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Senate Hearings

Before the Committee on Appropriations

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Fiscal Year 1976

94*th* CONGRESS, FIRST SESSION

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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1976

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS UNITED STATES SENATE

NINETY-FOURTH CONGRESS

FIRST SESSION

ON

AN ACT MAKING APPROPRIATIONS FOR THE DEPARTMENT OF DEFENSE FOR THE FISCAL YEAR ENDING JUNE 30, 1976, AND FOR OTHER PURPOSES

Printed for the use of the Committee on Appropriations

PART 1

Department of Defense

U.S. GOVERNMENT PRINTING OFFICE

49-101 O WASHINGTON : 1975

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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1976

WEDNESDAY, FEBRUARY 12, 1975

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

The subcommittee met at 10 a.m., in room 1223, Everett McKinley Dirksen Office Building, Hon. John L. McClellan (chairman) presiding.

Present: Senators McClellan, Stennis, Pastore, Symington, Proxmire, Young, Hruska, Stevens, and Schweiker.

DEPARTMENT OF DEFENSE

STATEMENT OF HON. JAMES R. SCHLESINGER, SECRETARY OF DEFENSE

ACCOMPANIED BY:

GENERAL GEORGE S. BROWN, USAF, CHAIRMAN, JOINT CHIEFS OF STAFF

HON. TERENCE E. McCLARY, ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER)

COLONEL ZANE E. FINKELSTEIN, JAGC, USA, LEGAL ADVISOR AND LEGISLATIVE ASSISTANT TO THE CHAIRMAN, JOINT CHIEFS OF STAFF

OPENING REMARKS OF CHAIRMAN M'CLELLAN

Chairman MCCLELLAN. The subcommittee will come to order.

The Defense Subcommittee of the Senate Committee on Appropriations begins hearings today on the fiscal year 1976 budget of the Department of Defense. The budget to be considered by the subcommittee totals $97.8 billion.

As I noted in a speech on the floor of the Senate yesterday, it is part of a $349.4 billion budget with a $52 billion deficit. This request is shocking and sobering, not only in its proposals, but also in its projections.

This budget proposes outlays of $1 billion a day and projects a deficit that will make one day of each week in the coming fiscal year a deficit day—adding $1 billion each week to the already swollen national debt.

Last year, we appropriated $82.1 billion for the Department of Defense and the corresponding outlays are estimated to be $79.2 billion. Thus, the budget considered by this subcommittee represents an increase of $15.7 billion in appropriations requested for the functions of the Department of Defense, and an increase of $7.6 billion in outlays.

This sizable increase is being proposed at a time when our economy is in disarray—when unemployment is soaring to near depression rates—when our foreign trade balances are suffering from the high price of imported oil—and when the cost of living for all our citizens is still climbing, although at a reduced rate of inflation.

Under these circumstances, I believe that I speak for all members of this subcommittee when I state frankly that this year we will be scrutinizing the spending proposal of the Department of Defense with even greater care and intensity than we have given it in past years.

In dealing with the Department of Defense budget, the subcommittee cannot operate in a vacuum. In this period of economic instability, we must give the fullest and most complete consideration not only to the requirement and demands of national security, but we must also take into account other demands upon the tax dollar and other priorities.

One of the points which I am certain that the subcommittee will wish to have cleared up for the record is whether or not this budget is the least that we need to maintain our national security in an insecure world.

We will wish to know if, on the other hand, it contains funds not required to fulfill mandatory defense needs but included in this budget as a "pump priming" device—designed to help us spend our way out of the current recession.

I hope, Mr. Secretary, that you will address yourself to this issue during your testimony.

I should like to make one further point.

PATTERN OF DEFENSE COSTS MISUNDERSTOOD

There has been considerable misunderstanding not only in the Senate but among the American people as a whole over the pattern of defense costs in relation to spending for all governmental functions in recent years.

While many Americans have been deceived by a barrage of misinformation that defense costs have swallowed up the lion's share of our resources, the facts present a completely different picture.

As I said yesterday, over the past decade, outlays for national defense have shrunk from 41.5 percent of total Federal budget outlays to 26.9 percent of the sum requested for fiscal year 1976. The defense share of the total Federal budget and the gross national product continues to decline. And defense spending has been rising far less rapidly than any other major item in the budget.

I hope that during these hearings—and when we take our completed defense appropriations bill to the floor—we will be able to continue an educational process aimed at providing the American people with facts and figures about defense spending, not propaganda.

In conclusion, let me state that it is the aim of this subcommittee to provide the United States with the best and most complete system of national defense commensurate with the state of our economy and our ability to pay for it.

Let us remember that we are trying to preserve and protect freedom and democracy not only for ourselves but for people all over the world. On the surface, democracy appears to be the easiest path for man to follow, but this is not true. Democracy demands the extraordinary of

the ordinary person—and let us make certain that this generation of Americans is equal to the challenges which are facing it.

TEXT OF FLOOR SPEECH BY CHAIRMAN

At this point I shall include in the record the text of a speech which I made on February 11, 1975, on the floor of the Senate entitled "The Facts About Defense Spending" and certain supporting documents.

[The speech and documents follow:]

EFFECT OF ADMINISTRATION BUDGET ON ECONOMY

Mr. President, in my more than three decades of service in this body, I can recall few documents as shocking and as sobering as the Administration's proposed budget for the 1976 fiscal year.

The bare figures speak for themselves—$349.4 billion in outlays—nearly $1 billion a day—and a $52 billion deficit. Thus one day of each week of the coming fiscal year will be a deficit day, adding $1 billion each week to the already astronomical national debt.

Storms that have been gathering by reason of deficit spending have suddenly swept over our economy with such force and velocity that they are disrupting the American way of life. This budget clearly forecasts a continuation and a growing intensity of these storms.

Inasmuch as the budget request for national defense—$94.027 billion in outlays (including $92.8 billion for the Department of Defense)—almost $9 billion in expenditures over fiscal year 1975, is the largest single item in the President's request—critics of defense spending are already mounting their usual attack upon it.

From them we hear the same old refrain: "we can't afford a defense budget of this size; defense funds should be slashed and such reduction should be used to increase appropriations for health, education, mass transit or non-military government programs." The more exuberant critics claim the defense budget is "soaring out of control."

We are told that a greedy military-industrial complex is gobbling up funds needed for under-funded social programs; that a national defense budget of this magnitude fuels an ever-spiraling arms race which may end in nuclear disaster.

The facts properly interpreted, however, present quite a different picture.

To be sure, $94 billion is an enormous sum, specially when compared with the $55.9 billion cost of defense only ten years ago.

But, outlays for national defense have shrunk during that ten year period from 41.5 percent of total Federal budget outlays to 26.9 percent requested for fiscal year 1976.

Since fiscal 1966, the cost of the Federal Government has gone up $214.7 billion—from $134.7 billion to $349.4 billion estimated for fiscal 1976. Of that total increase, only $38.2 billion—or 17.8 percent is attributable to national defense spending. The remaining 82.2 percent, or $176.5 billion of the $214.7 billion increase, is attributable to non-military functions and services, such as human resources and general government.

So very little blame can possibly be lodged against the Defense Department for the exorbitant increase in Federal expenditures.

Since fiscal 1966, non-defense programs including Federal outlays for human resource items—education and manpower; health, including Medicare and Medicaid; income security, including individual benefits—have increased from 58.5 percent of the budget to 73.1 percent. In dollar terms, the increase for those functions was $176.5 billion—from $78.8 billion to $255.3 billion.

Thus, while national defense costs were rising by 68 percent over the past ten years—from $55.9 billion to $94 billion, total other government expenditures were climbing by 224 percent.

And the defense share of both the total Federal budget and the Gross National Product continues to decline. In fiscal 1976, for example, proposed national defense outlays constitute only 26.9 percent of the total budget—down about 14 percent from the fiscal year 1966 level. Between 1966 and 1976, National defense outlays declined from 7.7 percent of the Gross National Product to 5.9 percent. During this same period, outlays for the non-defense portion of the budget rose from 10.9 percent to 16.0 percent of the Gross National Product.

Moreover, defense spending has been rising far less rapidly than any other major item in the budget.

For example during the past 10 years:

Federal aid to education, manpower and social services jumped 257 percent, from $4.1 billion to $14.6 billion.

Public assistance increased 440 percent, from $3.4 billion to $18.4 billion.

Social Security and other retirement and disability programs increased 247 percent, from $21.4 billion to $74.3 billion.

Health services, including Medicare and Medicaid, increased by 963 percent, from $2.6 billion to $28 billion.

Interest on the national debt increased by 205 percent, from $11.3 billion to $34.4 billion.

Many other like comparisons could be cited.

So, Mr. President, contrary to the misconceptions of many well-meaning persons who demand a revision of priorities with regard to the defense budget—including some members of this body—the truth is that we have already revised our spending priorities on an across-the-board basis.

The truth is that we are spending far less proportionately today to maintain our national security than we are spending for human needs and non-defense programs.

Why, then, are we now being called upon to provide for expenditures of an additional $9 billion over the amount being spent on national defense in the current fiscal year.

To a great extent, the answer lies largely in the cancer of inflation, the increasing sophistication of weapons systems, the need to replace obsolescent equipment and the high cost of an all-volunteer force.

Even as I speak, the fires of inflation are consuming a significant amount of the funds Congress has made available to the Department of Defense. For example, on September 30, 1974, the Secretary of Defense sent me a report on the status of 42 selected weapons systems which showed that inflation has driven up the cost of completing these programs by a phenomenal $16 billion over estimates made *only three months before*. I ask unanimous consent that it be included in my remarks.

In World War II, a B–29 bomber cost $680,000. If we buy the B–1 bomber, each one will cost $76.4 million.

In World War II, a P–51 fighter aircraft cost $54,000. An F–14 of today costs $17.8 million.

In World War II, the price of an M–1 rifle was $50.22. A modern M–16 costs $137.17.

The annual pay of a recruit in 1950 was $960. Today, a recruit receives $4,130.

Only eight years ago, it cost $1.30 a day to feed a soldier. Now it costs $2.68—and as any housewife knows—the cost of food is still going up.

Here is a table showing the phenomenal increases in the cost of food served in the mess halls of the Armed Forces:

	Cost of food items (cents)		Percent increase
	1964	Today[1]	
White bread, 1 lb	0.21	0.27	28.6
Round steak, 1 lb	1.04	1.75	68.3
Rib roast, 1 lb	.83	1.56	88.0
Chuck roast, 1 lb	.57	1.23	115.8
Pork chops, 1 lb	.88	1.80	104.6
Bacon, 1 lb	.67	.90	34.3
Hamburger, 1 lb	.49	.82	67.4
Pork loin, 1 lb	.61	1.60	162.3
Milk, ½ gal	.48	.76	58.3
Coffee, 1 lb	.82	1.12	36.6

[1] August 1974. These are bulk prices paid by the Department of Defense.

Military personnel costs have in recent years also escalated as a result of inflation and the all-volunteer services concept. In fiscal 1976, personnel and related costs will account for 53 percent of the Department of Defense outlays, or $49.2

billion of the $92 billion estimated. This represents an increase of $2.4 billion in spending on personnel in one year alone to maintain a smaller force.

Although the number of military personnel will have been reduced from 3.5 million men in 1968 to 2.1 million in 1976, average per capita cost is expected to double—due principally to pay increases and inflation—from $5,500 to $12,000 in 1976. As a result, total active duty pay costs for our military personnel have risen from $19 billion in 1968 to $25 billion in 1976.

Spending for national defense is up almost $9 billion over last year, but nearly one-third of this, $2.4 billion, will go for military and civilian pay and related personnel costs. Of the remaining $6 billion, about $1.8 billion will go for procurement; $2.6 billion for operation and maintenance; about $1 billion for research and development, and about $400 million for military construction and family housing.

In the area of fuel costs alone, the bill will rise by $400 million between fiscal year 1975 and 1976, even though actual consumption will be about the same.[2]

Mr. President, I do not want my remarks today to be misinterpreted. There is a very real and significant growth in funding for our national defense effort contemplated in the fiscal year 1976 budget, and it must bear very close scrutiny in light of the overall budget totals.

I want to assure my colleagues that the Appropriations Committee will examine very carefully some of the following areas of increase, and make prudent reductions where they are feasible. Some of the more significant areas of concern include:

An increase in military aid to South Vietnam of almost $600 million;

A $650 million increase budgeted for a higher peacetime tempo of air operations, more real property maintenance, greater numbers of ship alterations and increased maintenance in other areas;

A one-time request of $2.3 billion to pay for naval ships whose costs were very seriously underestimated by the administration in fiscal year 1975 and previous years;

Very significant increases—approaching $1 billion—in war reserves;

A 20 percent increase (over $1.6 billion) in research and development funding to pay for a whole range of new initiatives in advanced weapons systems—both strategic and tactical;

A significant and costly program to increase exploration, development and production of oil from our Naval Petroleum Reserves as well as to establish a sizeable national strategic petroleum reserve;

An increase of over $1 billion in appropriations for military construction and family housing programs.

It is obvious that reasonable men often differ on the question of "how much is enough" for defense. However, Mr. President, I wish to impress upon this body the following facts:

During fiscal 1976, national defense will receive the smallest share of the Federal budget since 1940—the year before Pearl Harbor.

During fiscal 1976, defense will have the lowest levels in manpower it has had since 1950.

No one can seriously challenge the proposition that there must be significant reductions in Federal spending. But, defense spending is only one segment of the national budget. It cannot be forced to bear the whole burden of fighting inflation.

For the sad truth is that despite detente, military power is by no means irrelevant in the modern world. It is a real, tangible and indispensable element of our national and international policy.

The burden of military preparedness which we must bear is not easy to carry. There is no way to shirk or escape this burden without weakening—and possibly imperiling—our national safety and security. As we celebrate the bicentennial of the independence of our nation during this coming fiscal year, it is well for us to be guided by the words of Thomas Paine:

Those who expect to reap the blessings of freedom, must, like men, undergo the fatigue of supporting it.

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[2] In fiscal year 1976, 199.5 million barrels at a cost of $3.4 billion, compared with 198.2 million barrels at a cost of $3.0 billion in fiscal year 1975.

Mr. President, I ask unanimous consent that a letter from the Secretary of Defense to me regarding the effects of inflation on defense costs and a chart prepared by the staff of the Senate Committee on Appropriations showing the comparison of defense spending to the cost of human resources and other programs from fiscal 1966 to fiscal 1976 be entered in the Record at this point.

LETTER FROM JAMES R. SCHLESINGER

SEPTEMBER 30, 1974.

Hon. JOHN L. MCCLELLAN,
Chairman, Committee on Appropriations,
U.S. Senate

DEAR MR. CHAIRMAN: The Selected Acquisition Reports for June 30, 1974 are currently being finalized for transmission to you in the near future. The reports are behind schedule this quarter to permit implementation and refinement of the changes previously discussed with the Committee staff and the inclusion of more realistic escalation indices for the out-year programs.

In the interim, there is attached for your information a summary of the more significant program cost data reflected in the preliminary SAR's for June. While some of the data included therein may change, the summary will provide you with advance information on the magnitude of the cost increases since the March submissions.

Since the factors that influence economic escalation are beyond the control of the Department of Defense, we continue to believe that the Base Program estimates provide you and the Congress with the best measure of management efficiency. The Base Program includes the best estimate of all acquisition costs associated with a program except for economic escalation. The increase in Base Program estimates since the March SAR's is $857M bringing the Base Program cost to complete for the 42 SAR programs to $106.5B. By Service, the increase is $619M for the Navy, $261M for the Army, and a decrease of $23M for the Air Force.

In addition to providing estimates for the Base Programs, we have, as previously agreed, provided estimates reflecting the impact of economic escalation for all programs in the SAR system *through completion*, in some cases extending 15 years into the future. In providing these economic escalation factors, we are attempting to provide you and the Congress with our best estimate of the eventual dollar costs of systems procured, as described in each of the SAR's. These are our best estimates and their development required assumptions concerning the overall economy and the impact of national and international events on the various elements of costs for our weapons systems. In addition, our estimates are heavily influenced by the timing and rate of procurement for these systems.

The rate of inflation experienced in the U.S. since last December (when previous indices were developed) has been much greater than anticipated. As a result, the inflation indices developed last July reflect much higher rates and this accounts for the significant increase in the escalation estimates reported in the June SAR's.

For the December and March SAR's, we developed general price escalation indices which provided for a 4.5% increase for procurement in FY 1975 and 3.1% in FY 1976 and each year thereafter. For the June SAR's, we developed revised price indices which indicated an 11% increase from 1974 to 1975, 8% in 1976, decreasing to 4.3% in 1980 with 3.7% per year thereafter. Although the Services are provided the OSD indices for general application, they are encouraged and do in fact develop their own indices which are representative of the conditions pertinent to a particular program. Based on the past few months' experience, the 11% projection for FY 1975 may be too low.

The overall increase since the March SAR's is $16.9B, bringing the total cost to complete for the 42 SAR programs to $143.6B. By Service, the increase is $7.3B for the Navy, $3.7B for the Army, and $5.9B for the Air Force. A $16.0B increase in the provision for economic escalation reflected in the June SAR's is responsible for 95% of the overall cost increase this quarter. The increase in economic escalation by Service is $6.7B for the Navy, $3.4B for the Army and $5.9B for the Air Force.

By weapon system, 10 programs account for $15.1B or 89% of the total cost increase reported this quarter. These are the programs of longer range where the effects of higher out-year escalation are most significant. The 10 programs,

which are marked with a check on the enclosure, are the Navy's TRIDENT, SSN–688, DD–963 and PF systems; the Army's SAM–D, UTTAS, AAH and XM–1 systems; and the Air Force B–1 and F–15 systems.

With kindest regards,

Sincerely,

JAMES R. SCHLESINGER.

SAR PROGRAM ACQUISITION COST SUMMARY, JUNE 30, 1974

[In millions of dollars]

System	Current estimate			Changes in current estimate this quarter		
	Base program	Provision for economic escalation	Total	Base program	Provision for economic escalation	Total
NAVY						
A–7E	2,226.0	364.5	2,590.5	+4.1	+17.7	+21.8
E–2C	883.6	101.2	984.8	−2.3	+6.0	+3.7
F–14A	5,338.3	968.7	6,307.0	−29.7	−8.7	−38.4
P–3C	2,428.1	295.9	2,724.0	−50.0	+24.7	−25.3
S–3A	2,377.8	910.9	3,288.7	+12.0	+36.0	+48.0
Aegis	501.7	47.6	549.3	.....	.....	.....
Condor	366.8	45.7	412.5	+11.5	+5.0	+16.5
Harpoon	783.0	395.9	1,178.9	.....	+147.1	+147.1
Phoenix	991.7	162.6	1,154.3	.....	+37.9	+37.9
Poseidon	4,790.7	NR	4,790.7	+47.7	NR	+47.7
Sidewinder Aim–9L	101.8	30.6	132.4	+6.8	+18.1	+24.9
Sparrow III–F	587.8	212.0	799.8	−50.2	+34.4	−15.8
Trident	11,417.2	4,029.2	15,446.4	+94.3	+2,921.0	+3,015.3
MK–48	1,369.4	187.8	1,557.2	−4.2	+100.9	+96.7
SSN–688	5,932.6	1,930.0	7,862.6	+84.1	+756.3	+840.4
DD–963	2,838.2	760.4	3,598.6	+241.7	+277.7	+519.4
DLGN–38	1,272.7	319.1	1,591.8	+25.0	+200.0	+225.0
LHA	980.5	199.4	1,179.9	−1.3	+35.9	+34.6
PF	2,807.8	2,466.8	5,274.6	+130.2	+1,661.6	+1,791.8
PHM	776.2	331.3	1,107.5	+99.8	+249.3	+349.1
CVAN–68 class	2,045.5	512.3	2,557.8	.....	+211.9	+211.9
Total Navy	50,817.4	14,271.9	65,089.3	+619.5	+6,732.8	+7,352.3
ARMY						
Lance	898.4	47.3	945.7	+4.5	+16.2	+20.7
Imp. Hawk	700.6	151.8	852.4	+.1	+21.4	+21.5
Safeguard	4,572.0	790.0	5,362.0	−14.0	.....	−14.0
Sam-D	3,810.0	2,579.0	6,389.0	+259.4	+1,229.9	[1] +1,489.3
HLH	252.0	2.3	254.3	.....	+2.3	+2.3
UTTAS	1,918.6	1,484.2	3,402.8	.....	+727.2	+727.2
MICV	226.4	118.5	344.9	.....	+59.3	+59.3
Scout	204.5	57.8	262.3	.....	.....	.....
AAH	1,464.0	1,054.2	2,518.2	+11.2	+505.9	+517.1
XM–1	2,328.3	1,946.9	4,275.2	.....	+874.9	+874.9
Total Army	$16,374.8	8,232.0	24,606.8	+261.2	+3,437.1	+3,698.3
AIR FORCE						
A–7D	1,324.4	157.9	1,482.3	−3.8	.....	−3.8
A–10	1,779.0	954.5	2,733.5	.....	+212.6	+212.6
B–1	12,209.8	6,422.8	18,632.6	.....	+3,632.6	+3,632.6
F–5E	387.8	34.7	422.5	.....	.....	.....
F–15	7,586.5	3,354.8	10,941.3	+47.1	+1,620.0	+1,667.1
F–111	5,492.4	1,625.4	7,117.8	−8.1	.....	−8.1
AWACS	1,965.9	689.5	2,655.4	.....	+178.8	+178.8
AABNCP	446.2	52.4	518.6	+23.3	+11.0	+34.3
Maverick	410.3	162.9	573.2	.....	.....	.....
Minuteman III	5,992.7	968.4	6,961.1	−.4	+115.8	+115.4
SRAM	1,135.4	19.8	1,155.2	.....	.....	.....
Sidewinder AIM–9L	184.1	57.1	241.2	.....	+38.4	+38.4
Sparrow III F	368.4	142.0	510.4	−81.1	+76.8	−4.3
Total Air Force	39,302.9	14,642.2	53,945.1	−23.0	+5,886.0	+5,863.0
Grand total	106,495.1	37,146.1	143,641.2	+857.7	+16,055.9	+16,913.6

[1] Reflect changes since Dec. 31, 1973; no Sam–D SAR for Mar. 31, 1974.

BUDGET OUTLAYS BY FUNCTION 10-YR COMPARISON (1966–76)

[In millions of dollars]

	Fiscal year 1966			Fiscal year 1976 (proposed)			Increase	
	Amount	Percent of total budget	Percent of GNP	Amount	Percent of total budget	Percent of GNP	Amount budget	Percent
National defense	55,856	41.5	7.7	94,027	26.9	5.9	38,171	68
Department of Defense Portion	(54,178)	(40.2)	(7.5)	(89,800)	(25.7)	(5.6)	(35,622)	(66)
Education, manpower and social services	4,093	3.0	0.6	14,623	4.2	.9	10,530	257
Public assistance	3,400	2.5	0.5	18,368	5.3	1.2	14,968	440
General retirement and disability insurance (including social security)	21,435	15.9	3.0	74,356	21.3	4.7	52,921	247
Health	2,638	2.0	.4	28,050	8.0	1.8	25,412	963
Interest	11,286	8.4	1.6	34,419	9.9	2.2	23,133	205
General government and other costs	35,944	26.7	5.0	85,529	24.5	5.4	49,585	138
Total	134,652	100.0	18.7	349,372	100.0	21.9	214,720	159

10-YR COMPARISON OF DEFENSE OUTLAYS TO TOTAL OUTLAYS

[Dollar amounts in millions]

	Fiscal year 1966			Fiscal year 1976 (proposed)			Increase	
	Amount	Percent of total budget	Percent of GNP	Amount	Percent of total budget	Percent of GNP	Amount	Percent
National defense	55,856	41.5	7.7	94,027	26.9	5.9	38.171	68
Department of Defense portion	(54,178)	(40.2)	(7.5)	(89,800)	(25.7)	(5.6)	(35,622)	(66)
Federal Government other than defense	78,796	58.5	10.9	255,345	73.1	16.0	176,549	224
Total	134,652	100.0	18.7	349,372	100.0	21.9	214,720	(1)

[1] Of the total increase of $214,700,000,000, only 17.8 percent is attributable to national defense, while 82.2 percent of the increase is attributable to nonmilitary functions.

Note: Columns may not add due to rounding.

INTRODUCTION OF WITNESSES

Chairman McCLELLAN. Our first witness this morning will be the Secretary of Defense, Dr. Schlesinger. He is here to tell us what the Defense Department wants and the reason for each request that has been submitted in the budget.

Senator Young, do you have a statement?

Senator YOUNG. I am deeply concerned about the overall budget. There has been considerable criticism concerning the $52 billion deficit forecast in this budget.

Chairman McCLELLAN. Well, I am sure the deficit does not have much support, but it is an affliction.

INTRODUCTION OF SENATOR PROXMIRE

We have a new member on this subcommittee whom I am glad to welcome this morning.

Senator Proxmire, we would be glad to hear any comments you have this morning.

Senator PROXMIRE. I am honored and flattered to be on this subcommittee. It is the most important subcommittee that the Appropriations

Committee has. I look forward to working with you, Mr. Chairman and Senator Young, for whom I have the greatest admiration.

Chairman McCLELLAN. Very well.

Mr. Secretary, we welcome you and we hope that we can repeat at least some of our modest success in the past in scrutinizing the budget for the Defense Department objectively with a view of doing what is necessary to protect the national interest while maintaining strong national security.

You have cooperated with us in the past, and we anticipate the same fine spirit of cooperation as we begin this tremendous task of analyzing the budget this year, trying to find areas where reductions can be made without doing violence to our defense posture.

We will proceed until 12:30 today. I have another appointment scheduled this afternoon, and will have to defer to that. We will make all the progress we can.

Mr. Secretary, you may now proceed any way you like.

Secretary SCHLESINGER. Thank you, Mr. Chairman.

Mr. Chairman, I think your statement yesterday on the floor summarizes the issues very well. Some of the remarks that I shall make in the next 15 or 20 minutes will be remarks whose general content you and other members of the committee will be familiar with.

PREPARED STATEMENT

Chairman McCLELLAN. Do you have a formal statement this morning?

Secretary SCHLESINGER. Yes, Mr. Chairman. I would like to submit my formal statement for the hearing record and speak briefly on the major points.

Chairman McCLELLAN. Very well, Mr. Secretary. Without objection, it will be received and printed in the record at this point.

[The statement follows:]

Mr. Chairman and members of the committee, it is my privilege to present to you the Defense Program and Budget for FY 1976 and for the three months thereafter, ending September 30, 1976. In compliance with the 1974 Budget and Impoundment Control Act, I am providing you with the Department's request for legislative authorization through FY 1977. I am also submitting for the first time a five-year projection of future Defense budgets in total obligational authority.

The table below shows the Departmental requests for FY 1976 and the transition period.

TOTAL REQUESTS

[In billions of current dollars]

	Fiscal year 1976	Transition period
Total obligational authority	$104.7	$24.6
Outlays	92.8	25.4

The Department's requests and five-year projections will be discussed later in this Report. Before doing so, however, it is essential to discuss the basic defense choices that we as a nation face and the international context within which we must make them.

I. THE BASIC BUDGETARY CHOICES

In FY 1964, before the war in Vietnam had resulted in a major impact on the U.S. defense establishment, our military and civilian personnel totaled over 3.7 million people. For FY 1976, we plan fewer than 3.1 million people, even though the world has become only a slightly safer place in the ensuing twelve years. For the first time since 1939 (two years before Pearl Harbor), our active fleet will consist of fewer than 500 ships. Our ships, aircraft, and ground combat vehicles are aging. Perhaps most troublesome of all, the readiness of some forces has suffered as budgetary constraints have grown more severe. There is, in short, no way that we can maintain force structure, modernization and readiness on the basis of declining budgets. Yet, if the effects of inflation and real pay increases are removed, the last four years have witnessed nothing but declining budgets.

In such circumstances, the Congress and the country must face the main choices before us and the consequences that are likely to flow from their decisions.

One choice is to continue to review the Administration's budget and make cuts in such a way that the net reduction is no more than 5% of the total. Consciences are then salved and no great damage is done in any particular year. The difficulty is that if this approach is followed year after year—as it has been in the recent past—the real military power of the defense establishment must inevitably erode. And as troublesome as the fact of erosion is the fact that decisions fundamental to the security of the United States are made by default. Surely, if we want the shadow rather than the substance of first-class military power, we should make the decision explicitly rather than in a casual and impulsive fashion over a period of time.

A second choice is to recognize that there is a strong connection between the safety, interests, commitments, and foreign policy of the United States on the one hand, and the size, composition, and deployment of our defense establishment on the other hand. This choice implies that, if the proposed Defense budget is too high for the Congress and the country, it may well be that excessive demands are being made on defense. Thus, if the Defense Budget is to be reduced, it should be done in clear recognition that we will not be able to fulfill our responsibilities.

A third and more reasonable choice is to acknowledge that in a world where detente runs parallel with a number of dangers—some evident, some hidden and uncertain—in a world where the United States simply cannot escape great responsibilities, military power remains relevant. In these circumstances, a posture of deterrance will be seen as necessary to some measure of safety, collective security, and progress toward more enduring peace even though the price is high but quite tolerable. Such a choice implies acceptance not only of the Administration's budgetary request, but of the strategic concepts on which it is based.

II. THE INTERNATIONAL SITUATION AND THE DEFENSE ESTABLISHMENT

1. The Nature of the Challenge

Last year I quoted from Proverbs to the effect that "Where there is no vision, the people perish." The vision that I attempted to suggest then was one of peace among the great powers based on equality, civility, and prudence. This year, the principle of equality strongly supported by the Defense Department was established at Vladivostok. But equality must be more than a principle. We would do well to recall in that connection that "When a strong man armed keepeth his palace, his goods are in peace." Perhaps we are no longer of "that strength that in old days moved earth and heaven," but we must still be "strong in will—to strive, to seek, to find, and not to yield."

To heed that advice, we must maintain military strength. But there remains the problem of defining our specific defense objectives and establishing efficient programs for their attainment. A French official once solved the problem very succinctly. He said that the Maginot Line began where it was required and ended where it was no longer needed. However, we can and should do better than that. As a British statesman once asked: "Does it mean that because Americans allegedly won't listen to sense, you intend to talk nonsense to them?" The answer is: No.

I am sensitive to the fact that national security is not a product that brings explicit and tangible benefits to us, although most of us are acutely aware when it is absent. As Sir John Slessor once noted: "It is customary in democratic

countries to deplore expenditure on armament as conflicting with the requirements of the social services. There is a tendency to forget that the most important social service that a government can do for its people is to keep them alive and free."

It is also common to allege that the Defense Budget contains some inner momentum of its own, that it has a Parkinsonian tendency to expand independently of external threats (although the perceived growth is in current and highly inflated dollars). Few of us give ear to some of our most trenchant critics in Congress who acknowledge that the Department of Defense is the best managed in government.

Obviously, this Department can always improve the efficiency of its performance, but we will never reach zero defects. In any event, the United States can afford both increased social programs and an adequate posture of defense; the two objectives are not incompatible and we do not have to trade one for the other.

What is more, the defense of this nation and its interests is a matter of the utmost gravity; despite theories to the contrary, we have not arrived at this Budget (or its predecessors) as a result of some form of mindless bureaucratic bargaining. The issue before us, therefore, is not how to restrain these voracious bureaucrats. It is how much defense of what kind we need to be reasonably confident of securing this nation and its myriad interests.

We live in an interdependent world economy, and our foreign economic interests are substantial. U.S. assets abroad amount to more than $180 billion. Annually, we export more than $70 billion in goods and services, and our imports are of an equal or greater amount. The oil embargo of 1973 is only the most recent and pointed reminder that we have a keen and growing interest in distant lands—their markets and their products.

Our foreign political interests are even more extensive. Within this century we have participated in two great wars to ensure that Europe did not fall under the domination of a single power. We have a similar interest in seeing that Japan remains independent and that the other nations of Asia are free to choose their own destinies. Our concern for the freedom of the Western Hemisphere from external domination now dates back more than 150 years. And, we have important economic and strategic interests in Latin America, including the Panama Canal. Even in a period of questioning and self-doubt, there remains a concensus within the country that we have vital interests in Western Europe, the Middle East, the Persian Gulf, and Asia. Contrary to occasional suggestions, surely the right cure for what may seem an excess of commitments is not the blind and hasty abandonment of all commitments. Our objective, as a great power, is to display a somewhat greater degree of steadfastness.

Despite detente and its opportunities, the need for steadfastness is no less great than it was a decade or more ago. Putting aside the shilbboleths of the cold war era, it is nonetheless the case that the world remains a turbulent place. The military confrontation along the Sino-Soviet border continues. Both Washington and Moscow appear to agree that the situation in the Middle East is extremely volatile. Our allies in Europe and Asia find themselves in varying degrees of economic and political difficulty. From the Azores, through Europe and the Mediterranean, to Japan, common objectives and policies remain to be formulated. The conflict over Cyprus continues unresolved. In several countries with whom we have close associations, succession crises are in the offing. The international waters are troubled and the temptation to fish in them to the detriment of U.S. interests cannot be entirely absent.

The Soviet Union and the PRC have proved to be relatively prudent powers under their current leadership, although some of their client states appear to suffer from periodic excesses of revolutionary exuberance. Challenges may therefore arise even though the great powers do not wish to initiate them. Whatever the case—and the future is clouded with uncertainty—there is no doubt about the very large military capabilities at the disposal of the USSR. What is more, these capabilities continue to grow. In our prices, the Soviets now devote more resources than the United States in most of the significant categories of defense. In overall Research and Development, they outstrip us by 20%; in General Purpose Forces by 20%; in Procurement by 25%; and in Strategic Nuclear Offensive Forces by 60%.

What is more, we are now beginning to witness in the Soviet Union the largest initial deployment of improved strategic capabilities in the history of the nuclear competition. How far it will go we do not yet know, but there is no doubt that these new ICBMs—with larger throw-weights, MIRVs, and improved accuracies—

combined with significant improvements in their sea-based missile force, will give the Soviets a much more powerful strategic offensive force, even within the constraints of Vladivostok.

At the same time, the Soviets have continued to strengthen their general purpose forces and provide large amounts of military assistance to other states. One of the more impressive feats performed by the Soviets during the past five years is to have built up their forces in the Far East to a strength of more than 40 divisions without any diminution of their capability west of the Urals. In fact, during the past year, there have been both qualitative and quantitative improvements in the forces oriented toward NATO, and the Center Region of the Alliance still faces a deployed force of about 58 Warsaw Pact divisions, with the possibility that at least 30 more could be added from the USSR alone within a relatively short period of time. The northern and southern flanks of NATO face smaller but nonetheless formidable forces as well.

While we have heard a great deal about U.S. forward based systems with nuclear capabilities, remarkably little has been made of the large number of non-central nuclear systems that the Soviets deploy, some of which—under certain circumstances—would be capable of hitting parts of the United States, most obviously Alaska. It is noteworthy, in this connection, that the President was unwilling to compensate the Soviets for our forward based systems in the negotiations at Vladivostok.

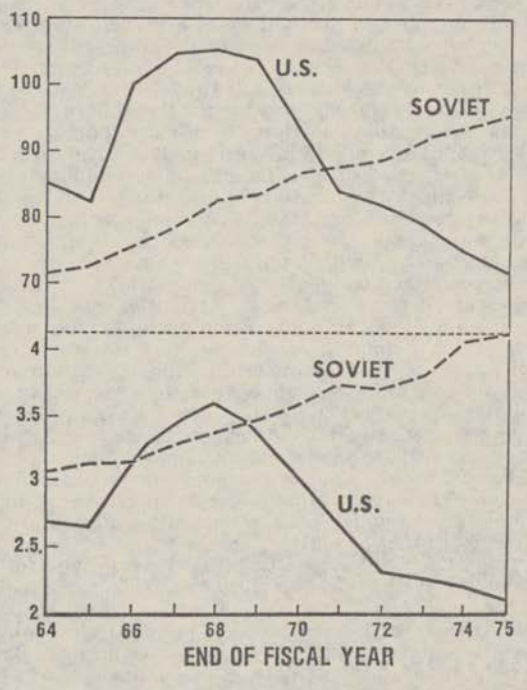
SOVIET — U.S. DEFENSE EXPENDITURES AND MILITARY MANPOWER

DEFENSE EXPENDITURES

(Billion 1973 Dollars, excludes military assistance and civil defense)

MILITARY MANPOWER*

(Millions)



* As a result of further data, a new analysis of the number of personnel assigned to the command and general support portions of the Soviet Armed Forces is underway. There are a number of individuals assigned to supply, research, and training elements for whom we have not yet accounted.

What we have to recognize, in sum, is that: first, the United States continues to have large and growing interests in an interdependent world even as it faces a number of problems at home; second, the areas of greatest interest to the United States are beset by a number of internal and external difficulties; third, despite detente, the sources of potential differences and conflict among the powers remain numerous; and fourth, large and diversified military capabilities remain

in the hands of powers with whom our relationships have to some degree improved, but powers who have not traditionally wished us well or looked with cordiality upon our interests.

2. The U.S. Role

A major issue that we must face as a nation concerns the degree of initiative and leadership that the United States should provide in the face of the global complexities. As a result of events last year in the Middle East, no one can doubt that the world has become truly interdependent and that American citizens remain vitally concerned with its evolution. Clashes in various parts of the world have demonstrated the importance of U.S. diplomatic efforts both to foreign governments and to our own citizens. And we are all aware that we have become vulnerable to nuclear attack. It is also quite obvious that the United States will remain one of only two superpowers for many years to come. For that very reason, however passive and restricted our role in specific situations, we will loom as a major factor in the calculations of other nations, and many of them will seek to involve us in their affairs. Such was the case in the earlier part of this century ; it is even more so now.

But none of these realities mean that we must take initiatives, try to shape the future to our ideals, work toward results favorable to our interests, or forestall unwanted challenges. In principle, at least, a relatively passive policy, a sense of limited liability, and a minimal military posture are alternatives that are open to us.

Some of our citizens might even find favor in such a role, provided that their own particular oxen were not gored in the process. An active foreign policy implies risks, but so does passivity. There is no risk-free policy. In the face of uncertainty and a not altogether friendly world, it is more prudent to shape the future by our own actions than to let others do it for us.

It is also worth recalling that a number of factors, in addition to our diplomatic relationships with the Soviet Union and the People's Republic of China have changed during the last generation.

> The United States, while remaining the great arsenal and reserve of democracy, has also joined its first line of defense; moreover, it is alone as the superpower of the non-communist world.
>
> It is all well and good to add up the population and gross national product of the European Economic Community and pretend that it is a substitute for the United States; but it will be many years before the nine members of the Community can act with the unity, coherence, and efficiency that we command.
>
> In the meantime, despite the promising dialogues begun with the USSR and the PRC, it would surely be unwise to forego the maintenance of a balance of power in critical areas of the world.

Perhaps all will go well without the maintenance of such balances and the deterrence of hostile acts that go with them. Perhaps we can now depend on the good will of others to preserve the independence and territorial integrity of our friends and the protection of our farflung interests. But we ought not to tempt fate in that particular fashion. That being the case, there is no alternative to a strong defense establishment for the United States as a basis for its continued leadership in the world.

Moreover, there is little reason why we should expect this requirement to change in the future. Despite our hopes for detente and an end to the cold war, we have been driven out of the Paradise of isolation and noninvolvement which characterized the America of the nineteenth and early twentieth centuries; and as Thomas Wolfe reminded us in another connection: We can't go home again. No longer can we expect other nations by themselves to man the front lines of freedom. No longer can we depend on the strength of our allies to buy us the time to expand our defense production base, to mobilize and deploy our forces, to learn the lessons of the conflict from the mistakes of others, and to turn the tide of war in our favor. The luxury of time—and the old role that went with it—are gone, perhaps forever.

In these circumstances, barring the millennium, ready military power will continue to be necessary; without it, anarchy will ensue. As President Ford has pointed out: "A strong defense is the surest way to peace. Strength makes detente attainable. Weakness invites war. . . ." In a volatile world, a credible deterrent capability is essential to our well-being. The real issue thus is hardly one

of need; it centers on the types and magnitudes of deterrent forces that we must have.

3. The Basis for Planning

A world in which so many conditions are changing simultaneously makes it difficult to state with precision what those types and magnitudes of forces should be. But as a very great power in the forefront of world politics, we cannot afford to play the accordion with our military posture any longer. As long as interests differ among the powers and competition continues (however muted), we must aim for an economical and stable defense posture that is suitable to the environment and that we can sustain over the long haul.

The movement toward detente with the USSR and the PRC may seem to suggest that such a posture can be very minimal indeed. Before we reach that conclusion, however, we would do well to remember that where the USSR is concerned, we can reasonably expect:

A relaxation but not an eradictation of tensions with the United States;

A move away from the risk of direct military confrontation with the United States (as long as we maintain our military strength), but not at the sacrifice of any major interests as perceived by Moscow;

A continued pursuit of and even an increase in the ideological struggle;

The maintenance of a relatively closed society and a cloak of great secrecy around the decisions of her government;

A belief that the atmosphere of detente has arrived because, as the Soviet leadership might put it, the correlation of forces has begun to shift in their favor;

The continued allocation of major resources to a strong and growing military posture, and a singularly persistent effort to create a balance of military power more favorable to the USSR.

With the differences that exist between our own social system and that of the USSR, and with the differences in political and economic objectives, it would be surprising indeed if there were not an extended period of time between the first steps toward detente and the more deeply cooperative relationship to which we aspire. Meanwhile, we must anticipate that moments of cooperation and agreement will alternate with periods of dispute and competition. In such circumstances the risk of confrontation, crisis, and miscalculation will remain present—as has been the case in the recent past. No one should be under any illusion about the extent, availability, and readiness of American military power should comparable cases arise in the future. A minimal military establishment will hardly meet the requirements.

This concern should not be taken as opposition to a reduction in military arms and budgets. On the contrary, the Department of Defense has urged and still urges and encourages progress toward the equitable control and reduction of both strategic nuclear and general purpose forces. Arms control agreements such as the President has initiated at Vladivostok not only remove uncertainties from the process of military planning; they also offer hope of reducing the costs of the arms competition and removing some of the tensions and suspicions that invariably accompany accelerations in the competition. Precisely for these reasons, the Department of Defense supports the earliest possible effort on the part of the United States to lower the currently agreed ceilings on strategic delivery vehicles below 2,400.

Even as we support and actually desire arms reductions, we must be realistic in our expectations of how much can be accomplished in the near term. The actual removal of all nuclear forces from the arsenals of the world—however desirable—is not something that we can seriously anticipate, and the knowledge of nuclear fission and fusion is likely to be with us as long as the human race survives. This equally obvious but often-neglected prospect also holds true for the general purpose forces where, as yet, we have made little progress in the direction of arms control.

The main point, however, is that even if we continue to move forward on the arms control front, and even if successive constraints are imposed on the major military establishments, we will still have to engage in force planning within these constraints.

These are a number of principles that should guide our planning under these conditions.

First, our forces—together with those of our allies—must be a function, not of internal political disputes, but of our needs in light of the capabilities and programs of potential adversaries.

Second, we must avoid unilateral reductions in the baseline posture that we consider appropriate to our interests; in a period of transition and uncertainty, reductions should result from international agreement rather than from temporary budgetary exigencies or the impulse to set a good example for the other side.

Third, we should nonetheless continue to strive for the utmost efficiency in the use of our scarce defense dollars and, as long as our baseline force requirements are not fully met, continue to convert excess overhead and support into increased combat power.

Fourth, our planning should abide meticulously by the spirit as well as the letter of existing arms control agreements and guidelines; in fact, we should plan toward the Vladivostok goals and our desire for other equitable agreements.

To proceed otherwise—and particularly to engage in unilateral force reductions—will not foster further detente and arms control. Instead it will simply create the kind of weakness that invites miscalculations, probes, tests, and the risk of disaster. Despite frequent use of the term "arms race," the United States has not engaged in the life-or-death competition that occurred among the European powers in the 1930's; and our defense budget, both as a percent of GNP and in its decline (in constant dollars), is a clear reflection of that fact. Indeed, we have been engaged in the rather peculiar process of reducing our defense budget in real terms while the Soviets have been raising theirs.

That, unfortunately, is the problem confronting us. We may be facing a situation where the Middle East is the potential tinderbox that the Balkans actually were in 1914, and where our international economic problems bear some resemblance to the 1930s, when international financial institutions and economic structures deteriorated and the Western powers turned inward and became weaker. In such an era, civility is essential, but it should be armed civility joined with prudence. Thus, while we should take other capabilities into account, our planning objectives should be to:

Assure that no potential adversary achieves unilateral advantage over the United States.

Leave unchallenged the Soviet capability for deterrence provided that our interests are respected and the traditional norms of international behavior are accepted.

In the present era, with so many sources of possible conflict, these principles and objectives—we believe—constitute the only prudent bases for planning.

4. Toward Long-term Deterrence

In the period prior to World War II, we could think of deterrence as based essentially on one type of capability—our non-nuclear forces. Even then we believed in a strong "forward defense" symbolized by a Navy second to none (and insisted on the principle of parity with Great Britain in the Washington Naval Treaty of 1922), a small regular army, and a mobilization base on which to build and equip major land and air forces. But because of distance, powerful friends in Europe, and the assumption that we should have the time to mobilize, we could afford a defense budget that constituted no more than 2% of the GNP.

Now, however, all that has changed. The role of the United States has grown dramatically since World War II. Perhaps even more important, the technology of warfare has undergone a dramatic transformation. After 30 years, we are still struggling to adapt our concepts of conflict and its deterrence to nuclear weapons that range in yield from the sub-kiloton to the multi-megaton; to delivery system that can travel intercontinental distances in 30 minutes; and to improving accuracies that apply to short-range as well as long-range delivery systems and to high explosive as well as to nuclear warheads.

In the 1950's, some nations in the Western Alliance, including the United States, made the intriguing and convenient discovery that there was a phenomenon called deterrence, painless in that it would supposedly work without the unpleasant necessity of anyone being seriously prepared to fight. Even more miraculously, it turned out (or so it was alleged) that deterrence was low in cost—in contrast to defense. This observation led to the advocacy by some of reduced defense capabilities. Churchill himself spoke of safety as "the sturdy child of terror, and survival the twin brother of annihilation." Even now, deterrence is distinguished from defense and described as "the means of inflicting unacceptable damage in case of aggression . . ."

At base, however, this is nothing but a dangerous illusion, and most serious students of the subject have recognized it as such as the nuclear predominance of the United States has disappeared. Deterrence is not a substitute for defense;

defense capabilities, representing the potential for effective counteraction, are the essential condition of deterrence. This simple truth becomes especially evident in a crisis, when forces designed only for "deterrence" are increasingly found to be lacking in credibility both to opponents and to their potential users.

Deterrence, in other words, is not something free-floating that exists independently of a credible, implementable threat. It requires the most careful structuring of forces that is fully consistent with an agreed-upon strategic concept. By contrast with the 1950's, when the great nuclear superiority of the United States concealed any basic deficiencies in strategic analysis and force structure, it is now evident that deterrence does not simply derive from a pile of nuclear weapons—a pile which one anticipates, at least, will frighten one's opponents as much as the people it is designed to protect.

In the 1950's, you may also recall, there was some misunderstanding of the need for balanced military forces as opposed to simple reliance on nuclear retaliation. The "Fifties", if nothing else, were a period during which many institutions became excessively intrigued with the novelty of nuclear explosives. There is some evidence that the academic community has not recovered from the novelty yet.

More recently, illusions somewhat similar to those of the "Fifties" regarding deterrence have emerged about detente. Only detente exercises an even more powerful magic since it is believed somehow to obviate the need for both deterrence and defense. But we should make no mistake about it: there is no conflict among detente, deterrence, and defense. They are inextricably bound up with one another in the maintenance of an equilibrium of power.

A relatively closed society like the Soviet Union has no difficulty in pursuing detente and simultaneously strengthening its defense efforts. Under such circumstances, this nation should be under no illusions about the need to maintain a military balance and all the capabilities that go with it. If indeed we are to maintain a military posture second to none, there is no substitute for the hard, costly, and unremitting effort required to keep up the nation's defense.

For more than a decade now, it has become generally accepted (regardless of administration or party) that credible deterrence must, among other factors, rest on a TRIAD of capabilities—strategic nuclear, theater nuclear, and nonnuclear forces. Each component serves as a deterrent to its opposite number and, together, they interact to enhance deterrence over the spectrum of possible conflicts. If we do not have the full TRIAD, in other words, an opponent might be tempted to exploit the gaps in our deterrent.

The main components of our deterent forces will be discussed in detail later on in this Report. Here, I simply want to review three key military balances: the strategic nuclear balance, the military balance in Central Europe, and the worldwide maritime balance. The importance of our strategic mobility forces should also be underlined.

5. The Worldwide Military Balance

These three main balances do not cover all of the elements that we must consider in assessing the worldwide military balance that is the objective of U.S. and allied military programs. Of increasing importance, for example, is the comparative U.S. and Soviet capability to project military power into potential crisis areas. Until recently this comparison did not concern us because Soviet capabilities to deploy and support military forces at some distances from its borders were negligible. The issue will be a matter of increasing interest to us in the years ahead as the strategic mobility of Soviet forces improves.

Another aspect of any comprehensive assessment of the worldwide balance is the contribution of U.S. overseas deployments outside of Europe, for example in Korea. These forces help maintain local balances and form U.S. strongpoints in the worldwide balance.

To assess all of these balances with confidence is difficult. U.S. and Soviet forces are different in many ways. Organizational, doctrinal, and weapon assymmetries have developed as a result of differences in historical experience, weapons design philosophy, relative resource scarcities, geography, and other factors. In the case of the three key balances that will be reviewed, there are larger and larger asymmetries as one passes from strategic nuclear forces, to the conventional forces in NATO (in which the Center Region receives so much attention), to the air and naval forces. Simple comparisons based on counting numbers of weapons and men, even if qualified by the differing technological quality of the weapons, tell only part of the story.

6. The Strategic Nuclear Balance

Credible strategic nuclear deterrence depends on the satisfaction of four major requirements. First, we must maintain an essential equivalence with the Soviet Union in the basic factors that determine force effectiveness. Because of uncertainty about the future and the shape that the strategic competition could take, we cannot allow major assymmetries to develop in throw-weight, accuracy, yield-to-weight ratios, reliability and other such factors that contribute to the effectiveness of strategic weapons and to the perceptions of the non-superpower nations. At the same time, our own forces should promote nuclear stability both by reducing incentives for a first use of nuclear weapons and by deterring and avoiding increased nuclear deployments by other powers.

The second requirement is for a highly survivable force that can be withheld at all times and targeted against the economic base of an opponent so as to deter coercive or desperation attacks on the economic and population targets of the United States and its allies.

The third requirement is for a force that, in response to Soviet actions, could implement a variety of limited preplanned options and react rapidly to retargeting orders so as to deter any range of further attacks that a potential enemy might contemplate. This force should have some ability to destroy hard targets, even though we would prefer to see both sides avoid major counterforce capabilities. We do not propose, however, to concede to the Soviets a unilateral advantage in this realm. Accordingly, our programs will depend on how far the Soviets go in developing a counterforce capability of their own. It should also have the accuracy to attack—with low-yield weapons—soft point targets without causing large-scale collateral damage. And it should be supported by a program of fallout shelters and population relocation to offer protection to our population primarily in the event that military targets become the object of attack.

The fourth requirement is for a range and magnitude of capabilities such that everyone—friend, foe, and domestic audiences alike—will perceive that we are the equal of our strongest competitors. We should not take the chance that in this most hazardous of areas, misperceptions could lead to miscalculation, confrontation, and crisis.

Our current and programmed capabilities continue to satisfy these four requirements of strategic balance and deterrence. The forces which fulfill these objectives are a triad of bombers, ICBMs and SLBMs. Each leg of the triad is not required to retain independently a capacity to inflict in a second strike unacceptable damage upon an attacker. Instead, the three legs of the triad are designed to be mutually supporting. Our sea-launched ballastic missile (SLBM) force provides us, for the foreseeable future, with a high-confidence capability to withhold weapons in reserve. However, some of the POLARIS submarines are nearing the end of their useful life, so we must now plan for their gradual replacement. In doing so, we should make certain that we are insured against major improvements in antisubmarine warfare (ASW) by improving the performance of both the successor submarines and the missiles that will replace the POLARIS A–3 and the POSIEDON C–3. The TRIDENT program provides that hedge and deserves continued support.

The ICBM force, the heart of which is the MINUTEMAN series, continues to give us the accuracy, flexibility, and control necessary to deal with and thereby deter a wide range of attacks on military targets. It provides the most reliable source of limited response options so essential to nuclear deterrence under conditions of nuclear parity. The combination of silo-upgrading and a new understanding of the problems the Soviets would face in mounting a preemptive counterforce strike—the so-called "fratricide" effects—holds the promise of extending the period in which we can feel confident of the survivability of our ICBM force. This assumes that the Soviets exercise restraint in their own developments and deployments.

The Soviets have already begun what will be a very substantial indeed unprecedented, deployment of large new ICBMs in the first quarter of this year. However, if the principles and spirit of Vladivostok prevail, our response can be quite restrained. We should continue improvements in our command and control systems to enhance the flexibility and responsiveness of our startegic systems. For credibility in limited options, we should make modest improvements in the accuracy of the MINUTEMAN III by taking advantage of the capability inherent in its current guidance system. And we should increase the range of yields available for our nuclear warheads, in part to compensate for the uncertainties that

always surround the accuracies of all-inertial guidance systems when used under real-world conditions.

The most tried and tested of our strategic retaliatory forces—the heavy bombers—continue to interact with our ICBMs to heighten the survivability of both. At the same time, they provide us with a hedge against failures in our other retaliatory capabilities and complicate the Soviet defense problem. For some years, we kept 50% of the force on a very high alert; subsequently we reduced it to 40%. Now, unless the Soviets prove remarkably aggressive in their offensive and defensive programs, we can reduce the alert rate still further—to 30%—and transfer some of the tanker force to the reserves.

The last B–52 was produced in 1962. It should be clear, therefore, that if the heavy bombers are to continue their contribution to deterrence, we must plan for their modernization and the replacement of at least some portion of the B–52 force. Accordingly, continued but measured development of the B–1 is essential as a basis for any future production decision. Such a decision does not need to be made for at least another year. A special contribution of the bomber is the massive complications it introduces into any attack plan directed at U.S. strategic forces. Survivable aircraft render unattainable any credible coordinated surprise strike against U.S.-based systems. In addition, bombers complicate Soviet force management decisions, resulting in substantial air defense expenditures. Air defense is the aspect of Soviet defense programming which this nation finds least disquieting.

Our modest but productive civil defense program also warrants continuation. I say this not because we plan to embark on any grandiose program of damage-limiting; the ABM treaty effectively precludes such an effort in any event. The value of the current program is that it contributes to deterrence in a crisis and offers the prospect of saving American lives in the event that limited and coercive nuclear attacks should actually occur.

Finally, because no significant long-range bomber threat to the United States now exists, and because—with the ABM treaty—we have recognized the difficulty of implementing a full-scale damage-limiting posture, we can rely on a reduced CONUS anti-bomber defense capability. At the same time, as a hedge, we can draw on our tactical theater-defense training forces for CONUS defense in an emergency since, for the most part, they are based in the United States rather than overseas.

There are several aspects of this overall strategic posture, and the programs that go with it, that deserve attention:

While it contains some counterforce capability, neither that capability nor the improvements we are proposing for it should raise the specter in the minds of the Soviets that their ICBM force is in jeopardy.

In addition, this improved hard-target-kill capability will not threaten the growing Soviet SLBM force.

It follows that we do not have and cannot acquire a disarming first-strike capability against the Soviet Union. In fact, it is our decided preference that neither side attempt to acquire such a capability.

To sum up the existing situation, we have a good second-strike deterrent, but so does the Soviet Union. Although the two forces differ in a number of important respects, no one doubts that they are in approximate balance. There are, in short, no immediate grounds for fears about bomber or missile gaps. To go further, however, we would welcome reductions in these forces provided that the Soviet Union were willing to reciprocate in an equitable fashion.

As we convert the principles and guidelines of Vladivostok into the specifics of a 10-year agreement, this basic situation should continue to prevail. However, there are two uncertainties against which we should continue to carry insurance. A major uncertainty is the manner in which the Soviets will attempt to exploit their throw-weight advantage. The throw-weight of the Soviet ICBM's will continue to exceed that of the U.S. MINUTEMAN force by a very substantial amount—perhaps by as much as a factor of six (unless the United States also increases its ICBM throw-weight). This throw-weight, combined with several thousand high-yield MIRVs and rapidly improving accuracies, could come to jeopardize the survivability of our fixed, hardened ICBM force.

Such developments would not give the Soviet Union anything approximating a disarming first strike against the United States. One reason for this is that less than 25% of the U.S. strategic deterrent capability measured in terms of missile and bomber warheads resides in fixed ICBMs. But such a development could bring into question our ability to respond to attacks in a controlled, selective, and deliberate fashion. It could also give the Soviets a capability that we our-

selves would lack, and it could bring into question the sense of equality that the principles of Vladivostok so explicitly endorse. Worst of all, it could arouse precisely the fears and suspicions that our arms control efforts are designed to dispel. Thus it is important that we continue to pursue programs that will permit us various options for responding to the growing Soviet counterforce threat against our fixed ICBMs.

You will recall in this connection that last year's program of strategic "initiatives" was justified on three major grounds. First, great uncertainty then existed as to the nature of any follow-on to the Interim Offensive Agreement of 1972 that we might be able to achieve. Second, essential equivalence was established as a fundamental criterion in the design of our strategic forces. Third, how far we went with these "initiatives" should depend on the evolution and pace of the Soviet strategic programs.

There now are fewer uncertainties about a successor to the Interim Offensive Agreement. But the other reasons for pursuing these "initiatives" remain strong, as I shall indicate later.

With a continuation of these "initiatives", and with the other programs outlined herein, I am confident that we can maintain a balance with the Soviet Union and assure a highly credible second-strike strategic deterrent within the framework of existing and future SALT agreements. Without these programs, however, I can give no such assurance.

The Balance of Power in Central Europe

Last year I pointed out that we plan our general purpose forces on the assumption that, in conjunction with our allies, we should be able to deal simultaneously with one major attack and one lesser contingency. The major contingencies that we consider for force planning purposes are attacks in Central Europe and Northeast Asia, although we do not ignore such areas as the Middle East. In addition, I believe that collective security and deterrence require us to maintain an initial defense capability primarily in our active forces, a long-war hedge in our reserves, and several strong points or deployments overseas from which our forces can move rapidly to deal with such threats to our interests as might arise. Central Europe is the most important of these deployments, in large part because of the powerful forces from the Soviet Union and its allies that lie in such close proximity to it.

Our association with NATO now dates back more than a quarter of a century and there is general agreement that we should continue it. Despite occasional differences among allies, most of us recognize that Western Europe, Canada, and the United States are inextricably linked by a number of political, economic, and cultural ties. Despite the failures of the 1920s and 1930s, we share a common interest in collective security and the deterrence of aggression. What tends to be at issue is not the importance and continuing desirability of the association, but the continued presence of a large U.S. military contingent in Europe combined with the capability to reinforce these ground and air forces substantially on very short notice.

In an age of essential nuclear parity, few of us would be happy with a concept for the defense of Western Europe that was heavily dependent on an early recourse to nuclear weapons. Most of us would agree, once having looked at the facts, that a non-nuclear defense of Western Europe is feasible. It also is desirable, from the standpoint of deterrence, that such a defense should be backed up and reinforced at all times by theater nuclear forces. The existence of deployed conventional and theater nuclear forces in sufficient strength reduces whatever temptation there may be for the Warsaw Pact to probe the cohesion and determination of the Alliance.

Nevertheless, while the reasons for it vary, some form of proposal to withdraw at least a portion of our forces from Western Europe has become an annual event. The arguments for withdrawal are now familiar. Our forces have been deployed in Europe for nearly a generation. Our Allies, in the aggregate, have become prosperous and are amply endowed with manpower.

In fact, while it is true that the deployment of U.S. forces to Europe has contributed to the U.S. balance-of-payments deficit in the past, the major cause of that deficit has been the difficulty with our commercial account. Nevertheless, we have encouraged the Allies to offset our military balance-of-payments in Europe and the Allies have responded favorably. The United States recently concluded one of several two-year bilateral offset agreements with the Federal Republic of Germany which—when coupled with other Allied purchases of military-related

equipment in the United States—should be sufficient to offset total U.S. defense balance-of-payments expenditures in NATO Europe during FY 1974.

Now, in any event, our financial problem is of a different order. The balance-of-payments drain is from the West to OPEC. This drain is particularly acute in the case of Japan and Western Europe. In the current situation, we must be careful of the demands we place on our Allies, lest we be guilty of the "beggar thy neighbor" approach which President Ford has deplored.

It continues to be argued, nonetheless, that burdens can and should be more equitably shared among the Allies, despite current economic difficulties. Futhermore, the Soviet Union faces problems to the East that are alleged to divert her attention and, in any event, detente is here. Why then, has the time not come for a change?

To answer the question: this Administration is indeed prepared for change, but only if it takes place in the East as well as the West. Reductions are to be applauded, but they must be mutual and balanced force reductions.

Short of such reciprocity, however, there is a case for a strengthened military posture in NATO, even after 25 years, and the case for additional strength is very strong indeed. Despite significant reductions in overall U.S. force levels since 1969, despite detente, despite a major Soviet buildup on the Sino-Soviet frontier, we have to consider the following facts:

> The Soviet Union alone still deploys 27 of its first-line divisions in East Germany, Poland, and Czechoslovakia. Another 4 Soviet divisions still stand guard in Hungary.
>
> Other Warsaw Pact forces in the same area bring the total to more than 58 divisions, over 930,000 men, and about 2,900 tactical aircraft.
>
> The ground forces have at their disposal more than 16,000 tanks and hold to a tactical doctrine of rapid armored thrusts that bears a strong family resemblance to what we used to call blitzkrieg.

As matters now stand, NATO has the capability and the resources to attain a more equal balance with the Pact even though it deploys a smaller number of divisions and has certain serious vulnerabilities that we are working to correct. Our U.S. Army, Europe (which we plan to strengthen by two brigades and other ground combat elements) and U.S. Air Forces in Europe (which we also plan to strengthen), all in compliance with the Nunn Amendment, represent a critical numerical and psychological factor in the current, somewhat precarious, equilibrium. If they were withdrawn or seriously reduced without reciprocity from the USSR, this capacity for a military balance would be badly upset. Furthermore, we would lose the foundation for rapid reinforcement from the United States to counterbalance any Soviet buildup that might occur, whether under relatively normal conditions or in a crisis. After thirty years, the peace of Europe would once again be at risk.

In other words, the choice here is the same as we face in so many other areas of foreign policy and national security. We can withdraw our forces and hope either that other countries will replace them, or that the Warsaw Pact will continue to exercise restraint. That is, we can depart from an area of great and enduring interest to us and let decisions about its fate be made by others. Or—politically and militarily—we can help to ensure the establishment of a balance of forces in Central Europe and nudge events in directions that are favorable to our interests.

Perhaps matters would proceed satisfactorily without our presence. Perhaps good will and mutual security would flourish precisely because of the departure of the only superpower in the West. Perhaps the bear would cherish the lambs in our absence. Perhaps . . ., but we should not count on it. As has been noted in the past, it is useless for the sheep to pass resolutions in favor of vegetarianism while the wolf remains of a different persuasion.

Accordingly, while there are costs and risks to being steadfast, we should not forget that there are advantages as well. The Congress has been in the forefront of those who have recognized and articulated these advantages for more than a generation. Now, as we gradually reap the rewards of standing fast, we should not think of retreat.

8. The Maritime Balance

As was emphasized in last year's Annual Report, it is essential that the United States, together with its allies, maintain naval forces that are widely regarded

as at least equal in capability to the naval forces operated by the Soviet Union and its allies.

In assessing this balance, one should start by noting the substantial differences in geography, national policy, and alliance systems that dictate differing U.S. and Soviet naval missions and force structures. The United States and most of its principal allies depend fundamentally on use of the seas for their trade and commerce in peacetime and for their lines of communication in war. They also depend heavily on the strategic mobility provided by long-range airlift. The USSR and its allies currently do not. Because of this basic asymmetry, the primary conventional naval missions of the two superpowers and their respective allies differ in several respects:

The United States and its allies emphasize sea control and the projection of power ashore through attack carriers and amphibious forces. The U.S. Air Force also contributes to the mining and sea surveillance and control missions.

The Soviet Union, at least for now, stresses defense against U.S. power projection efforts and interdiction of U.S. and allied military and economic support shipping on the open oceans.

Both sides are interested in showing the flag in peacetime and in surging deployed naval forces in a crisis, as has happened on several occasions in the Mediterranean. In this connection, it is important to emphasize long-term flexibility in the employment of our major naval units. If commitments are too fixed, they will dictate the tempo of operations of the programmed forces and reduce flexibility.

Based on recent assessments of the maritime balance, six general conclusions are warranted.

First, confusion arises about the balance because of the asymmetry between the forces and their missions. Soviet naval forces emphasize an antiship capability. This capability is distributed among a large number of ships, most of which are small in comparison to our ocean-going units. U.S. forces, on the other hand, tend to concentrate striking power in a relatively small number of aircraft carriers. The carrier's escort ships emphasize defensive weaponry. In general, our units are larger, more sophisticated, and have a greater capacity for sustained action—advantages which tend to offset their somewhat smaller numbers. In addition, what is often overlooked, our Allies add significantly to overall U.S. strength, particularly in a NATO war; Pact allies add very little to the strength of the Soviet fleet.

Second, once one removes the mission asymmetry and measures the balance, it becomes clear that the naval forces of the Soviet Union and its allies are not generally superior to those of the United States and its allies, and that this should be perceived by well informed observers. Nonetheless, U.S. naval power has suffered a serious decline and must be resuscitated.

Third, the Soviet Navy has developed a formidable force for the protection of Soviet and Pact territory from attacks by U.S. sea-based tactical air and amphibious forces. This force consists of surface ships, submarines, and long range aircraft. Many of these units are armed with cruise missiles, an innovation in naval warfare which greatly increases antiship striking power and partially substitutes for the Soviet lack of carrier-based tactical air.

Fourth, the Soviet Navy possesses strong capabilities for attacks on U.S. and allied shipping on the open oceans. Should they concentrate their long-range aviation and submarine forces exclusively on this mission, their interdiction potential would be substantial. In view of the heavy U.S. and allied dependence on use of the seas, particularly during any sustained conflict in Europe or Northeast Asia, and considering the capabilities of the Soviet Navy for antiship operations, it would be imprudent to assume that the Soviets would not allocate a significant part of their naval forces to an effort at interdicting our sea lanes.

Fifth, the United States and its maritime allies could suffer significant but not prohibitive shipping losses if the Soviets were to conduct a major antishipping campaign. In time, however, U.S. and allied sea control forces would exact heavy attrition on the enemy's long-range forces, and would regain firm control of the sea lanes in the Atlantic and Pacific. Although shipping losses might be heavy, the net effect on the U.S. and allied war effort would not be crippling.

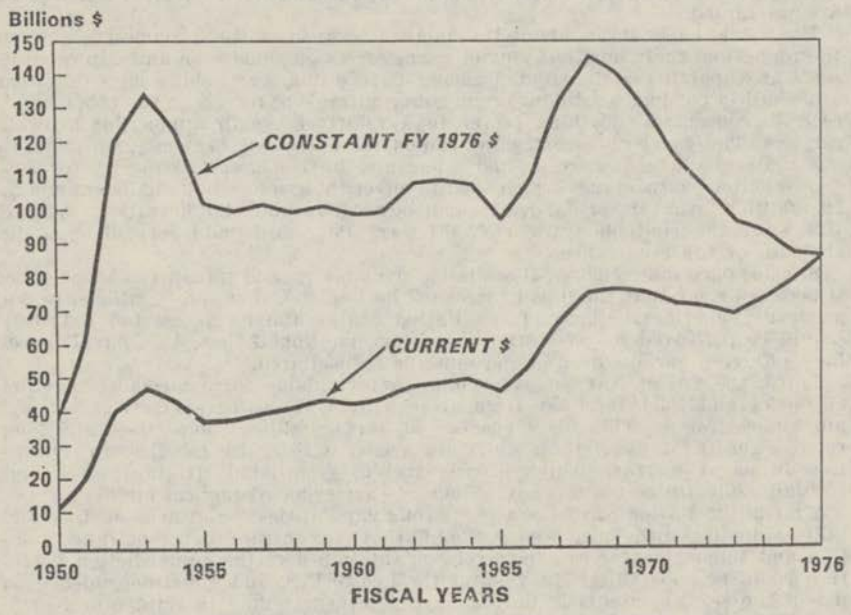
Sixth, as far as peacetime naval presence is concerned, aggregate Soviet activity increased sharply in the late 1960s, but now appears to have stabilized somewhat below the overall U.S. level. The Soviets could increase their deployments by raising the operating tempo of their forces. During the Middle East war of 1973, in fact, they demonstrated a significant capability to surge and support naval forces to a greater extent than we had anticipated. However, U.S. forces tend to have a greater surge capability to most theaters of primary interest to the United States and its allies.

To preclude any misinterpretation of these conclusions, which I would characterize as cautiously optimistic, I should emphasize three basic qualifications.

First, the validity of the longer-range aspects of our assessment depends on the assumption that the Navy's current modernization will be completed essentially as planned. To the extent that this fundamental assumption proves false, the risk that our future Navy will be unable to carry out our strategy will grow beyond a prudent level.

Second, as is true of any analytical assessment of a complex problem, our work on the maritime balance reflects many uncertainties, particularly in its treatment of future Soviet policies. The naval programs discussed later in this Report are in some cases sized and structured to provide hedges against the more important uncertainties in our estimates.

CURRENT AND REAL DEFENSE EXPENDITURES
(EXCLUDES MILITARY RETIRED PAY)



Third, there could be plausible situations in which the enemy may have advantages of geography or selection of H-hour (or both) which would severely strain our naval capabilities or temporarily deny us the use of certain parts of the world's oceans.

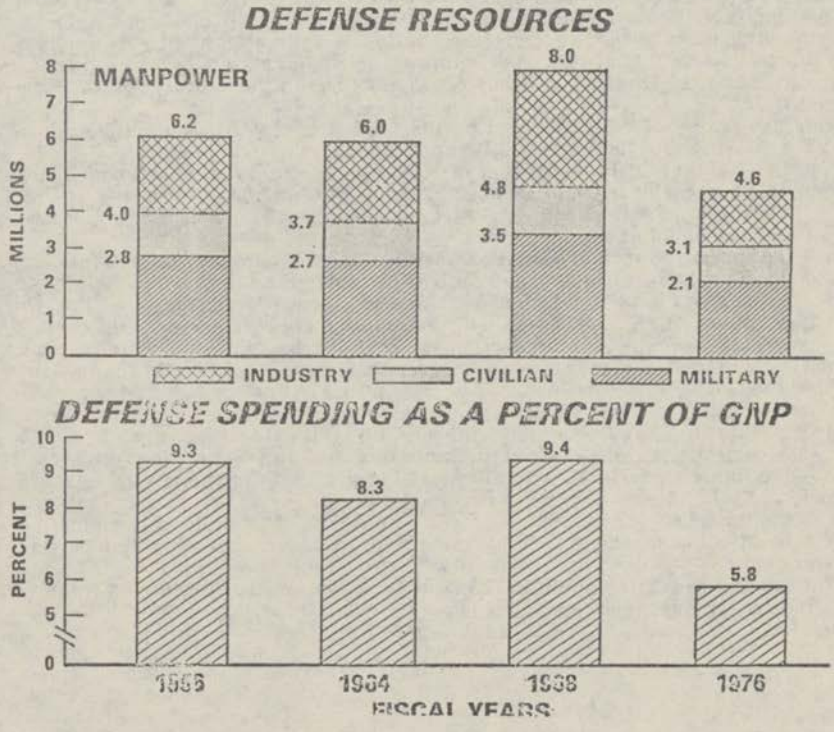
Subject to these three basic qualifications, if our naval modernization programs are approved by the Congress, I am reasonably confident that the United States, together with its allies, will remain able to defend the essential sea lanes in the Atlantic and Pacific, project power ashore under a wide range of circumstances, continue a strong deployed naval presence, and maintain the necessary maritime balance with the Soviet Union and its clients.

For FY 1976, the Department requests $104.7 billion in Total Obligational Authority (TOA). This compares with the $93.9 billion requested for FY 1975 (including the POL and Mideast amendments). Outlays are planned at $92.8 billion, compared with the Department's estimate of $86.8 billion for FY 1975 (again including the Mideast and POL). On this basis, TOA will increase by $10.8 billion and outlays by $6 billion. It should be noted, however, that the Congress allowed the Department only $89 billion in TOA for FY 1975, despite rampant inflation. Outlays for FY 1975 are now estimated at $84.8 billion.

Currently estimated outlays for FY 1976 will constitute 26.6% of the federal budget (compared with 27.1% for FY 1975), and will consume 5% of the capacity output of the Gross National Product (somewhat less than the 5.2% for FY 1975). It should be emphasized, however, that if the President were not to receive the authority to limit federal pay increases to 5% (which will save us $1.8 billion), and if the Department were not to acquire the receipts from the production of oil at Elk Hills (currently estimated at $400 million), defense outlays for FY 1976 would rise to $95 billion instead of $92.8 billion.

Of these planned outlays, $6.9 billion will go to military retired pay alone; and another $42.3 billion is required for compensation of civil service and active duty military personnel. This total of $49.2 billion represents 53% of our proposed outlays for FY 1976.

Although TOA for FY 1976 appears to increase by $15.7 billion, the bulk of the increase is intended to deal with the effects of past and current inflation. Although there is a real increase in TOA from the eroded FY 1975 base, there is an actual decrease from the amount projected last year in our rolling 5-year defense plan. In fact, as a result of underestimates of inflation during the past two years, the Department is not able to buy $10 billion in contracted goods and services authorized and approved by the Congress in FY 1975 and prior-year budgets.



Outlays show an increase of $8 billion over FY 1975. Of this total, $3 billion is for pay increases alone. In addition, purchase prices have risen sharply in recent months. Even if they level off in the near future, our purchasing power in FY 1976 (on a full-year basis) will be considerably less than in FY 1975. Depending upon the overall inflation rate, the real program value of Departmental outlays for FY 1976 will be about the same as for FY 1975. That is to say, we will be able to purchase about the same amounts of goods and services in FY 1976 that we did in FY 1975, despite the seemingly large increase in proposed outlays. By comparison, we compute that Soviet defense outlays, measured in dollars, will rise by as much as 3% in real terms.

In order to keep our own outlays approximately level in real program value, and at the same time struggle to retain a force structure adequate to the fulfillment of U.S. responsibilities, the Department is taking further belt-tightening measures. Among the most severe are:

A reduction of 30,000 in military manpower;

A reduction of 9,000 in civil service personnel;

A rigid control over the consumption of petroleum.

The Department's five-year projection of future Defense budgets attempts to reverse this downward trend. The forecast shows current estimates of the minimum future financing need to keep U.S. military force of adequate size, readiness, and modernization. As shown in the top row of the table on page 44, Department of Defense TOA will grow at a rate of about $2.8 billion a year in real terms from the proposed FY 1976 budget level of $104.7 billion.

An average of $300 million a year of this $2.8 billion annual increase will be needed to keep pace with projected increases in the population of men and women who will have retired after 20 or more years of service in the armed forces. Increases for development of petroleum reserves, less decreases for military assistance, net to a growth of $.1 billion a year. The remaining $2.4 billion annual increase will be required to provide real (non-inflationary) growth in funding for the modernization and readiness of U.S. forces. This $2.4 billion annual increase, which represents an annual real growth rate of about 2% in the Defense Budget, is needed to cover the additional costs associated with improving the technology of modern U.S. weapon and support systems made increasingly urgent by the continuing technological advances in the military forces of the Soviet Union.

This five-year projection is based on the following general assumptions:

A world situation essentially unchanged from today, with the Soviet Union continuing the expansion of its present military establishment while remaining at odds with the People's Republic of China.

A continuing real growth of Soviet defense expenditures at the rate of 2-to-3% a year in dollar terms.

Continuation of the current Strategic Arms Limitation Agreements, including implementation of the Vladivostok understanding.

A relatively constant Defense active and reserve force, measured in military and civilian manpower, with continuing improvements in its combat power at the expense of reductions in headquarters and support personnel. This will result in some additional combat units, such as the planned increase to 16 Army divisions, and a growth in Air Force combat power, without increases in total Defense personnel. Further efficiencies will, of course, be sought in order to convert overhead into restored combat capability.

A continuation of the Navy program designed to reverse the recent trend of declining force levels while conforming generally to the requirements of Title VIII.

Continuation of the "high-low" force mix concept to avoid over-sophistication in all components of the force and to assure adequate numbers of systems.

Assurance of a dynamic RDT&E program, but one constrained in terms of total dollar resources.

Continuation of military assistance somewhat below the current level because of a projected decrease in aid to Southeast Asia.

Inflation has already reduced very severely the purchasing power of previous Defense budgets. Current economic forecasts do not anticipate that future inflation will be as severe as it has been in the last 24 months. But there will still be inflation in the United States between FY 1977 and FY 1980. Consistent with current economic forecasts, the second row of figures in the table on page 44 shows one series of fully inflated, "then-year" obligational authority estimates required to support our five-year projections.

The difference between the two projections is that the second projection includes all the estimated future inflationary price increases beyond those forecast in the Defense Budget for FY 1976. If future inflation is lower than the forecast upon which the projections in the second row are based, these "out-year" totals can be reduced. On the other hand, if inflation is higher than we have forecast, the Department will so advise the Congress and prepare new projections.

Two major points need emphasis here. The first is that projections of future Defense spending which include only the real growth are shown in deflated (constant) prices in the top line of the table. The second is that Defense outlays over this period will continue to decline as a percent of capacity GNP.

[Total obligational authority in billions of dollars]

5-yr projection	Fiscal year—				
	1976	1977	1978	1979	1980
In deflated prices	104.7	107	111	114	116
In "then-year" dollars	104.7	117	128	138	148

Before explaining the basis for these requests, it is worth summarizing several assumptions of a more general nature that have guided the Department in preparing this Report.

The United States is inescapably the leader of the non-communist world; there is no other country to fulfill our role if we abandon it.

Grave challenges face the industrialized nations of the West, and they are much external as internal.

If we are to realize our dreams of domestic progress, we must first stay alive and free.

National defense (and the men and women who perform so well in its service) provide an indispensable public good that is the basic duty of this Republic to its citizens.

As you review this Budget and its intellectual foundations, I trust that you will continually ask whether there are any different basic assumptions on which we could or should base our posture of defense.

DEFENSE BUDGET BASED ON SPECIFIC ASSUMPTIONS

Secretary SCHLESINGER. Mr. Chairman, you referred in your opening remarks to $97.8 billion requested for appropriation and $86.8 billion for outlays for this year. This refers to amounts considered by this subcommittee. Our overall request in the President's budget is $104.7 billion in total obligational authority and outlays of $92.8 billion. Our budget is dependent on several assumptions, as shown on the following table:

EFFECT ON FY 1976 BUDGET ESTIMATES IF PRESIDENT'S LEGISLATIVE PROPOSALS NOT ENACTED ($ BILLIONS)

	TOA	OUTLAYS
ESTIMATES AS SUBMITTED	$104.7	$92.8
POTENTIAL ADDITIONS:		
PAY RAISES (9% vs 5%)	+1.2	+1.2
CPI INCREASES FOR RETIREES	+ .6	+ .6
PETROLEUM RESERVES	− .1	+ .4
NET POTENTIAL ADDITIONS	+1.7	+2.2
POTENTIAL REQUIREMENT	106.4	95.0

FIVE PERCENT LIMIT ON INCREASES OF SALARIES AND RETIRED PAY

Secretary SCHLESINGER. One of those assumptions, a critical one, is that the Congress will agree to the President's request that a 5-percent limit be placed upon increases in salaries and retired pay. If that request is not approved by the Congress, greater payroll for the Department of Defense would result. Our total savings through enactment of such a limitation would amount to $1.8 billion.

In addition to that, Mr. Chairman, we expect to receive some $400 million in receipts from the Naval Petroleum Reserve at Elk Hills and that also depends on legislation. Those expected receipts are an offset to our outlays. If the legislation were not forthcoming, the total request in lieu of legislation would be $95 billion in outlays—a figure that has been portrayed in the press.

Mr. Chairman, in your opening remarks, you asked whether there is any economic stimulus in this budget. This budget has been put together on the basis of what we believe to be the requirements of national security. Any economic effects of that budget are secondary and have not been a factor in the makeup of this budget.

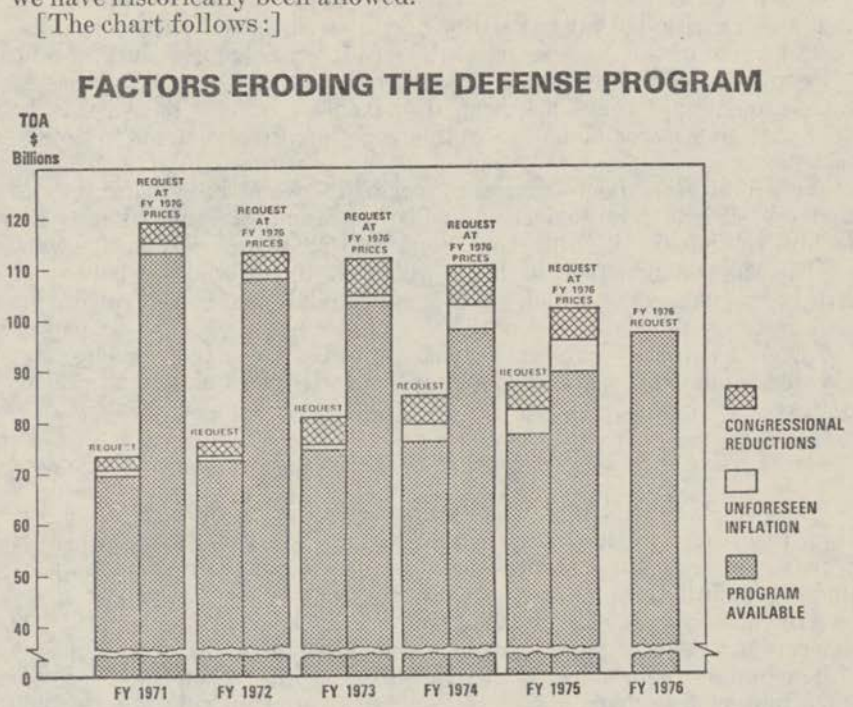
Of course, expenditures amounting to nearly 6 percent of the GNP have economic effects and the Congress must take those effects into account. But, as I think you will see, in terms of our constant dollar receipts over a period of years, the trend continues to decline.

FACTORS ERODING THE DEFENSE PROGRAM

If this is a stimulating budget, the trend is going in the wrong way. In terms of current dollars through 1975 and, indeed, this year, the budget is increasing. In terms of constant dollars, we have been going down. If you look at the top line on each of the points in the following chart, you will see the President's initial request. The blue areas represent congressional reductions, and the red areas represent the

consequences of unforeseen inflation going beyond the 3.5 percent that we have historically been allowed.

[The chart follows:]



EFFECT OF INFLATION ON DEFENSE BUDGET

Secretary SCHLESINGER. As you will note, and as you would expect, particularly in fiscal year 1975, in terms of real resources, the Department of Defense was ravaged by inflation.

Mr. Chairman, I think many on the Hill expected us to send up a supplemental to offset the consequences of inflation. We decline to do that, partly because of the observations of Chairman Stennis with regard to the appropriateness of various supplementals. They would prefer to wrap these things together in one total request for the new fiscal year. We have done so; some of the requests, however, particularly in the procurement account, are intended to cure the underfunding that comes from prior years.

As you will note, our request for this year just counterbalances the effects of inflation in 1975. It does not vary to any great extent to offset the consequences of the congressional reduction. Year after year we are faced with the fact of diminishing real resources for the Department of Defense. This is a consequence of inflation and of the reduction in requested outlays after our high point in Vietnam. It is also the consequence of congressional reductions.

The overall budget request is down 40.2 percent in real resources from the fiscal year 1968 high when we were involved in Vietnam.

A more relevant guideline is fiscal year 1964, before we went into Vietnam. As compared to that year, we are down some 20 percent.

These are trends that have continued, partly as a result of the disenchantment of the American public with the involvement in Vietnam.

People on both sides of the issue recognize that there is public disenchantment and there has been divisiveness, but we have issues to deal with in the world that go well beyond our involvements in Southeast Asia.

We are attempting to maintain a worldwide military balance, and that undergirds détente just as it also represents a hedge against the failure of détente. I think that Senator Proxmire has put this very well in the past; in fact, he has a plaquette in his office—I believe he still has a plaquette—which reads: "National Defense is a Life Insurance Policy—We Must Be No. 1".

I do not think we can claim anymore to be No. 1, but our objective is to be second to none, and that implies a degree of equality in terms of forces.

FISCAL YEAR 1976 BUDGET REQUEST IS BELOW FISCAL YEAR 1975 LEVEL

Senator PASTORE. In the last column, you have 1976 requests and then right next to the left, you have requests in 1976 prices. In other words, you are asking for less now irrespective of the reduction of the unforeseen inflation.

Are you asking for less in 1976 than you did in 1975?

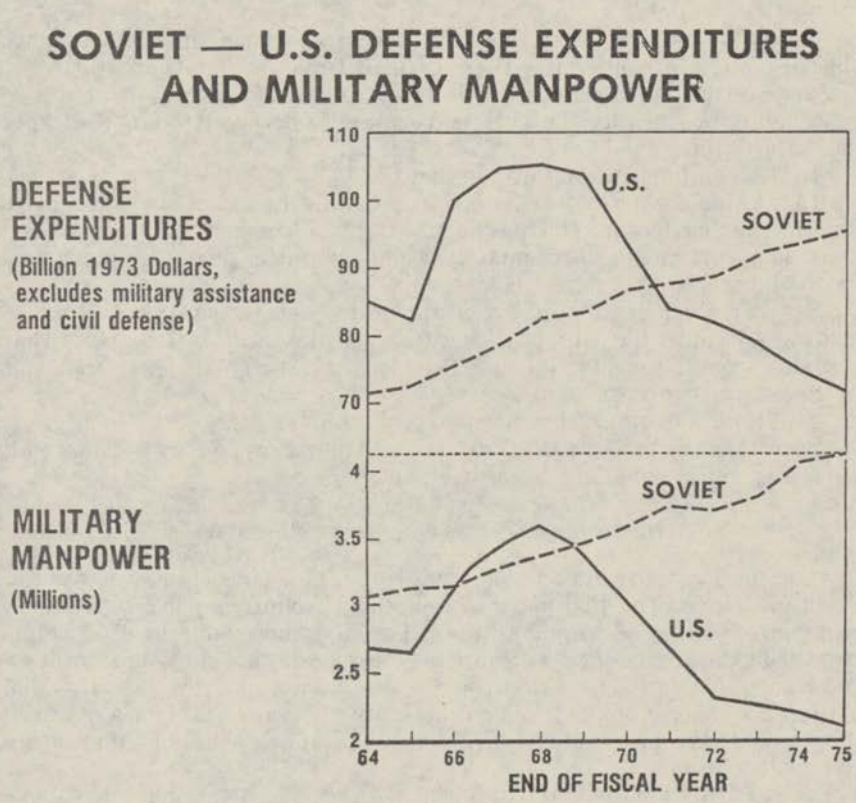
Secretary SCHLESINGER. Yes, sir, by about $5 billion.

The budget request for fiscal year 1976 was forecast in the fiscal year 1975 budget document at $98 billion, with inflation running at about 10 percent. Now if we priced out the 1976 program, which we forecast at $98 billion, it would amount to $110 billion. We are about $5 billion less than we would have intended to be. That is inevitable, Senator Pastore, because it takes a long time to turn around an organization that spends as much money as the Department of Defense. When funding is reduced and additional funds for the programing are requested, if programing is conducted in a managerially effective manner, it increases more slowly than those reductions which can occur very rapidly.

U.S.S.R. DEFENSE EXPENDITURES

Under the heading of defense establishment second to none, we must recognize that the Soviet Union continues to increase its defense outlays in real terms by about 3 to 5 percent a year. This has gone on in spite of the spirit of Camp David, in spite of the spirit of Geneva, in spite of the spirit of Glassboro, and in the time of détente. There has been a steady expansion of ready military power as portrayed in the following chart.

[The chart follows:]



U.S.S.R. DEFENSE PRODUCTION ESTIMATED

Secretary SCHLESINGER. In recent years, qualitative improvements have grown to be more significant than the quantitative.

Senator YOUNG. How do you arrive at those Soviet figures? Were they published somewhere?

Secretary SCHLESINGER. No, sir. The data that they publish in their official budget is fallacious data. The way that we arrive at the correct figure is to estimate tank production, the number of men in uniform and we price those things out in American dollars. We do have a complex, technical problem of the ruble-dollar exchange rate. These are the estimates of the intelligence community.

In my judgment, and I can go into this in detail later on, if anything, in dollar terms, these estimates are probably on the low side.

Senator YOUNG. Are those DIA estimates?

Secretary SCHLESINGER. No, these are CIA estimates.

What they show is a steady expansion of Soviet military power since Mr. Khrushchev. Men in uniform have increased from 3 million to in excess of 4 million. Expenditures in constant 1975 dollar terms are on the order of $105 billion or $110 billion, as compared to expenditures by the United States.

Chairman McClellan. Do they get much more for their expenditures than we get?

Secretary Schlesinger. No, sir; not in the terms of this analysis, because we are converting their expenditure—rather than stating it in real terms—into American dollars, and therefore we are using as a benchmark the way the U.S. Government effectively or ineffectively uses the dollar.

In this comparison we can't do that.

In a ruble comparison we do recognize the fact that the wage rates in the Soviet Union, the payment of the soldiers is very low. They pay their privates approximately $3.60 a month. They cannot run an all-volunteer force on that basis.

Senator Proxmire. What you are doing here is you are telling us what we would have to pay if we had 4-plus million troops, is that right?

Secretary Schlesinger. Yes.

Senator Proxmire. At American pay scale?

Secretary Schlesinger. Yes. It is American pay and American prices of the Soviet force establishment.

SUFFICIENCY OF DEFENSE EXPENDITURES

Senator Pastore. May I ask a question? This consistently comes up. You mentioned the plaquette in Senator Proxmire's office that states we can afford to be second to none, and it is not a question of being first. But the argument is constantly being made that there is a point of no return. Now, it is true that the Soviets are doing a great deal. What difference does it make? We can destroy the world 20 times over, 30 times over. We have enough armaments to knock them out no matter what they do.

Now, is this idea of parity, if you will accept the expression, a psychological thing that bothers you, or is it a thing that jeopardizes the security of the country?

I mean, you get to a point. A man must eat in order to survive, but he does not have to overeat because that will get him into trouble. Are we overeating?

Secretary Schlesinger. In my judgment, no; and that is a point that I shall develop at some length. I am not concerned about some excess in Soviet expenditures on a dollar basis. As Senator Proxmire has pointed out, we probably don't want to have 4 million men under arms. The argument that you cited, Senator Pastore, is one that has been applied to the strategic forces, to nuclear capabilities, and falls under the heading of overkill. It does not apply to the general purpose forces, which constitute the great bulk of our force establishment. I would not agree that it applied in the strategic forces area, but if it does apply anywhere it would apply there.

I might say in passing that the great exponent of the overkill philosophy, Prof. Seymour Melman of Columbia University, had commented that in light of American commitments overseas—he said this 4 years ago—our defense budgets were too low rather than too high, and that was before these rather substantial declines that have taken place in recent years.

I will come back to that later on.

Senator HRUSKA. Mr. Secretary, the previous chart, that was for the Soviet Union proper, was it not?

Secretary SCHLESINGER. Yes, sir.

Senator HRUSKA. It is not for outlying satellites?

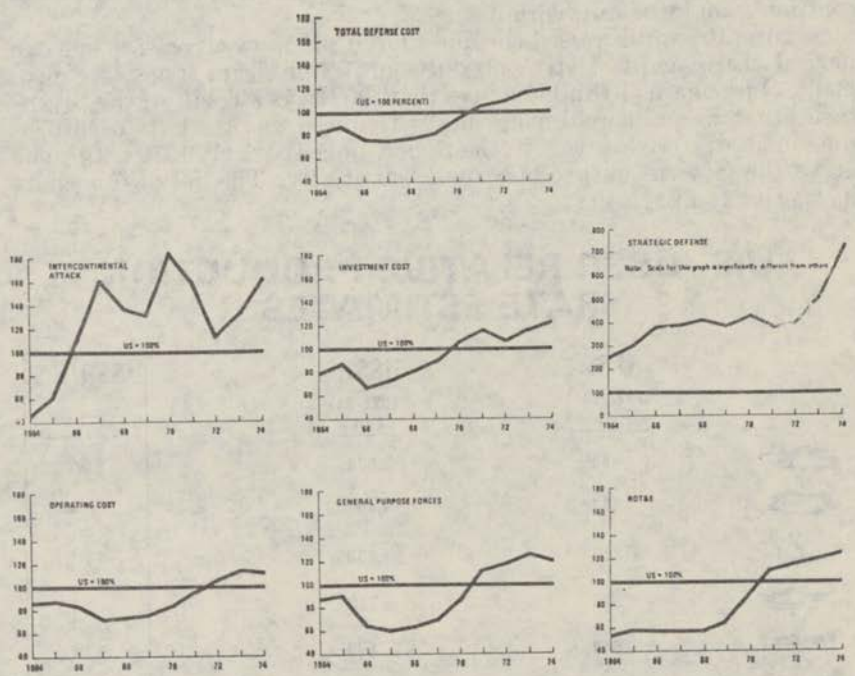
Secretary SCHLESINGER. It includes none of the satellites.

COMPARISON OF NATO-WARSAW PACT EXPENDITURES

If you wish a comparison of the NATO and the Warsaw Pact, I can show that with the following table.

[The table follows:]

DOLLAR COST OF SOVIET PROGRAMS AS A PERCENT OF US DEFENSE EXPENDITURES
(1973 DOLLAR VALUES)



SOVIET EXPENDITURES INCREASING

Secretary SCHLESINGER. In most of the critical categories as illustrated in the above chart—and this goes to Senator Proxmire's question with regard to the difference in payments, leaving out such measures as the number of men in uniform, the Soviets are indeed slowly increasing their lead in expenditures relative to the United States. The chief exception, I think, is in the tactical air area. The United States continues to possess some margin, but in overall R.D.T. & E. the Soviet Union is outspending us by approximately 25 percent.

From the strategic defense area, which we have decided is of limited operational interest to the United States, they are outspending us by over 600 percent and in intercontinental strike capability by about 60 percent.

Now, we need not be concerned about any one of these indicators in general. It is the overall position, and particularly the trends, which I find disquieting. If the trends of a diminution of U.S. expenditures in real terms by about 3 or 4 percent a year, and a growth of Soviet expenditures in real terms by about 3 or 4 percent a year were to continue, whether one is alarmed by the present balance or not, one can see that 5, 7 years, or 10 years in the future, objectively, the consequence must be Soviet military preponderance. I am not saying that those trends will continue; I do not expect them to continue because I believe that the American public will support a defense establishment necessary to fulfill our worldwide responsibilities.

However, I want to emphasize that the present trends, if they do continue, would be unfavorable.

Senator Proxmire raised the question of manpower costs, so one can look at the issue of relative production of significant items of equipment. Once again, I think one sees that partly as a result of the inventories that we built up during the Vietnamese war, we have been producing at a fairly low rate in the period since the early 1970's. In some areas the Soviets outproduce us substantially. The following chart shows this comparison:

U.S./USSR RELATIVE PRODUCTION RATE ESTIMATES

	U.S. 1972-74 AVG	USSR 1972-74 AVG	USSR/U.S. 1972-74
	462[1]	3,000	6.5:1
	860	4,400	5:1
	170	1,200	7:1
	920	710	1:1.3
	540	930	1.7:1
	0	10	
(General Purpose)	3	5	1.7:1
	11	39	3.5:1
SSBN	0	6	

[1] INCLUDES 475 M60A2 RETROFIT IN 1973-74. AVERAGE M60A1 PRODUCTION WAS 303/YEAR

SOVIET PRODUCTION EXCEEDS UNITED STATES

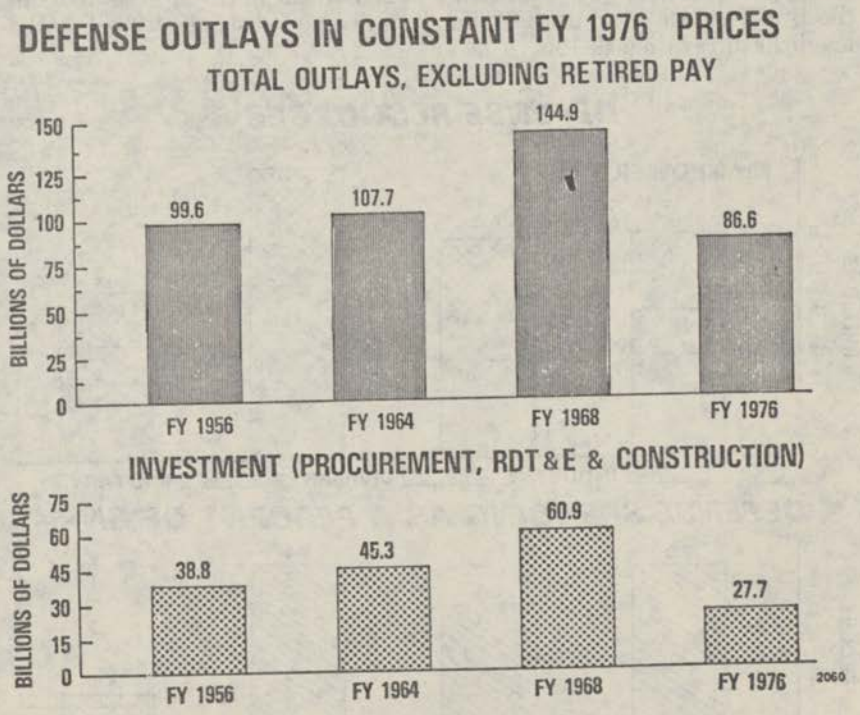
Secretary SCHLESINGER. In the area of ground vehicles for the ground forces, they outproduce us by a ratio of about 5 to 1. That reflects the large number of divisions they maintain. In artillery, the ratio is 7 to 1. In aircraft production, they have been outstripping us. In the naval area, they have been outstripping us in recent years. Those are the areas of greater and immediate concern to the United States.

So I think that if one looks at the indicators, they are serious. Many of the members of the committee know that at the time of the October, 1973 outbreak of war in the Middle East, we were producing about 22 M–60's a month. That is a rate of production of about 240 M–60's a year. The Soviets were producing annually in excess of 3,000 tanks and they were scattering them around the Mideast with gay abandon.

Senator SCHWEIKER. What is the second aircraft shown, zero intent?

Secretary SCHLESINGER. Those are strategic bombers. The Soviets are now producing the Backfire bomber, which is listed there.

Once again, I don't want to attach any particular significance to the individual items. I think it is the overall picture that I wish to draw to your attention. I will insert the following chart to amplify my remarks:



STATUS BASED ON CONSTANT DOLLARS

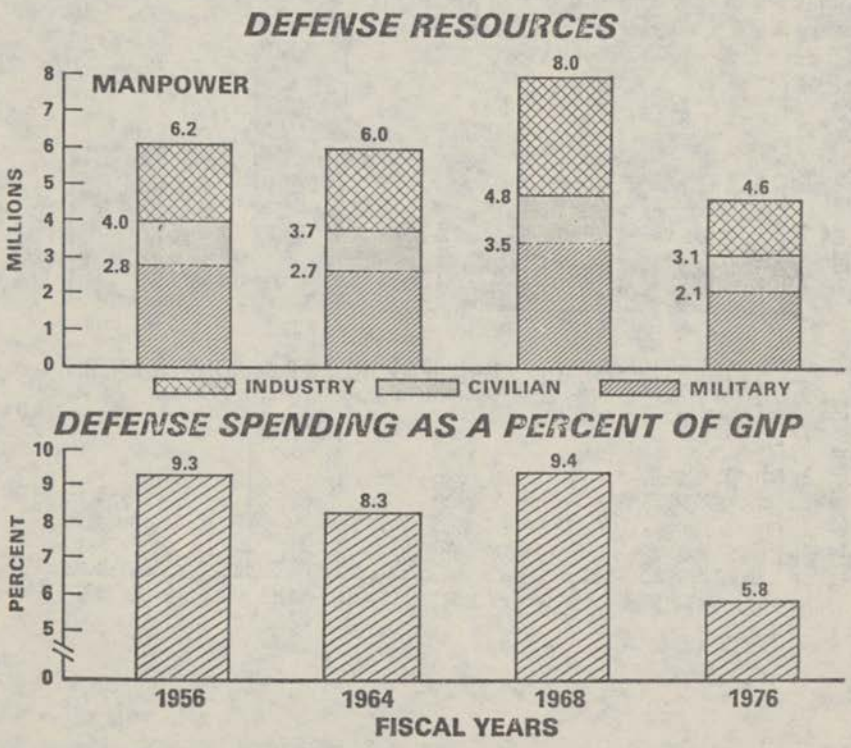
Secretary SCHLESINGER. As shown in the chart and as I have indicated, if one uses constant dollars we are down by about 40.2 percent since the Vietnam war high of fiscal year 1968. I am excluding retired pay because that does not add to present defense capabilities. We are requesting from the Congress this year about 5 percent of capacity output. That is the lowest point since the days of Secretary of Defense Louis Johnson.

Of course, the economy has expanded. We have greater overall resources. Five percent of overall resources represents a larger total; but in terms of the relative total, we are down substantially. We are down even more in the area of purchases from industry, particularly the investment accounts. As compared to 1968, for example, we have cut ourselves and have been cut by more than 50 percent. Interestingly enough, we are down about 39 percent as compared to 1964, and we are substantially below the level of purchases during the Eisenhower years. That was when Secretary Wilson was Secretary of the Defense Department.

Senator PASTORE. Why is this so high in 1968?

Secretary SCHLESINGER. That is the peak year of the Vietnam war and remember I am using 1976 prices in going back to the 1968 period.

As I said earlier, we are down about 20 percent in the aggregate from the pre-Vietnam level of 1964, but we are also substantially below the level that prevailed in 1950.



Secretary SCHLESINGER. The preceding chart reveals that, in terms of manpower resources, we are now utilizing about 4.6 million people directly and indirectly. Our manpower in the military establishment is at 1 percent of the Nation's total population. That is lower than it has been since before Pearl Harbor. It is approximately the same point that it was in the post-World War II demobilization. We have cut our claims on manpower almost in half since the peak year of 1968.

We are lower than we were in the 1950's and 1960's prior to Vietnam. Some improvements in productivity have taken place. We believe that the efficiency of our forces is greater in 1976 than it was a decade earlier, but we must measure the total capacity of our forces against today's potential external threats rather than in terms of how our current forces would do in the context of our forces of 10 years ago.

Senator PASTORE. On that 4.6 are you saying that we have about as many people working in the industry as to produce the things of war as we have in the military who use them?

Would you explain that yellow and that red? Are we talking about people?

Secretary SCHLESINGER. Yes, sir. That is manpower in industry as computed by the Department of Commerce.

Senator PASTORE. That is people working in defense industries?

Secretary SCHLESINGER. Yes. In 1976 the number that would be employed, given our request, is 1.5 million. In 1968 the number was 3.2 million, so it is cut precisely in half.

In the pre-Vietnam period the number was about 2.3 million. So defense jobs, industrial jobs, are down and I think that——

Senator PASTORE. What is the distinction between industry and military?

Secretary SCHLESINGER. Those are Civil Service employees. The blue is Civil Service employees.

Senator PASTORE. That work for the Government?

Secretary SCHLESINGER. Yes, and the 1.5 million work for private defense contractors.

As indicated, we are spending about 5.8 percent of a rather diminished GNP expected this year, which is about 5 percent of capacity output. If one removes the effect of retired pay, we are spending about 4.5 percent on defense capabilities. That is the level of expenditure in fiscal year 1951, when, as you will recall, Secretary Louis Johnson was cutting fat and not muscle just prior to the Korean War.

Chairman MCCLELLAN. Is retired pay included in the budget?

Secretary SCHLESINGER. Yes.

Chairman MCCLELLAN. How much does that amount to annually?

Secretary SCHLESINGER. That is $6.9 billion this year if you give the President the 5 percent CPI limitation he has requested on retired pay.

Chairman MCCLELLAN. That contributes nothing to the current military strength?

Secretary SCHLESINGER. That is correct.

Chairman MCCLELLAN. That is a burden that the Defense Department is carrying?

Secretary SCHLESINGER. Yes, sir.

Chairman McCLELLAN. And it is being calculated in the expenditures of the Defense Department?

Secretary SCHLESINGER. Yes, sir.

Chairman McCLELLAN. In other words, when we take that out of consideration, then the expenditures for actual military preparedness is some $7 billion less than your request?

Secretary SCHLESINGER. Yes, sir.

RECOMPUTATION OF RETIRED PAY

Senator STENNIS. May I ask one question right there.

On this matter of retired pay, $6.9 billion, you and I have talked about this before. Two or 3 years ago it came up on the floor. I will be very brief.

There were some four votes against the recomputation but my point is now it seems to me like the Department of Defense ought to come forward with a very definite positive program of some kind that will meet this situation.

I know you are concerned about this. I said we ought to start a new system and let the two run concurrently. Could you be quite brief? Have you made any headway on that problem?

Secretary SCHLESINGER. As you know, Senator, this year the administration did not request any recomputation partly as a result of the adjustment of the CPI index. Recomputation has been taking place for those who retire at an earlier age.

Senator STENNIS. My question really goes to the system, though. You have been playing with this recomputation and Congress has too, but leave that out.

Secretary SCHLESINGER. We have, I believe, some proposals before the Congress, Senator Stennis, but we will review that and get back to you with a letter of what can be expected. I agree entirely with your point.

I served 6 years ago on a Presidential board to review the retirement system.

Senator STENNIS. I don't want to delay this, but I want to make that point. We will have it again this year, I assume.

Senator PASTORE. How much more will it cost?

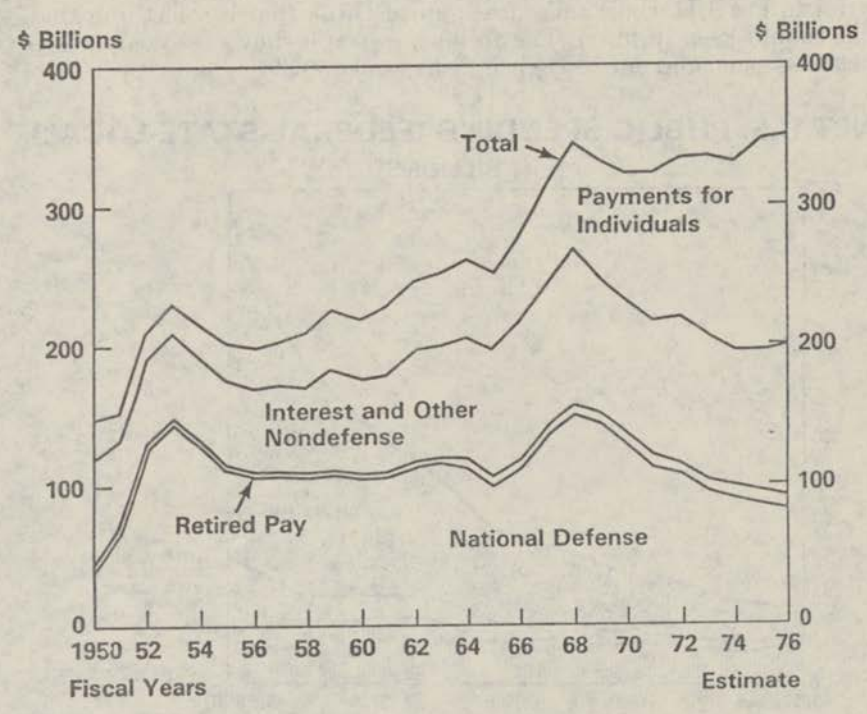
Secretary SCHLESINGER. Recomputation?

Senator PASTORE. Yes.

Secretary SCHLESINGER. Full recomputation would cost us $1.13 billion additional in fiscal year 1976. The annual add-ons right now approximate $500 to $600 million, but as you go out several years the add-ons would be very substantial. Recomputation, of course, is not applied in any sector of the industrial economy. The application of the CPI index to retired pay has been keeping the military retired community, to this point, ahead of the increases in the cost of living and has gradually been raising the pay of retired people as compared to people in the active duty military.

The Chairman raised a question about what kind of stimulus we are providing. As indicated in the following chart, in constant dollar terms, we show a shrinking share of the budget.

FEDERAL OUTLAYS—CONSTANT 1976 DOLLARS



CONSTANT DOLLAR OUTLAYS

Secretary SCHLESINGER. We are down this year to about 26 percent of the Federal budget. If the Congress does not grant to the President his request of $17 billion of rescission, we would be less than 25 percent of the Federal budget. That includes, as the chairman has indicated, retired pay. The great expansion of the Federal budget in constant dollar terms since 1968 has been in terms of payments to individual's, entitlement programs and the like.

Basically, our constant dollar outlays for the Federal budget have remained more or less constant since fiscal year 1968, and there has been a growth of entitlement programs at the expense of the national security programs.

Once again, much of this was desired by the executive branch as we came out of Vietnam; much of it was desired by the Congress. This is simply a recitation of the trends and, as I indicated earlier, continuation of those trends would be a specific concern.

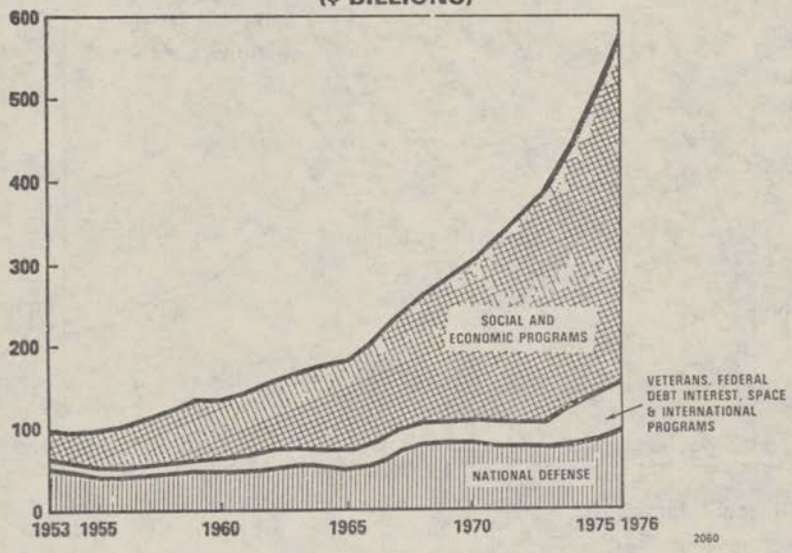
TOTAL PUBLIC SPENDING

The total public spending in the United States is another interesting data point. This is in current dollars. This year the Department

of Defense will take about 16 percent of the total public spending, including State and local expenditures. That is the lowest point since prior to Pearl Harbor, and once again, I think that is something that one should keep in mind. The following graph shows the comparison between social and defense expenditures since 1953:

NET U.S. PUBLIC SPENDING (FEDERAL-STATE-LOCAL)

($ BILLIONS)



EXPANSION OF SPECIAL AND ECONOMIC PROGRAMS

Secretary SCHLESINGER. The great expansion of public spending in the United States has taken place in the area of social and economic programs. I do not wish to say anything that begrudges money in that area. That is not my responsibility; but I want to be sure that everyone understands what the trends have been with regard to the national security expenditures.

Senator PASTORE. The only trouble there is that you have the economic programs—Federal and State and local.

Secretary SCHLESINGER. I have got the charts broken out, Senator Pastore. The previous chart dealt with Federal outlays. This chart deals with total Government expenditures. You can use either one.

Senator SCHWEIKER. Does this include the Federal security trust fund and the highway trust fund?

Secretary SCHLESINGER. Yes.

Chairman MCCLELLAN. What about the chart immediately preceding that?

Secretary SCHLESINGER. That is in constant dollars.

As compared to the prior year, as you will recall, the Defense amended budget request of the administration amounted to some $93.9 billion. Congress reduced that amount by some $5 billion so that our TOA granted by the Congress last year amounted to $88.4 billion.

Our current TOA request for fiscal year 1975 is $89 billion when the $522 million for Southeast Asia is included. If one uses the Presidential request as amended, of last year as a baseline—and this goes back to Senator Pastore's question—we have increased TOA by something less $11 billion, something less than the rate of inflation as compared to the budget that emerged after congressional deliberations. This is shown in the following chart:

TOA SUMMARY
($ Billions)

	FY 1975	FY 1976
ORIGINAL ESTIMATE	$92.6	$104.7
MIDEAST AMENDMENT	.3	—
POL	1.0	—
ADJUSTED REQUEST	$93.9	$104.7
CONGRESSIONAL CUT	− 5.2	
SOUTHEAST ASIA	.5	
ALL OTHER	− .2	
CURRENT REQUEST	$89.0	

EQUIVALENT TO $109.3 BILLIONS AT FY 1976 BUDGET PRICES

STATUS OF 5-YEAR DEFENSE PLAN

Secretary SCHLESINGER. We are up by $15.7 billion in TOA from our current fiscal year 1975 request. That is something in excess of the rate of inflation by about $4 or $5 billion, but we are substantially below the planned 5-year defense plan for the Department of Defense, and these are problems that have become increasingly weighty for us.

Senator SCHWEIKER. Mr. Secretary, most of the news stories say that your budget is 8.7 over the preceding year. Here is a larger difference. These different definitions——

Secretary SCHLESINGER. Those refer to the expected rate of expenditure or outlays. We are going in outlays from $84.8 billion to $92.8 billion, and this is an $8 billion increase in that area.

The request to the Congress for obligational authority is up by $15.7 billion. I am using those numbers and those are the numbers that Congress normally deals with in its appropriations request. When Congress judges the fiscal impact of the budget, it looks at the outlay totals.

Senator SCHWEIKER. Not all of this would be spent?

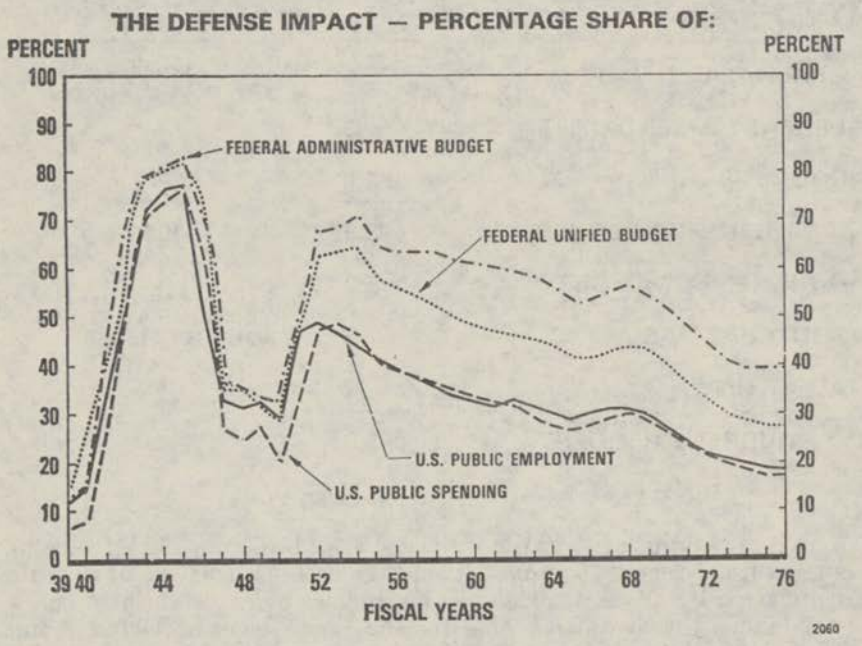
Secretary SCHLESINGER. That is right. Much of the outlay this year attempts to rectify problems in the procurement accounts—to repair

the ravages of inflation on the ship construction account and to increase the procurement of aircraft and tanks—so that a substantial portion of those moneys will be spent in fiscal years 1977, 1978, rather than in fiscal year 1976.

For the procurement account, in most cases, one only spends about 10 percent of the money that Congress grants in that fiscal year.

TRUST FUNDS

The question was raised by Senator Schweiker about the inclusion of trust funds. As a consequence, on the top line of the following chart, I show the so-called Federal funds budget, which is also known as the Federal administrative budget. That excludes all trust funds.



FEDERAL ADMINISTRATIVE BUDGET

Secretary Schlesinger. In the case of the Federal administrative budget, which leaves out the trust funds, since 1968 we are down from about 60 percent of the totals to about 40 percent of the totals. The dotted line in the middle represents the standard Federal unified budget which is the normal item that you discuss, and that of course includes the trust funds. The lowest line represents total U.S. public spending, including State and local.

All of the trends decline substantially.

Senator Pastore, you raised the question of the various elements I think that this chart displays. Senator Stennis last year raised the question of why we included pay and salaries in our adjustments for constant dollars, and I did not have a chance to respond fully to his question earlier, so I would like to take this opportunity to do so. I think the following chart is a graphic illustration.

1974 MARINE RIFLE COMPANY — 1945 AND TODAY

	NUMBER	ANNUAL BASIC PAY		COST AT 1945
		AVE PER MAN	TOTAL	RATES
TOTAL ENLISTED PERSONAL	179	$5,008	$896,388	$145,224
TOTAL OFFICERS	6	$9,484	$56,907	$11,900
GRAND TOTAL	185	$5,153	$953,295	$157,124

PAY INCREASES OF MARINE RIFLE COMPANY

Secretary SCHLESINGER. This is a Marine rifle company. These fellows do not carry much equipment but the effect of pay increases has been to increase the cost to the Department of Defense of a Marine rifle company by a factor of six since 1945.

Senator Stennis has raised this question in relation to the point that we had reached a record budget as compared to World War II. The cost of manpower has expanded sixfold for us since 1945. We are deeply concerned in the Department about efficiencies. This is a subject which Senator Proxmire has pursued in private and I believe, in public as well.

I think that we have done a good job in the area of increasing efficiency. As you know, we have attempted in the course of the last year to reduce headquarters and support elements and to convert the manpower represented therein into additional combat strength.

This is a reallocation of our resources which is permitting us, despite the unfavorable trends in constant dollars, to maintain and increase our capabilities.

DEPARTMENT OF DEFENSE
MILITARY AND CIVILIAN PERSONNEL REDUCTIONS
HEADQUARTERS ACTIVITIES

	CUMULATIVE REDUCTIONS (PLAN)	
	END-FY 75	END-FY 76
JOINT ACTIVITIES AND COMMANDS	1,400	1,400
DEFENSE AGENCIES *	5,200	6,800
MILITARY DEPARTMENTS	14,200	14,800
TOTALS	20,800	23,000

* INCLUDES ALL DEFENSE AGENCIES AS WELL AS DEFENSE AGENCY HEADQUARTERS

DOD PERSONNEL REDUCTIONS

Secretary SCHLESINGER. In the last year, we achieved total reductions of 20,000 in headquarters and defense agency strength and we expect to improve that slightly this year. In the case of the Army, some of those manpower slots are going into additional divisions. What we have done is to take 785,000 men, to which the Army has been reduced—that is 200,000 men lower than the pre-war level—and attempt to make repairs to our force structure with only a slight increase in manpower. When we came out of Vietnam, we reduced the budget dramatically.

We tore down the force structure more than we should have in order to achieve relatively rapid dollar savings. Now we have the opportunity to make readjustments within the Army. As a result, we are moving more support manpower slots into combat slots against a fixed total of 785,000 men. This is one way in which we can improve our relative force position without increasing the cost to the taxpayer.

There are some increased equipment costs; however, they are relatively minor.

REPLENISHMENT OF INVENTORIES

Senator YOUNG. Has the Defense Department replaced the equipment that was taken from our forces in Europe and elsewhere to help Israel?

Secretary SCHLESINGER. No, sir, we have not, but we are in the process of doing so as the equipment comes off the production lines.

Senator YOUNG. About how much would it cost to replace the equipment provided Israel?

Secretary SCHLESINGER. It would probably cost us around a billion and a half to replace all of the equipment we have sent to Israel. The funds for that are coming back to the Department from the $2.2 billion that the Congress appropriated for Israel.

However it takes a number of years to produce that equipment and so, gradually over a period of years, we will be replacing that equipment.

As I mentioned earlier, in October 1973 we were producing tanks at a rate of about 250 a year. We are attempting to increase this production rate hopefully to about 1,200 tanks a year, and that will permit us to enhance our tank inventory, which is the particular inventory that was most damaged.

Senator YOUNG. Are our forces in Europe short of tanks or any other equipment?

Secretary SCHLESINGER. No, sir. Our units in Europe are not short of equipment. [Deleted] the forces actually stationed in Europe have the full complement of equipment.

Chairman MCCLELLAN. [Deleted.]

Secretary SCHLESINGER. [Deleted.]

DEFENSE PURCHASE FROM INDUSTRY

Senator HRUSKA. Mr. Secretary, you have given us a series of charts especially from 1956 to the present year. Are these available for members of the committee in a set?

Secretary SCHLESINGER. Yes, sir.

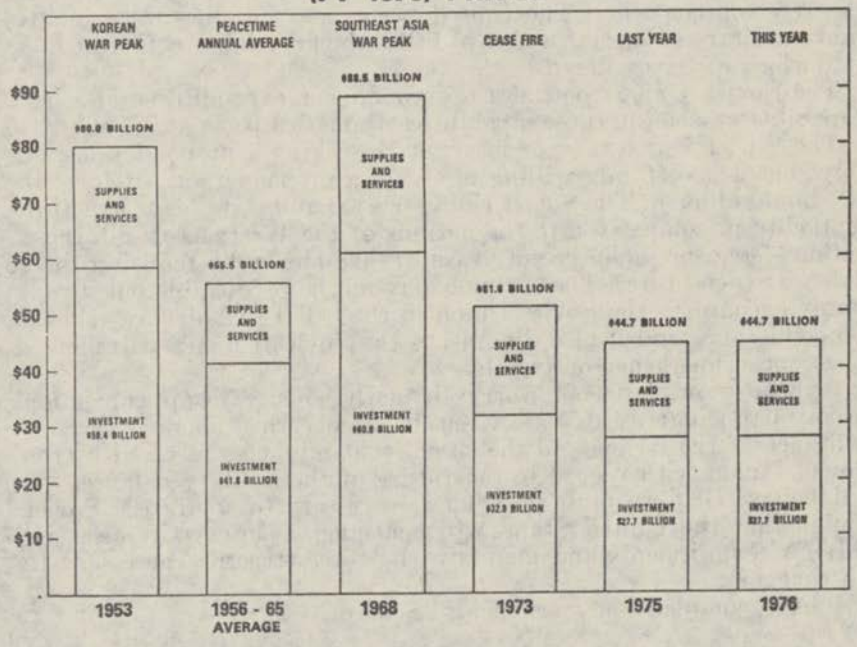
Senator HRUSKA. They would be very helpful for quick reference.

Secretary SCHLESINGER. We will be happy to supply those.

There is one other chart that I think illustrates where we are going. This is an indication of our purchases from industry. The upper portion represents supplies and services. The lower portion represents major investment in military equipment and stockpiles.

(The chart follows:)

DEFENSE PURCHASES FROM INDUSTRY IN CONSTANT (FY 1976) PRICES



DOD INVESTMENTS

Secretary SCHLESINGER. As compared to fiscal year 1968, we are down in terms of investment by roughly 50 percent, in terms of the total. I should emphasize, and it is an important point, that we were investing at a very rapid rate in fiscal year 1968. For example, the Air Force acquired a large number of aircraft. The Army acquired a new goup of helicopters in that period. Much of the acquisition that went on during the Vietnam war is still in our inventory.

Toward the end of this decade we will have a problem with that equipment as it becomes 10 and 12 years old, and it will have to be replaced. To some extent, in fiscal 1975–76, we are living on inventories acquired during the Vietnam war.

I would emphasize that if you take the average for the entire period from 1956 to 1975—a period that included the period of the cutbacks under Secretary Wilson, included the slight expansion after Sputnik, the expansion after President Kennedy's election, and President Johnson's first budget in 1965, in which he tried to keep it down below the $99 billion level—we are spending on the order of 20 to 30 percent less now in purchases from industry. That is reflected in the relative acquisition rates as between the Soviet Union and the United States, to which I pointed earlier.

Now, in the long run, gentlemen, as I attempted to suggest earlier, a continuation of these trends would mean an upsetting of the equilibrium between the Soviet Union and her allies on the one hand and the West on the other. The United States and its allies must maintain a military balance if we are to fulfill the firm policy commitments into which we have entered.

The Soviet Union continues to expand her expenditures and her capabilities—some of those capabilities dramatically.

The Soviet Union may or may not be seeking a preponderance of force but it is certainly willing to accept a preponderance of force if we should allow it. The Soviet Union has expanded its force structure markedly in comparison to the nations of the West. After all, these nations have sought in recent years to save money by reducing their defense expenditures. The outcome may not be predictable but it certainly encourages the Soviet Union in the belief that it may achieve preponderance and it also diminishes the Soviet Union's willingness to accept serious arms constraints.

As you know, I do not worry about the change in appropriation in any particular fiscal year. What I am concerned about is the significance of the trends and the signal that might be received by the Soviet Union with regard to the future of the military balance.

I believe that we must do what is necessary to assure the Soviet Union that the United States will continue to support its essential foreign commitments and maintain the force structure necessary to do that job.

I have completed my comments, Senator.

PERCEPTION OF EQUALITY IS ESSENTIAL

Senator YOUNG. I think the world recognizes that we are a nation that does not strike first. If we were a nation that struck first, we could probably get along with a smaller defense force.

In the nuclear area, if we were a nation that struck first, we would have had enough nuclear weapons 30 year ago.

Do you agree that because of over disposition, we have to be stronger?

Secretary SCHLESINGER. Yes, sir. I think we want to be perceived along with our allies, and our allies provide substantial capabilities, as maintaining a balance that deters the Soviets. That generally re-

quires a perception of equality. It does not require equality in every component of the force structure.

Now, at the present time our allies in Europe are maintaining about 2½ million men under arms. They have a capacity to expand their force structure rapidly. Some of the countries in Europe—I know this is a subject dear to the heart of the chairman—are doing relatively well. The Germans have a substantial force structure. Some of the countries in Europe—the Danes, for example—are doing considerably less well.

The Germans have a force structure that can put about 1.2 million men in the field within [deleted]. On the basis of the U.S. population that would be equivalent to the United States putting 4 to 5 million people into the field in [deleted]. We must keep in mind that our allies provide substantial support to this worldwide power balance, and to the extent that we retain those allies, the pressure on the United States is alleviated.

As a consequence, in some categories, particularly in the ground forces area, we are in a position that we can spend substantially less than the Soviet Union, have substantially smaller force structures and still, with the assistance of our allies, maintain something like a military equilibrium.

Chairman McClellan. Do I understand, Mr. Secretary, that we are not undertaking to compete with Russia to the point of having superior forces in the United States alone?

Secretary Schlesinger. Yes, sir, that is correct.

Chairman McClellan. We are taking into account in our planning and programing the strength of our allies in Europe?

Secretary Schlesinger. Yes, sir, as well as Japan and Korea in the Far East.

Chairman McClellan. We apparently would never need to try to maintain an army of the strength of that which Russia will no doubt maintain.

Secretary Schlesinger. Yes, sir.

Chairman McClellan. So the fact that she may now have three times as many men under arms does not necessarily signify that she has superior power.

Secretary Schlesinger. As compared to the West?

Chairman McClellan. As compared to the West.

Is it our policy—and is this what we are undertaking to do—to try to keep a balance of strength on our part, or a military posture sufficient with that of our allies to make that a deterrent to Russia to ever start a world conflict?

Secretary Schlesinger. Precisely, Mr. Chairman.

CONTRIBUTION OF ALLIES

Chairman McClellan. We haven't undertaken to do it alone—We are depending upon the strength of our allies with respect to the overall deterrent of the two sides, so to speak.

Secretary Schlesinger. Yes, sir. Particularly in the ground forces area and in the area of naval strength.

Chairman McClellan. Now, what we are supplying that our allies can not or are not contributing to is the nuclear power; is that correct?

Secretary Schlesinger. Yes, sir.

Chairman McClellan. How about the air strength? Are they contributing greatly to the air strength in this overall balance?

Secretary Schlesinger. I would say, Mr. Chairman, that in the area of air power the United States contributes more in terms of the total power balance than it does in the area naval forces or particularly in terms of ground forces. In other words, the allies contribute less in terms of air strength than the United States, relatively less. But in Europe, their contribution still amounts to about 75 percent of the in-place tactical aircraft.

Chairman McClellan. Now let's consider tank weapons. The Soviets have a greatly superior number to what we have. With respect to the overall picture, taking our allies into account, how do we compare there?

Secretary Schlesinger. We are behind them in terms of tank strength. The Soviet Union maintains by herself over 40,000 tanks. We would regard that as excessive. Our own intended tank inventory is about 10,000, about a fourth of the Soviet tank inventory.

Chairman McClellan. Ours or our allies?

Secretary Schlesinger. Our own, the United States. With the assistance of our allies in Europe, another 5,000 tanks is added to the total and that is growing. The allies are gradually increasing the strength of their tank forces once again, particularly the Germans, so that in Europe the Soviets have a tank strength ratio of about 2 to 1 compared to our allies.

On the other hand, we have a preponderance of antitank capabilities as compared to the Warsaw Pact.

Chairman McClellan. Are defense forces oriented primarily toward the defense of Europe as our first line of defense?

Secretary Schlesinger. Yes, sir. I would say that is the most demanding task for the United States military establishment because of the massive Soviet and other Warsaw Pact forces that lie to the east of the River Elbe. For that reason the size of our defense establishment is to a considerable extent dependent upon that scenario. However, there are other requirements, particularly in the area of mobility forces.

Chairman McClellan. There is not any threat, so regarded, of an invasion of the United States by the Soviet Union?

Secretary Schlesinger. No, sir.

Chairman McClellan. That is foreign to our present contemplations altogether?

Secretary Schlesinger. That is a long way off.

Chairman McClellan. So what we are undertaking to do now is to unite with our allies to make certain that there is not a successful invasion and a conquest of Europe first?

Secretary Schlesinger. Europe and other parts of the Eastern Hemisphere.

Chairman McClellan. Yes. That would be Europe first, I assume.

NUCLEAR "UMBRELLA" OF THE UNITED STATES

What we must do, and I see it in our military preparedness, is to be equal at all times, not superior, to the Soviets in nuclear power.

Secretary SCHLESINGER. That is right.

Chairman MCCLELLAN. If we ever become second-class or second-rate compared to the Soviets in nuclear weaponry or potential ability to strike and to defend ourselves, would that make us more vulnerable and more likely to air attack?

Secretary SCHLESINGER. It would reduce the effectiveness of the nuclear umbrella, particularly the umbrella that we have over our allies. It would take a much more rash Soviet Union to attack the United States than to be prepared to unleash forces directed at our allies overseas. Therefore, it would increase our vulnerability overall, though not necessarily vulnerability to nuclear attack on the United States.

Chairman MCCLELLAN. But the only counterweapon that our allies have to the Soviet nuclear power is our nuclear strength.

Secretary SCHLESINGER. Yes, sir.

Chairman MCCLELLAN. It is a matter of conjecture that since so many other countries are now getting nuclear power, how long do you think it will be before they will develop their potential into weapons?

Secretary SCHLESINGER. The French and British have relatively small nuclear forces at the present time. We have not encouraged that tendency for two reasons. We have not encouraged it, first, in view of the balance of power on the European Continent. We feel that putting their resources into ground, air, and naval capabilities contributes more to the total alliance than for them to increase in a major way their nuclear forces.

Second, we have been concerned about the problem of proliferation of nuclear capabilities and, as we have done over the many years, we have taken actions to discourage other nations from desiring to acquire nuclear capabilities.

Chairman MCCELLAN. Had you finished your presentation?

Secretary SCHLESINGER. Yes, sir.

Chairman MCCELLAN. Senator Young, any questions?

Senator Young. No.

Chairman MCCLELLAN. Senator Stennis?

DEFENSE PRESENTATION PRAISED

Senator STENNIS. Mr. Chairman, I address these remarks to you and other members of the committee. We have heard through Dr. Schlesinger, and this is the second time I have heard it and I learned a great deal on the second time—the balance presentation here of our forces, our needs, and this tremendous budget. That is very valuable indeed to me, and I think to all of us.

It is in depth, it is balanced, it is not belligerent, and it is a challenge to all of us.

I am disappointed that the add-ups went as high as they did, but I do feel that he has wrestled with this thing and tried to hold it down, and the fact that it is as low as it is is partly due to his work and the tremendous grasp that he has of this entire picture. It is amazing to me.

Senator YOUNG. Would the gentleman yield.

Senator STENNIS. Yes, I yield.

Senator YOUNG. Secretary Schlesinger has done a good job.

Senator STENNIS. Yes, he wears well.

Senator YOUNG. He might like to have that compliment on the record.

Senator STENNIS. I am impressed with your attitude about our deterrent forces as summed up here by the Chairman. I think it is a real contribution.

Now skip over to this retired pay. I am concerned about it for several reasons. It plagues all of us. It is something that these retirees, a lot of them honestly think they are entitled to recomputation. But even without recomputation this thing now is $7 billion. I think that itself is proof we have got to have a new system, gentlemen.

The Congress cannot get up a new system very well, you are the one that has the computers and I think it is an executive function. I hope you will redouble your efforts.

Secretary SCHLESINGER. Yes, sir. We are undertaking the quadrennial pay review. The retirement compensation must be part of a quadrennial review.

U.S. MILITARY AID TO ISRAEL

Senator STENNIS. Senator Young brought up the question about the impact on your budget of the Israeli aid. In the proper way I am going to call for some kind of bill of particulars for line items on this. In the fall of 1973—I want Senator Proxmire to hear this—this war lasted 3 weeks as I recall. That is 21 days, and we gave them $2.1 billion, and it was more than that, but call that a round figure. No line items, no questions asked, you might say. I blame myself as much as I do anyone else.

That is at the rate of $100 million a day for the time that war lasted. As I say, no questions asked.

Now, if we are getting down to the nub of things here. This budget is so high. That is not in our committee directly, but it is part of your military problem. I want us to have some kind of plan to have call for authorization. If there is another special request, you will have to put it together.

Secretary SCHLESINGER. Yes. There is no request before the Congress.

Senator STENNIS. I know that, but I want to bring it up now. There is a request to replenish our arsenal. I call to the attention of this committee that $2.1 billion is a major item.

Senator HRUSKA. Will the Senator yield for an observation on this?

Senator STENNIS. Yes. I am through.

Chairman MCCLELLAN. All right.

Senator Hruska, you are recognized.

Senator HRUSKA. Over how long a period was this $2.1 billion furnished to the Israelis?

Secretary SCHLESINGER. The war period that Senator Stennis referred to was about 3 weeks.

Senator HRUSKA. I understand that is the hostility, the period when they were shooting.

Secretary SCHLESINGER. The period has covered the entire time since October of 1973, and that is approximately 18 months ago. We are still

delivering items that were funded by that $2.2 billion appropriation.

Senator HRUSKA. So the complete delivery has not yet been achieved?

Secretary SCHLESINGER. It has not yet been achieved.

General BROWN. The deliveries that are outstanding primarily are awaiting production.

Senator HRUSKA. What percentage is that?

Mr. MCCLARY. $540 million in 1974; $700 million in 1975; $659 million in 1976, $50 million in the transition period, and concluding $151 million in 1977.

Senator HRUSKA. And that totals to the $2.1 billion.

It has been suggested there is no line item accounting or authorization. How were these amounts arrived at?

Secretary SCHLESINGER. The $2.2 billion represented a request that was submitted by the administration in October of 1973. If an itemized breakdown is required, representing the drawing on that authority, of course we have that, but there was only a single line item, in effect, that was passed by the Congress. Any details that you want on that, Senator, of coure are available.

Senator HRUSKA. I presume that is what Senator Stennis referred to that he might want to get into a breakdown of these amounts.

Senator STENNIS. I said if there was any more of these large sums, we wanted some line items before we authorized it.

FMS PURCHASES BY ISRAEL

Senator YOUNG. I think you have indicated that we gave them about $1.5 billion worth of equipment from Europe and elsewhere.

Secretary SCHLESINGER. I don't recall using the figure, but I would think that the total equipment would represent about that in the $2.2 billion.

Senator HRUSKA. Is that all grant?

Secretary SCHLESINGER. As I recall, it was about $1.5 billion in grant, but I would have to supply that for the record.

[The information follows:]

Pursuant to the provisions of the fiscal year 1974 emergency security assistance legislation, the President authorized a $1.5 billion waiver of payment by Israel for FMS purchases.

ISRAELI REQUIREMENTS ESTIMATED

Senator HRUSKA. The point I had in mind was that this $2.1 billion was not just a figure snatched out of the air, it has to have some figures above it before it was suggested in the budget there would be a total of $2.1 billion.

Secretary SCHLESINGER. I would like to believe that in the entirety, Senator, but that figure was put together in some haste, and it was not clear where the money was going to come from at that time. You will recall the war broke out at the beginning of October, and it was about 2 weeks later that the President made the request. There was no opportunity to define the requirements for that time, so it was an estimate of the general requirement without having a detailed breakdown of what was needed or deemed essential.

Senator HRUSKA. We did get in trouble one time getting precipitous action on the floor, and I wondered what the impact this might have in a similar fashion, that is all.

Chairman MCCLELLAN. Senator Proxmire.

FISCAL YEAR 1976 TOA INCREASE

Senator PROXMIRE. Mr. Secretary, in terms of total obligational authority, as I understand it, the defense budget is up $15 billion over last year including last year's supplementals, is that correct?

Secretary SCHLESINGER. Yes, taking into account congressional action to date.

Senator PROXMIRE. Those supplementals were a little over $500 million, is that right?

Secretary SCHLESINGER. Yes, I believe so.

Senator PROXMIRE. Therefore, if we compare the obligational authority being requested this year with the original obligational authority being requested in 1975, we are up over $16 billion. Is that right or not?

Secretary SCHLESINGER. That is absolutely wrong.

Senator PROXMIRE. Why is it wrong?

Secretary SCHLESINGER. Because you said the obligational authority requested. On that basis we are up about $10.8 billion. The Congress knocked down the President's request by about $5.2 billion.

Senator PROXMIRE. All right. I see.

Well then, it was actually what was provided last year in obligational authority less supplemental authority?

Secretary SCHLESINGER. I liked the way you rephrased it originally.

Senator PROXMIRE. I know, but I am rephrasing that.

My point is that this is about an 18-percent increase in obligational authority over the amount of obligational authority that was provided by Congress last year minus the supplement. How much of that is inflation?

Secretary SCHLESINGER. The inflation represents about $8 billion. The following chart shows that trend:

TOTAL AND BASELINE PROGRAM TRENDS

($ MILLIONS, CONSTANT FY 1976 PRICES)

TOA	FY 1973	FY 1974	FY 1975	FY 1976	CHANGE, FY 1975-1976
Total Obligational Authority	$109,377	$104,410	$96,468	$104,684	$+8,216
Prior-Year Shipbuilding Programs	+91	+634	+909	-2,269	
Comparable TOA	109,468	105,044	97,377	102,415	+5,038
Non-Baseline Items.					
Military Retired Pay	5,787	6,174	6,573	6,936	
Military Assistance:					
Southeast Asia Costs	–	–	1,166	1,293	
Other MAP	1,614	4 482	1,449	1,408	
Mil. Functions Southeast Asia Costs	7,938	1,772	306	124	
Production Support, Fgn. Mil. Sales	–	-	–	300	
Total, Non-Baseline Items	15,339	12,428	9,494	10,061	+ 567
Baseline TOA, Constant Prices	94,130	92,617	87,883	92,354	+4,471

BASELINE PROGRAM

Senator PROXMIRE. So that you have about $8 billion of real resource allocation to defense.

Secretary SCHLESINGER. No, sir.

Senator PROXMIRE. Why not?

Secretary SCHLESINGER. Because as I recall the total baseline program, about $2.3 billion represents the underfunding of the ship construction program because of inflation which is now included in the procurement account. As I pointed out to the chairman at the outset, that underfunding, if allocated to the prior fiscal years for which we are now requesting those funds, would mean that the growth in obligational authority is on the order of $4.5 to $5 billion.

Senator PROXMIRE. In real terms?

Secretary SCHLESINGER. Yes, sir.

Senator PROXMIRE. I would like to look into that but at least there is a substantial growth of $4 or $5 billion in real resource allocation from the defense.

Secretary SCHLESINGER. Yes, sir, as compared to the figure that emerged from the Congress last year in TOA. In outlays we brought it down.

U.S. COMMITMENT TO SOUTH VIETNAM

Senator PROXMIRE. I understand. Now you have asked for $1.29 billion for Vietnam in obligational authority as I understand it for fiscal year 1976. At what point will the Vietnamese be able to fund their own defense requirements? In what specific year can we reduce our commitment, and by how much?

Secretary SCHLESINGER. I think that that is something that I would not care to offer precise predictions on, Senator. As I indicated the other day, I don't want to offer anybody light at the end of the tunnel. I think that there has been some of that problem in the past. The President has indicated that he would expect the Vietnamese to make their own way in 3 years if the Congress were willing to support the level of the request from the administration.

Senator PROXMIRE. Is that based on your own analysis?

Secretary SCHLESINGER. I think that it is a little unpredictable what Hanoi might agree to allow to happen in South Vietnam——

Senator PROXMIRE. The reason I ask, the President originally said 2 years when he was interviewed by the Chicago Tribune, and then he revised it later on instruction from the advisers in the administration. I think he would talk to you as the most expert person he could talk to.

Secretary SCHLESINGER. No; he did not consult with me on that.

Senator PROXMIRE. Do we have any formal diplomatic agreement with the Vietnamese that requires a certain level of funding for a particular number of years?

Secretary SCHLESINGER. The only agreement that we have had is the formal agreement that is included in the Paris Accord, which is for the replacement of equipment. As you know, we have given no equipment this year because of the reduced level of funding, but that is the only formal statement with regard to equipment.

Informally, of course, there were pledges that were made to the South Vietnamese Government, but they are not written down in treaty.

RESUPPLY OF NORTH AND SOUTH VIETNAM

Senator PROXMIRE. How do you compute, or do you have any computation now on what is required on the basis of the agreement that was made?

Secretary SCHLESINGER. I think that——

Senator PROXMIRE. Replacement of equipment.

Secretary SCHLESINGER. If we were to receive the $1.293 billion, Senator, we would not be achieving a one-for-one replacement of equipment. The equipment levels in South Vietnam are going down substantially.

I think the committee might be interested in having Erich von Marbod come up here and go into the detail of that $1.293. At the request of Senator Stennis, a sole authority in the Department of Defense, on Defense Assistance to Vietnam, Mr. von Marbod, has been appointed.

Senator PROXMIRE. It is my understanding that we provide several times as much equipment as the Russians and Chinese and other countries provide for the North Vietnamese. Is that still the case?

Secretary SCHLESINGER. I don't believe that is the case, Senator.

Senator PROXMIRE. In fact I was told it was eight times as much last year.

Secretary SCHLESINGER. I don't believe that is the case.

Senator PROXMIRE. Can you give us an estimate as to what it is?

Secretary SCHLESINGER. I would say—and this is the most general estimate in terms of military equipment—probably more is going into North Vietnam now than is going into South Vietnam.

Senator PROXMIRE. What do you base that estimate on?

Secretary SCHLESINGER. For one thing——

Senator PROXMIRE. That would be a remarkable change in one year.

COMPARATIVE SUPPORT TO NORTH AND SOUTH VIETNAM

Secretary SCHLESINGER. No, because the amount of assistance going into North Vietnam is understated and has been understated in many previous years. In the case of the United States we are including packaging, handling, and transportation costs in our $700 million. We also include the cost of the DAO. In the case of any equipment that we see going into North Vietnam, it is included only to the extent of the estimated cost of that equipment, without any of the associated transportation or administrative costs.

Senator PROXMIRE. Will you give us the most accurate estimate you can for the record?

Secretary SCHLESINGER. Yes, sir.

[The information follows:]

In response to this and similar questions concerning comparative support to North and South Vietnam, an interagency working group was convened in order to arrive at the best estimate of total Communist assistance to North Vietnam. The memorandum which has been prepared jointly by the Central Intelligence Agency and the Defense Intelligence Agency is enclosed and includes detailed

data for the period 1970–1974. Information prior to 1970 is considered too sketchy to provide a meaningful estimate of Communist assistance to North Vietnam.

Memorandum of March 5, 1975.
Subject: Communist Military and Economic Aid to North Vietnam 1970–1974.[1]

1. The Intelligence Community has been requested to estimate the amounts of Communist aid delivered to North Vietnam in the years 1970–1974, using current U.S. dollar costs of the materiel and services provided (see Table I). It is important to recognize that the Intelligence Community's estimate on this subject is not equivalent to—and hence not comparable with—U.S. appropriations for military and economic aid to South Vietnam, for the following reasons:

(a) On the matter of accuracy, our information on North Vietnam has always been incomplete, although coverage on civilian imports is substantially better than for military aid. The drawdown of the U.S. presence in Southeast Asia has further limited intelligence collection capabilities in the area, so that current information on North Vietnam is less comprehensive than it was formerly. In particular, on the question of Communist military aid, our information base is very spotty. Hence we know we are seeing only part of the picture on military aid, and our estimates for the part we cannot see have a wide margin of error.

(b) Military aid to North Vietnam is focused on materiel required for the type of military action undertaken by the Communist forces in South Vietnam—i.e., selected attacks from redoubt areas at times and places of their choice. U.S. military aid to South Vietnam supports a different military mission—i.e., defense of scattered communities, large agricultural areas, and lines of communication, plus reaction and reinforcement of local forces after Communist attack. As the total forces for the different missions differ in size, so do their requirements for assistance. Throughout the war, South Vietnam's forces have been roughly twice the size of North Vietnam's forces in the South, primarily because the missions of South Vietnam's forces—protecting population and holding territory—have required a much larger and widely dispersed military structure.

(c) The GVN has therefore also required a combat air force and an ability to redeploy forces rapidly by ground and air transport. Thus, the types of equipment supplied to South Vietnam by the U.S. have been more sophisticated and therefore more expensive than those required by Hanoi. South Vietnam also requires considerably more logistic support.

(d) In addition, shipping, overhead, and other support costs of military aid to the GVN are substantially more than support costs of Communist aid to North Vietnam because of the greater distance involved and other factors. (See Table II at annex.)

2. Several conclusions may nonetheless be drawn with respect to levels of military and economic assistance to North Vietnam from 1970 through 1974:

(a) Total Communist military and economic aid to North Vietnam in 1974 was higher (in current dollars) than in any previous year.

(b) The suspension of U.S. air bombardment in North Vietnam at the beginning of 1973 brought about a large decrease in assistance for defense against such bombardment or to replace losses caused by it (e.g., air defense equipment, missiles, trucks, etc.).

(c) The U.S. disengagement from combat and the reduction in the level of hostilities in South Vietnam in 1973 were reflected in a substantial decrease in the amount of ammunition and ground force equipment received by North Vietnam, compared with 1972.

(d) In 1974, the delivery of ammunition to Hanoi markedly increased over 1973 and reached a level as high as that of 1972[2], although deliveries of ground force equipment continued at relatively low levels.

(e) Economic aid was reduced in 1972 with the closure of North Vietnamese ports, but with their reopening rose sharply in 1973 and reached a record level in 1974. The economic aid increase in 1974 was further spurred by typhoons which damaged the 1973 North Vietnamese autumn rice harvest, the inflation of dollar values in 1974, and the increased pace of reconstruction during 1974.

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[1] This memorandum has been prepared jointly by the Central Intelligence Agency and the Defense Intelligence Agency, and concurred in by the Bureau of Intelligence and Research, Department of State.

[2] The dollar figure shown in the table for ammunition deliveries in 1974 is considerably higher than that for 1972, but tonnages were about the same. Inflation of ammunition prices explains the difference.

3. The figures leading to the above conclusions are shown in Table I. They give a rough order of magnitude of Communist military assistance to North Vietnam and a somewhat more precise indication of economic aid. Within the category of military assistance, the estimates of deliveries of equipment and materiel ($275 million in 1974), as well as the estimate for transportation equipment ($25 million in 1974), are fairly good. Even a more complete data base would produce estimates of the same relative magnitude. This is not true, however, for those items listed under the "other military-related support" heading, where the lack of hard data makes our estimates subject to wider margins of error.

4. It should also be noted that in the final analysis what is significant is not so much the level of military assistance but the relative balance of forces on the battlefield in South Vietnam. North Vietnamese forces in South Vietnam, supported by record stockpiles of military supplies, are stronger today than they have ever been. The Communists are expected to sharply increase the tempo of the fighting in the next few months. Given the present military balance in the South, the GVN's forces will not be decisively defeated during the current dry season. At currently appropriated levels of U.S. military assistance, however, the level of combat that we anticipate in the next few months will place the Communists in a position of significant advantage over the South Vietnamese forces in subsequent fighting.

TABLE I.—ESTIMATED COMMUNIST MILITARY AND ECONOMIC ASSISTANCE TO NORTH VIETNAM

[In millions of current U.S. dollars]

	1970	1971	1972	1973	[1] 1974
Military	205	315	750	330	400
Military equipment and materiel	140	240	565	230	275
Air defense equipment	20	85	310	100	55
Ground forces equipment	45	80	110	40	45
Ammunition	70	60	130	85	[2] 170
Other	5	15	15	5	5
Military transportation equipment (trucks, helicopters, transports)	20	15	30	35	25
Other military-related support (delivery and packaging costs, Spare parts, POL for the military, technical assistance and training, medical supplies) [3]	45	60	155	65	100
Economic	735	755	465	670	1,295
Commodity shipments [4]	635	645	360	540	1,145
Food	65	60	80	170	420
Fertilizer	10	15	5	5	25
Petroleum	10	10	5	15	55
Machinery, transport equipment, and metal products	240	175	125	165	345
Other	310	385	145	185	300
Technical assistance (includes cost of foreign technicians in NVN and NVN trainees abroad)	100	110	105	130	150
Total of estimated Communist goods and services provided to North Vietnam	940	1,070	1,215	1,000	1,695
Less North Vietnamese exports to Communist countries [5]	50	50	30	80	125
Total estimated Communist aid to North Vietnam	890	1,020	1,185	920	1,570

[1] The data for 1974 are preliminary.

[2] Although ammunition supplies to North Vietnam in 1974 constituted an estimated 40 percent of its military aid, our data regarding probable ammunition costs per ton are admittedly "soft." Therefore, if our price estimates are off by, say, 10 percent, the total value for ammunition alone could fluctuate by some US$17,000,000.

[3] The lack of hard information on the items included under "Other military-related support" makes these estimates subject to a wider margin of error than exists for other categories of military assistance to North Vietnam.

[4] For economic goods, the cost of transportation is included in the cost of the goods as shown in the table. (For military goods delivery and packaging costs are included under "Other military-related support.")

[5] Since North Vietnamese exports in these years paid for some of North Vietnam's imports, we have subtracted them to derive our estimates of Communist aid to North Vietnam.

Note: Because of rounding, individual figures do not always add to the totals in this table.

TABLE II.—COMPARISONS OF MAJOR CATEGORIES OF COMMUNIST MILITARY AID TO NORTH VIETNAM AND U.S. AID TO SOUTH VIETNAM [1]

[In millions of U.S. dollars]

	Communist military aid delivered to North Vietnam, calendar year 1974		U.S. military aid so far appropriated to South Vietnam, fiscal year 1975	
	Amount	Percent	Amount	Percent
Total military aid [2]	$400	100	$700	100
Military equipment and materiel	275	69	268	38
Air defense equipment	55	14	----	(3)
Ground forces equipment	45	11	----	(3)
Ammunition	170	43	268	38
Other	5	1	----	(3)
Military transportation equipment	25	6	----	(3)
Delivery costs	20	5	74	11
Other military-related support (including spare parts, POL for the military, technical assistance and training, medical supplies, and miscellaneous costs)	80	20	358	[4] 51

[1] For reasons explained in the text, our figures on Communist aid to North Vietnam (some of which are soft estimates) are not readily comparable with U.S. aid appropriations for South Vietnam. Also, the data we have on Communist aid is kept on a calendar year basis while U.S. aid appropriations are keyed to a fiscal year cycle. The above table, however, gives a rough indication of the way the 2 aid packages break out in calendar year 1974 for Communist aid and fiscal year 1975 for U.S. aid.

[2] Figures may not add because of rounding.

[3] Negligible.

[4] 1 reason for the wide disparity is a charge against the U.S. aid account for administrative expenses for the DAO in South Vietnam which has no known counterpart on the Communist side. There are also other items for which no counterparts on the Communist side are available, such as offshore maintenance servicing of military equipment, and construction.

B–1 BOMBER

Senator PROXMIRE. What is the current total program cost of the B–1 bomber according to the assessment of the Air Force program?

Secretary SCHLESINGER. I think it is $20.6 billion.

Senator PROXMIRE. Do you agree with that figure?

Secretary SCHLESINGER. Yes, sir.

Senator PROXMIRE. What is the unit cost?

Secretary SCHLESINGER. I think it is $84.3 million for each aircraft.

Senator PROXMIRE. I thought it was $83 million. It is $84.3.

Senator SYMINGTON. Would you yield?

Senator PROXMIRE. Yes.

Senator SYMINGTON. What is the number?

Secretary SCHLESINGER. It is about $84.3 million, Senator.

Senator HRUSKA. What is the unit base for that?

Secretary SCHLESINGER. 244 aircraft.

REQUEST FOR CHEMICAL-BIOLOGICAL FUNDS

Senator PROXMIRE. Mr. Secretary, why have you requested funds for the Air Force binary nerve gas bomb plus some $2.3 million for Army plans for binaries, and the Congress-killed reproduction funds last year?

Secretary SCHLESINGER. The request, of course, represents the judgment that we should have a defensive capability in this area, and if we have a defensive capability it should be based upon the safest type, which would be binary.

George, would you like to comment?

General Brown. I agree with the retaliatory capability to use in response to an enemy initiative, and we don't now have that capability today. [Deleted.]

Senator Proxmire. General Brown and Mr. Secretary, do both of you feel that this is within the law as the trust of the United States?

General Brown. Yes, squarely within the law.

Secretary Schlesinger. Yes.

Senator Proxmire. You have discussed that with your counsel?

Secretary Schlesinger. Yes.

ESTABLISHING THE 16 DIVISION FORCE

Senator Proxmire. Mr. Secretary, I think you deserve a lot of commendation for doing that. Do you intend to increase the number of divisions from 13 to 16?

Secretary Schlesinger. Yes, sir.

Senator Proxmire. That is good, and I am all for it, but why can't you pass half the savings on to the taxpayer? You see the 13 to 16 proposal is a 23 percent increase in our fighting division strength. I am wondering what justifies this dramatic increase, particularly in combat readiness in Europe. You have been making the argument that we should not draw down our European forces while the negotiations are under way. By increasing our forces, will this not create a problem of the Soviet response to the negotiation?

Secretary Schlesinger. No, sir, I think not. There are two problems raised, one with regard to Europe and one with regard to the United States. As you know, in Europe, under the Nunn amendment, we have been attempting to convert 18,000 slots from support to combat over a 2-year period. That was the intent of the Nunn Amendment, largely designed to shrink the support structure in Europe.

The other question that you raised has to do with the justification for the 16 divisions, and the aggregate strength of the U.S. Army. I think a very compelling case could be made in that area. Part of the point was made through Senator McClellan earlier. We reduced our forces rapidly after coming out of South Vietnam because we had those major budget reductions. The only way you can get outlays down quickly—and you remember those outlay ceilings—is to tear down force structure. We tore down the force structure more than was necessary or desirable. When we went down to 13 divisions, we went down too far.

In the pre-Vietnam period, we maintained 16⅓ divisions. Now in the period since 1964 what one notices is a growing strength of the Warsaw Pact and of Soviet forces in the NATO guidelines area.

In addition to that growing numerical strength, there is a substantial improvement in quality in terms of adding tank battalions to many divisions, along with other measures. In addition to that, the Soviets are getting into the area of mobility forces. Their mobility forces as yet are not a match, I think, for our own mobility forces, but you will recall in the alert in October 1973 that the Soviets placed [deleted] airborne divisions on alert. It shows that the Soviets are now beginning to acquire the capability of projecting power beyond the periphery of the Soviet Union.

To this point, by and large, the Soviets have been confined to projecting power around the periphery of the Soviet Union. We are not unduly concerned about that yet, but we do notice this growing strength of their mobility forces. Between the qualitative improvements in Europe, between the situation in the Middle East and the growing strength of Soviet mobility forces, maintaining the 16 divisions which we had pre-war by a restructuring of our forces, strikes us as the minimum that we should do.We are trying to do that against a total manpower ceiling for the Army of only slightly more than 785,000, which as I mentioned earlier is 200,000 less than pre-Vietnam.

Senator PROXMIRE. I think you deserve commendation for that. You may be absolutely correct.

DIVISION REQUIREMENTS IN EUROPEAN THEATRE

If you will, give us some notion of what would happen if, instead of going to 16 divisions, you went to 14 or to 15, so that we have that before us.

It seems to me, Mr. Chairman, that may well be a very significant debate in the Senate this year, maybe not. Maybe it is something that we will all accept.

If we have that justification from you, we will be in a much better position.

Chairman MCCLELLAN. Supply those for the record.

Secretary SCHLESINGER. Yes.

[The information follows:]

Given the qualitative improvements by the Warsaw Pact in Europe and the other changes cited in different sections of this testimony, we believe that returning to the 16 active divisions we had prior to the Vietnam war is the minimum we must do. [Deleted.] Such demanding deployment times can only be met by predominately active forces. A minimum of [deleted] should remain in the Pacific in order to help retain some stability in that area during what would surely be a very volatile time. Even with the 16 division active force we would be requiring a degree of readiness never before achieved from our reserve forces just to round out the initial forces for NATO. Should the NATO scenario develop following an action elsewhere the risk would be even higher. While NATO has the capability and the resources to make a conventional balance feasible, this feasibility relies strongly on our capability to supply the essential defense requirements in the early days. Thus, with only 14 or 15 active divisions we would increase the risk that we would fail to provide that essential amount of force.

DEFENSE AS A PERCENT OF GNP

Senator PROXMIRE. I have a couple more questions.

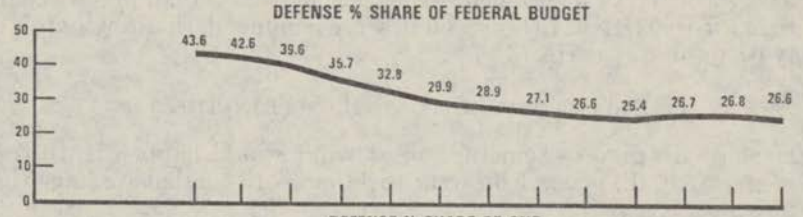
Your argument about the declining amount of GNP devoted to defense raised an interesting issue. Do you still argue that roughly we should have about 6 percent of our GNP for defense? Are you making that argument? You didn't make it specifically here today, but I am asking you if you have that as one of your contentions?

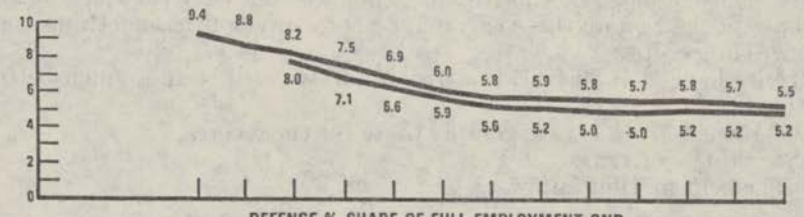
Secretary SCHLESINGER. I think last year I said that it was roughly 6 percent, or a little bit less. This year we are talking about 5.8 percent.

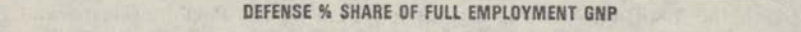
Let me have that chart.

OUTLOOK TO 1980
($ BILLIONS FISCAL YEARS)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
GNP	826	898	955	1,012	1,102	1,224	1,349	1,434	1,596	1,839	2,067	2,293	2,540
FULL EMPLOYMENT GNP	822	892	979	1,070	1,154	1,247	1,402	1,623	1,840	2,088	2,302	2,494	2,697
FEDERAL BUDGET	179	185	197	211	232	247	268	313	349	410	446	485	526
DEFENSE BUDGET	78	79	78	76	76	74	78	85	93	104	119	130	140







EXTERNAL CAPABILITIES

Secretary SCHLESINGER. I don't think that one can talk about that in percentage terms. The reason I have used that argument is to show that the falling burden depends on what the external capabilities are.

Senator PROXMIRE. And what the external threats are.

Secretary SCHLESINGER. Yes. If the Soviets were to cease growing, then obviously our share would decline.

Senator PROXMIRE. All right.

Secretary SCHLESINGER. We are down to about 5 or 5½ percent, given present trends.

Senator PROXMIRE. There are circumstances in which that might be enough.

Secretary SCHLESINGER. Yes.

Senator PROXMIRE. Six percent would not be enough.

Secretary SCHLESINGER. That is correct. We expect it to continue to fall.

U.S. FOREIGN ARMS SALES

Senator PROXMIRE. This is a little bit aside, but I think it is directly related to our responsibility and yours. I understand that the world arms exports are now between $8 and $9 billion, of which we, the United States of America, are responsible for 54 percent, the Soviet Union for about half of that; that we sell or export nine times as much as the French, 15 times as much as the British. Why is that? That just

seems to me to be something that the country that is devoted to peace as we are, and have our record of nonaggression, and so forth, should be not engaged in. This has been mischievous. We have given arms to the Indians and Pakistanis, and countries in South America that are fighting each other all over the world.

Secretary SCHLESINGER. It can have a mischievous effect, Senator, there is no question about that.

Senator PROXMIRE. You dispute the fact that we are exporting more than half the arms exports in the world?

Secretary SCHLESINGER. Remember that $8 billion figure represents entering into contract with delivery toward the end of the decade. The actual export is much lower.

Senator PROXMIRE. I understand.

Secretary SCHLESINGER. I think that one has to look at the individual area. As you know, we have resisted in many areas of the world the desire of governments to acquire arms. We have a complex problem, however.

For many years we have urged other nations to contribute to the pooled strength of what is sometimes euphemistically referred to as the free world. Sometimes the nations included in the free world are not necessarily free states. But we have encouraged the expansion of military power in Europe. We have encouraged it elsewhere.

We have been concerned about the vulnerability of the area lying south of the Soviet Union for many years. The Shah of Iran in recent years has attempted to develop a military capability that would make Iran a stronger military power and thus represent a greater bulwark against a movement southward toward the Persian Gulf. From that standpoint, from the standpoint of looking northward, I think that it is welcomed by U.S. foreign policy that there is indigenous strength in that area.

Senator PROXMIRE. I am just wondering whether it is not possible for us to work in terms of arms free zones at least in South America, perhaps in parts of Africa, perhaps in parts of Asia, and so forth, rather than leading the world by this big margin of export of arms.

Secretary SCHLESINGER. I think that is a pertinent point, Senator, and there are areas of the world to which that is highly applicable. As we know, in the South American case, we have attempted strongly to discourage the unnecessary acquisition of arms.

Senator PROXMIRE. Some of them.

Secretary SCHLESINGER. As a matter of fact, we have discouraged them. But the effect of our discouragement under the amendment has been an infusion of French and Soviet arms into South America, and it is not clear to me that that is advantageous from our standpoint. We would like those Latin American governments to spend less.

DEFENSE PRODUCTIVITY IMPROVEMENTS

Senator PROXMIRE. All right.

I do have a couple more questions I would like to ask, one with respect to what you refer to as the productivity improvements. As you know, I spoke twice on the floor of the Senate. Over the last several years you have improved. I am puzzled, however, about how the

Defense Department is not cooperating more fully with the productivity commission trying to find out the degree to which jobs are measured for productivity.

I am told by Mr. Morris, who used to be in the Defense Department, and by Mr. Staats, and others, that 60 percent of the jobs are measured from the productivity standpoint but they get very few of the military jobs. I think that is very unfortunate because a large proportion of the people employed by the Federal Government are in the military.

Secretary SCHLESINGER. I agree.

Senator PROXMIRE. I think it would be a fairly salutory method of providing incentive for improving the productivity.

Secretary SCHLESINGER. I agree with that, Senator. Let me look into any deficiencies we have in that area and see if we can correct them. I will supply that information for the record.

Senator PROXMIRE. All right, sir.

[The information follows:]

PRODUCTIVITY ENHANCEMENT AND EVALUATION PROGRAM

During FY 1974 the Department of Defense employed approximately one million civilian employees. Almost 360,000 of these employees—more than 34%—were covered in our productivity enhancement and evaluation program and included in the Federal productivity measurement effort. Additionally, the Department evaluated the productivity of more than 160,000 military personnel employed in support areas and 25,000 employees in Army Government-owned Contractor operated facilities. Our FY 1975 goal—a Presidential MBO (Management By Objective)—is to have productivity evaluation on 50% of the workforce. The Department's formal productivity enhancement and evaluation program requires productivity evaluation of all jobs in major support functions such as medical, communications, procurement, transportation, supply, real property maintenance, education, training, accounting and finance, and civilian personnel management.

MILITARY MANPOWER VIS-A-VIS EXPENDITURES

Then one other question. I raised with you the point that in view of the need for jobs—now this was a point I raised last year when the view was not nearly as great—that we had found on the basis of the Labor Department statistics that $1 billion spent with the military provides about 57,000 jobs; it is different now but that was roughly the proportion. The same amount spent with educational services provides 141,000 jobs. I wondered if you had an opportunity to consider that, to challenge it, because in a year in which we are very anxious to provide jobs and at the same time hold down the enormous deficit we have, it seems to me these are figures we ought to have, and that if they can be challenged by you, you ought to challenge them, you ought to know about it.

Secretary SCHLESINGER. I can't comment on the nondefense figures you mentioned. As to Defense, your figures are generally correct, Senator, as a 1975 average. Let me, however, amplify my comments on them.

If one is looking at that kind of objective function, one has to look at the various components of expenditure within the Department of Defense. For example, R. & D. is peculiarly high per unit job cost, whereas to go back to the 16 division case, you would maintain about 100,000 military men for $1 billion of expenditure, which is more equivalent to the—I forget the title.

Senator PROXMIRE. The educational services.

Secretary SCHLESINGER. There would be a major difference within the military function directly, in that jobs per billion for R. & D. would be much less than for military manpower. So one would have to look at categories.

PERSONNEL EARNINGS

Senator PROXMIRE. Are you sure of that figure with respect to military function? It seems to me all the things that go into adding people to the military that it would cost more than that.

Secretary SCHLESINGER. We can prepare a table for you on that, Senator.

Senator PROXMIRE. I wish you would.

[The information follows:]

JOBS PER BILLION

According to figures published by the U.S. Department of Commerce in the *Survey of Current Business* (July 1974, p. 37), average annual earnings in 1973 (the latest available) were as shown in the first column below. The jobs per $1 billion would be as in the second column.

	Average annual earnings per full-time employee	Jobs per $1,000,000,000
Military personnel	$8,977	111,396
State and local government employees in public education	9,624	103,907
Private sector employees in educational services	6,571	152,184

MILITARY MANPOWER REDUCTIONS

Secretary SCHLESINGER. If you were to cut 50,000 jobs of the 785,000 in the Army, you would take out mostly enlisted men. You would not change the equipment buy, for reasons that I can go into. As a consequence, you would save yourself, at most, approximately a half-billion dollars per year after the first year—which would be much lower due to separation costs and because full-year savings would not be realized. The following chart explains this:

CHANGES IN ACTIVE FORCE MILITARY MANPOWER AND PAYROLL SPENDING, FY 1968 – 76

	ANNUAL CHANGES		CUMULATIVE CHANGES		CHANGES PER MAN	
FISCAL YEARS	THOUSANDS OF PERSONNEL 6/30	PAYROLL (FY 1976 Rates – $ Millions)	THOUSANDS OF PERSONNEL	PAYROLL ($ Millions)	ANNUAL	CUMULATIVE
1968 TO 1969	-88	$ +513	-88	$ +513	$ +	$ +
1969 TO 1970	-393	-1,371	-481	-858	3,489	1,784
1970 TO 1971	-352	-3,034	-833	-3,892	8,619	4,672
1971 TO 1972	-392	-3,748	-1,225	-7,640	9,561	6,237
1972 TO 1973	-70	-2,512	-1,295	-10,152	35,886	7,839
1973 TO 1974	-91	-1,443	-1,386	-11,595	15,857	8,366
1974 TO 1975	-32	-402	-1,418	-11,997	12,562	8,461
1975 TO 1976	-29	-732	-1,447	-12,729	25,241	8,797

OFFICER-ENLISTED MAN RATIO

Senator PROXMIRE. I hope you would also take off officers and staff personnel, especially the way you have been doing an excellent job in getting more "teeth to tail," so if you take out the fighting forces you would also take out others.

Secretary SCHLESINGER. We have legislation passed by the Congress, Senator, to permit the Army to select out regular officers. Our problem has been that under the law, a reduction of force resulted in an increase in the officer-enlisted man ratio, despite our attempts to reduce that ratio. We have been reducing officer strength over recent years, but it is a gradual attrition under the law. We can RIF (reduce in force) Reserve officers, but we have RIFed so many Reserve officers in the Army that we are now RIFing Reserve officers who have superb records. At the same time there are regular officers who we are unable to encourage to leave. I think that this is inequitable as well as inefficient.

Senator PROXMIRE. Thank you, Mr. Chairman.

Chairman MCCLELLAN. Senator Schweiker.

Senator SCHWEIKER. I said I would yield to Senator Hruska for a question.

Senator HRUSKA. Just for one question.

BUDGET ALLOWANCES FOR INFLATION

In preparing your proposals in your budget estimates are you allowed to, or is it the practice to anticipate inflation in dollars?

Secretary SCHLESINGER. Yes, sir. This budget has been drawn up on the basis of anticipating inflation. Until this year we were allowed a 3.5 percent rate of inflation only for the major systems. This year we have realistic rates of inflation for major systems as well as for the rest of the procurement accounts. The exception is the operations and maintenance account for which we have no allowance for inflation.

Senator HRUSKA. I recall about 2 years ago, the Administration submitted a "zero-dollar" budget amendment for the defense department. This budget amendment transferred approximately $3.0 billion within the defense budget request. At that time we were told that you were not allowed to anticipate the inflation that would be incurred during the budget year to which we addressed ourselves.

Secretary SCHLESINGER. Yes.

Senator HRUSKA. So this is a change, is it?

Secretary SCHLESINGER. This is a change. In prior years we were allowed a normal 3.5 percent for procurement.

Senator HRUSKA. Totally unrealistic.

Secretary SCHLESINGER. This was only on procurement, and then only for major weapons system, not minor procurement.

Senator HRUSKA. Thank you.

Thank you, Senator.

Senator SCHWEIKER. Mr. Secretary, just following that one point, what is the rate that you are allowing in this budget for outlays?

Mr. MCCLARY. In outlays we are assuming a 9.9 percent inflation factor, and in total obligation authority 8.4 percent.

Senator SCHWEIKER. Mr. Secretary, in your figure of outlays which I believe was 92.8 for this fiscal 1976—does that sound right?

Secretary SCHLESINGER. Yes, if the Congress supports the legislation providing the 5 percent cap on salaries and on retired pay, and for the DoD use of Naval Petroleum Reserve receipts.

Senator SCHWEIKER. On Federal pay.

Secretary SCHLESINGER. On Federal pay and retirement.

Senator SCHWEIKER. On that 92.8 percent how many dollars are involved there from previous authorized obligations that you are spending this fiscal year? In other words, what previously authorized appropriations are in that $92.8 billion figure?

Secretary SCHLESINGER. I would estimate about 40 percent, 30 percent.

Mr. MCCLARY. Not quite that.

Senator SCHWEIKER. It would not be the total though would it?

Secretary SCHLESINGER. No. You are talking about the aircraft or ship contracts that were let.

Senator SCHWEIKER. You are talking about the hardware.

Secretary SCHLESINGER. Yes; the procurement account is very heavy in prior year appropriations. The R. & D. account is much less so, and the operations and maintenance account least of all.

Mr. MCCLARY. Let me give you that specifically. Of the $92.8 billion, $69.2 billion will come from the 1976 authorizations; $14.4 billion from 1975 programs; and $9.3 billion from 1974 and prior.

SOVIET MANPOWER ON CHINESE BORDER

Senator SCHWEIKER. All right.

Thank you, Mr. Secretary.

In the figure of manpower of the Soviet Union would you have a rough guesstimate as to how much of their manpower is dispersed along the China border?

Secretary SCHLESINGER. Yes; they have approximately 40 divisions along the Chinese border, and it represents about 400,000 men, as I recall it.

Senator SCHWEIKER. How many men would that be?

Secretary SCHLESINGER. That is approximately 400,000 men, which includes the divisions and support units.

INDEPENDENT EVALUATION OF WEAPON SYSTEMS

Senator SCHWEIKER. All right. A while back, as I am sure you are well aware, the Fitzhugh Commission had recommended a procedure for solving some of the conflicts in weapon systems by having a Deputy Secretary of Defense for Evaluation and putting under him some of the—well, a good portion of the evaluating systems to get a direct pipeline to you and to give a little more objective interpretation of a conflict between weapon systems and commitments of resources.

I assume that concept was never adopted, but I just wonder what progress we might be making in this area to at least initiate the idea of some direct line to you to make judgments about conflicting systems and to give objective analysis of where our best buys are?

Secretary SCHLESINGER. As you know, part of that has been implemented in the establishment of the Office of the Deputy Director of Defense, Research and Engineering for Test and Evaluation. That is

headed at the present time by General Starbird. He is in a position where, on any major issue, he can come in and see me or the Deputy Secretary.

I have been chatting with him frequently lately with regard to the AWACS certification issue, and of course General Starbird would be available to this committee on any of the issues.

Senator SCHWEIKER. How far down the line in terms of evaluation and testing does he have authority under you to make decisions?

Secretary SCHLESINGER. In the area of testing, I think that there has been a very substantial improvement within the service structures in that the services have moved in the direction of establishing independent operational and testing agencies. For example, adequate operational testing must be accomplished before production can start, and that operational test and evaluation now is accomplished in the Army by a dedicated operational test agency independent of the developer, whereas previously that function had been served in fact by the developing command itself, the Army Materiel Command, just the point you were getting at. The Navy and Air Force have established parallel commands and arrangements. The services themselves now have test organizations which, in selecting and deciding on weapons systems or the commencement of production or whether the weapons pass their milestones, have far greater independence. I am encouraged by that trend.

I think that your point is well taken. It is one of the most critical areas, and we must watch it carefully.

Senator SCHWEIKER. These independent sources, do they have direct responsibility to you, or does it go through the respective service chiefs because this was sort of a key recommendation of the Fitzhugh Commission?

Secretary SCHLESINGER. Within the services it goes to the service chief, or to the service secretary. The Office of the Deputy Director of Defense Research Engineering for Test and Evaluation in the Office of the Secretary of Defense reports to me. We are trying to strengthen the independence of the testing function both within the services and outside the services.

General BROWN. I would add, Senator, if I may, that one of the key recommendations of the Blue Ribbon Report was to divorce the man who established the testing requirements from the fellow who was doing the development, for example, the developer should not do the testing. That has been complied with in all the services.

For instance, in the Air Force, the Tactical Air Command now looks to see whether a tactical air weapon system produced by the Systems Command fills the bill. The Systems Command does not make that report, and the report goes directly to the Chief of Staff. In that sense we have complied with the Blue Ribbon Report.

U.S.-SAUDI TRAINING AGREEMENT

Senator SCHWEIKER. I wonder, Mr. Secretary, if you want to comment on the recent report about the Defense Department training men for Saudi Arabia, the security guards for oil fields?

Secretary SCHLESINGER. Well, I think that circumstances were simply overblown in the press. As you will recall, in April 1974 Secre-

tary Kissinger entered into an agreement with the Government of Saudi Arabia to establish panels of "consultation" concerning economics, technology, security questions, and industry.

At that time this action toward improved relations with the Saudis was warmly accepted. In pursuing the security relationship with the Saudis, a joint panel was established to suggest improvements in the capability of the Saudi armed forces over a period of time.

The particular contract that you refer to is a contract for strengthening the National Guard—that is, the local militia in Saudi Arabia—and a number of Americans would be going over there to train them. This is funded by Saudi Arabia, and handled through the Department of Defense. There is no cost to the United States. There is no relationship between the strengthening of the National Guard and an intent to protect the oil fields.

I think that somebody in the press imaginatively tied those two things together, but this is just an outgrowth of that longer term relationship that was entered into in 1974.

Senator SCHWEIKER. If war should break out there, would this not possibly put us in a position of having our people opposing each other on both sides of the war, and isn't that rather an unusual position to be in?

Secretary SCHLESINGER. I wish it were that unusual. Since the United States is in the position of providing assistance to many nations around the world, such a hypothetical possibility is created. I think this is a question of the military balance between ourselves and the Soviet Union and her allies. At the present time we are providing technology of various sorts to the Soviet Union. The same kind of fundamental question arises there in the event of hypothetical conflicts.

We can say that the probabilities of anything of the sort that you have suggested occurring are so low that we do not think the anticipated increase in the Saudi military strength is disadvantageous to the United States.

As I indicated to Senator Proxmire earlier, a general strengthening of the security in the Persian Gulf area is regarded as being in the interest of the United States.

Senator SCHWEIKER. Isn't there another element here that physically Americans are being there? I mean you are quite right that we have supplied technical assistance and military sales, but it seems to me we are putting American people into the Middle East in this way.

Forgetting whether we are on one side or both sides, I think that in itself would just raise some problems.

Secretary SCHLESINGER. That is not unique. We have military advisory groups in 40 or 50 countries, and we have industrial contractors in many of these countries. While the presence of Americans is a novelty, I think, in some of the countries in the Middle East, it is not a novelty with regard to American policy.

Senator SCHWEIKER. That is all I have, Mr. Chairman.

Thank you.

Chairman MCCLELLAN. Senator Stevens.

Senator STEVENS. Following up that question, Mr. Secretary, my memory is that Americans are running all those oil fields over there for the Saudis anyway, aren't they?

Secretary SCHLESINGER. Yes.

Senator STEVENS. And that we have quite an American presence there in the civilian sense.

Secretary SCHLESINGER. Yes.

NO MANPOWER REDUCTION WITH 14-DIVISION FORCE

Senator STEVENS. Senator Proxmire asked you about the figures for the 14-, 15-, and 16-division breakdown. When you give that report about the division strength, could you give us the manpower involved at those levels? We presently have 13 divisions, 13½ divisions, and you project going to 16 as a result of the savings in reductions in headquarters. I wonder what would happen if the Congress decided that it was going to be 14 divisions, for instance? Would that be an automatic reduction on the man strength of the Army?

Secretary SCHLESINGER. No; it would not be an automatic reduction. We are accomplishing at the present time not only the reduction of headquarters personnel that you referred to, but also the reduction of many military capabilities which we regard as less important than the three new divisions. The number of men included in this reallocation of manpower spaces is relatively small in relation to total Army strength.

Senator STEVENS. But my question is—and Senator Proxmire anticipates a debate on the number of divisions that the Army should have—should the Congress decide that you would have 14 divisions, for instance——

Secretary SCHLESINGER. I think the Congress should not decide that.

Senator STEVENS. I would hope not too, but let's presume for the purpose of the question that the Congress might make that decision. What would happen to the manpower involvement in the 15 and 16 divisions under current law?

Secretary SCHLESINGER. Nothing.

Senator STEVENS. Would you still have some 785,000 ceiling?

Secretary SCHLESINGER. Yes; we would still have 785,000 under current law. One reason, I would stress that it would be ill-advised to disallow our program for 16 divisions is that the Army has worked hard to acquire the greater efficiency of 16 divisions while holding their total strength constant. This is what we want and, in my judgment, this is what the Congress has wanted. If the incentive of constant resources were to be destroyed, then the services would not operate in the way the Congress desires.

By creating the three new divisions the Services are doing what the Congress wants, which is to increase combat strength with no additional resources. If the reward for that is a reduction in resources, the Services are bound to be recalcitrant. That is just the nature of all bureaucracies, it seems to me. We want to organize units in terms of total efficiency.

One of the reasons, in my private judgment, we have developed so much in the area of support is that in the early 1960's the Services were directed as to what their force structure would be irrespective of the expenditures. Therefore they began to develop a more and more massive support structure. Also, one of the reasons that the Services, I think, moved to more expensive procurements was that they were told

they could have 15 carriers and 16⅓ divisions, and 23 air wings. In the early 1960's there was no limit on budget expenditures and as a result, the Services quite sensibly, from their standpoint, began to drive up per unit costs.

What we are trying to do is establish a firm budget ceiling for the Services—firm manpower ceilings—and create in them the incentives to reduce per unit costs. An action of the sort that you specify would once again have the effect of driving up per unit costs and at the same time remove all Service incentives to achieve greater efficiencies.

The 16 divisions force is the notable case, in recent years, it seems to me, of the Services doing exactly what they should, and we don't want to nip that one in the bud.

Senator STEVENS. The Chairman mentioned in his opening statement the question about whether there were any expenditures I believe to offset the recession designed as pump-priming devices. Could I ask the contrary of that. On the other side, are there any provisions in this budget that would automatically reduce manpower either on the civilian or military side of the Department of Defense? Is this budget revision a reduction anywhere in that manpower?

Secretary SCHLESINGER. Sir, one of the adjustments to reduce expenditures that we have made has been to call for a 40,000-man reduction—approximately 30,000 of it in military strength, 10,000 in civilian strength. So there is a reduction in civilian and military, manpower built into the budget request.

FIVE PERCENT CEILING ON SALARIES

Senator STEVENS. Have you projected what would happen if the Congress does not go along with the 5-percent ceiling on pay, both active and retired pay, and at the same time that the Department has been told to eat the increases?

Secretary SCHLESINGER. Well, I did cover that at the outset, Senator. As I indicated, the request by the administration—if Congress were not to go along with the 5-percent cap—would be in excess of $106 billion in TOA and $95 billion in outlays.

We would expect, if Congress does not take the action that the President has requested, that the adjustment would be made with regard to manpower costs. If we are asked to absorb those additional manpower costs at the expense of equipment and what not, we will drive down once again O. & M. expenditures, R. & D. expenditures, and procurement in a way that is most unproductive.

So we would expect, just as all the other departments and agencies would, that if the Congress does not go along with the President's request, we would have a budget adjustment upward—in this case $1.8 billion.

Senator STEVENS. I see.

U.S. EXPENDITURES SINCE VIETNAM ACCORD

My last question is, do you have a figure on how much money we have spent in South Vietnam support since the accord with Hanoi?

Secretary SCHLESINGER. I can give you the runout on the following chart:

MILITARY APPROPRIATIONS FOR VIETNAM, LAOS, AND THAILAND FY 1966-FY 1976 ($ Millions)

Fiscal Year	New Obligational Authority	Overall Congressional Ceiling[e/]	Amounts Reported to Congress
1966	218.1[a/]	–	415.2
1967	1,496.0	–	1,356.7
1968	1,591.7	–	1,487.6
1969	2,130.4	–	2,237.1
1970	2,093.4	– [b/]	1,878.3
1971	2,325.9	2,500.0	1,941.9
1972	2,584.1	2,700.0[c/]	2,417.4
1973	2,562.9	2,735.0	2,713.1
1974	907.5	1,126.0	1,122.6
1975	700.0	700.0	–
1976[d/]	1,293.0	1,293.0	–

[a/] Does not include $620.4 million transferred from the Military Assistance Appropriation.

[b/] $2,500 million ceiling in Authorization Act, but none in Appropriation Act which was controlling.

[c/] Effective April 1, 1972 increased from $2,500 million to $2,700 million.

[d/] FY 1976 President's Budget.

[e/] Separate Appropriation commencing with FY 1975.

Secretary SCHLESINGER. If you can read that chart, Senator, if you take the congressional ceiling, which is the middle column, you have the best indication of what we have spent. Since the accord was signed in 1973, we spent about $2.7 billion, which was allowed that year by the Congress. The subsequent year, as you will recall, we came in with a request of about $1.7 billion. The Congress suggested the ceiling of $1.126 billion. Then last year Congress reduced that ceiling to $700 million. In addition, Congress abolished all prior funds, so the funding was particularly hard to live with in fiscal year 1975. The request for fiscal year 1976, aside from prior year funding, is $1.3 billion.

So all in all, one can say that the sum amounts to about $4.5 billion, depending on the initial rate.

MAINTENANCE OF ONE-TO-ONE REPLACEMENT EQUIPMENT

Senator STEVENS. Could you give us the figure on what it would cost to maintain the one-to-one replacement of equipment in Vietnam at the time of the accord?

Secretary SCHLESINGER. Yes, we can give you that figure. It would be a very high figure.

Senator STEVENS. Thank you very much.

[The information follows:]

ONE-FOR-ONE REPLACEMENT COSTS FOR VIETNAM

One-for-one replacement covering the two years since the accord would cost approximately $1.4 billion. This total includes replacement of major items of equipment which have been destroyed in combat or have worn out, and ammunition which has been consumed during the period. The cost of maintaining stocks

of repair parts, secondary items and POL, as well as the cost of numerous other goods, services and delivery costs is excluded. For example, so far in FY 1975 the $700 million in appropriated funds have been allocated as follows: $268 million for ammunition; $74 million to pay for delivery costs; and $358 million for spare parts, POL, technical assistance, medical supplies, and miscellaneous costs.

The cost of maintaining one-for-one replacement in the future would depend on the intensity of Communist offensive activity and would be affected by rising costs.

DOD CHEMICAL WEAPON PROGRAM

Chairman McCLELLAN. Is there any chemical weapon program in fiscal 1976?

Secretary SCHLESINGER. Yes, sir.

Chairman McCLELLAN. Is there any which is inconsistent with the U.S. ratification of the 1925 Geneva Protocol, or 1972 Convention on Biological Weapons?

Secretary SCHLESINGER. No, sir, not in the judgment of our lawyers.

Chairman McCLELLAN. Not in the judgment of your lawyers. What you have asked for would in no way conflict with those agreements?

Secretary SCHLESINGER. That is correct, sir.

REDUCTIONS IN NATO DEFENSE EXPENDITURES

Chairman McCLELLAN. How do the announced reductions in defense expenditures of the United Kingdom and the Netherlands impact on the number and types of forces that these countries are able to contribute to the NATO alliance? Are other NATO partners now contemplating reductions in their defense spending and force structures?

Secretary SCHLESINGER. The reductions announced by the United Kingdom are "reductions" only from a planned expansion of their forces that was adopted under the Conservative government; thus, one is not talking about a reduction in real expenditures. There is a reduction of some manpower, but overall their expenditures will continue to rise. They are spending in NATO, in relation to their GNP, a little bit more this year, I believe, than we are spending. The main point is that the forces directed toward their NATO commitment are barely affected.

Chairman McCLELLAN. Barely affected?

Secretary SCHLESINGER. Barely affected. They have reduced somewhat ancillary forces directed toward the Mediterranean. Their forces for the NATO central region remain intact; they will, in fact, be improved.

[Deleted.]

To my knowledge, the other countries are not planning reductions. Many of the countries are planning increases in their defense spending in constant prices—excluding inflation. Over the past several years, most of the Allies have achieved increases in their defense spending in constant prices while the United States has been declining.

Chairman McCLELLAN. I think we must make them understand that if they are going to reduce their defense spending, they cannot expect us to pay the difference. Our fiscal situation is such that we cannot assume their obligations, and we must let our NATO allies know what is expected of them.

Secretary SCHLESINGER. Absolutely, Mr. Chairman. I think General Brown would testify I am an excellent missionary in that regard.

General BROWN. Yes, sir.

PROSPECTS FOR MBFR

Chairman MCCLELLAN. All right. The administration has been engaged in or contemplating mutual and balanced force reduction negotiations with the Warsaw Pact nations for 5 or 6 years. The talks have been underway since October 30, 1973. Can you give us any idea when an agreement may be reached, or what progress we are making? Can we anticipate an agreement at any reasonable time in the future?

Secretary SCHLESINGER. I would hope so, Mr. Chairman. Basically, when they began, the tone of those talks was good; they were better than the current round of SALT. Then in the spring of last year MBFR talks grew very chilly. Whether it was due to what the Soviets perceived to be the domestic situation in the United States, or whether they had decided that they were not going to do anything until they had an agreement on SALT, I do not know, but they turned quite chilly last spring. Lately, they have improved, and [deleted.]

Chairman MCCLELLAN. [Deleted.]

Secretary SCHLESINGER. [Deleted.]

Chairman MCCLELLAN. [Deleted.]

VIETNAM SUPPLEMENTAL

Chairman MCCLELLAN. Will you briefly justify the supplemental request for an additional $300 million for military assistance to South Vietnam in fiscal year 1975. Is the amount related to specific requirements, or merely that amount of the $1 billion authorization which was not appropriated? In other words, let us understand why the full amount now must be expended instead of $700 million.

Secretary SCHLESINGER. Yes. I would be delighted. I will do that for the record.

Chairman MCCLELLAN. All right.

[The information follows:]

JUSTIFICATION FOR SUPPLEMENTAL REQUEST

The $700 million appropriation does not meet the requirements for essential consumable items such as ammunition, petroleum products, spare parts, and medical supplies. In the face of increased North Vietnamese pressure, stockpiles have been drawn down and the South Vietnamese combat capability gradually undermined. The present level of support has imposed serious constraints—for example, ammunition is rationed to 65% of the level normally necessary for current combat levels and fuel conservation measures allow the South Vietnamese Air Force to fly at only 50% of its potential. A defensive posture has become necessary. The South Vietnamese perceive the necessity to husband resources for future large scale attacks and as a consequence tight control and rationing have stifled initiative and aggressiveness. The $300 million is needed now just to purchase consumables. It still represents an austere level of support and, as was the case with the $700 million, will not provide any major items of equipment such as tanks, airplanes, trucks or artillery pieces. While the $300 million does represent the difference between the $1 billion authorized and the $700 million appropriated, it is, as President Ford stated, the minimum amount necessary to provide the South Vietnamese with the supplies they need for their self defense against the current level of North Vietnamese pressure, and certainly does not meet all of their needs.

NECESSITY OF SOUTHEAST ASIA SUPPLEMENTAL

Chairman McCLELLAN. Just what do you think will happen in Southeast Asia if the additional $300 million is not provided in fiscal 1975? I think you better answer that one now if you can.

Secretary SCHLESINGER. It will result in a weakening of the Saigon government as a result of not having the necessary funding for ammunition. They must ration ammunition very strictly. The result of that is the North Vietnamese are destroying pacification in the countryside. There will be no immediate fall of the South Vietnamese position, but there will be a gradual erosion of their degree of control in the countryside, just as in the 1960's.

To the extent that we provide them with the additional ammunition that can reverse this erosion process they will be better off. The longer term trends, of course, reflect what the Congress does with our request for approximately $1.3 billion next year.

Senator STEVENS. Would the Chairman yield right there?

Chairman McCLELLAN. Yes.

RF/PF WEAPONS DISTRIBUTION

Senator STEVENS. My memory is there is a substantial amount of individual weapons in the hands of civilians in South Vietnam. Is there a breakdown on how much of this would go to replenish ammunition or equipment for the nonorganized military as far as South Vietnam is concerned?

Secretary SCHLESINGER. Are you referring to RF's and PF's?

Senator STEVENS. Yes.

Secretary SCHLESINGER. We can give you that breakdown.

Senator STEVENS. I would appreciate that.

[The information follows:]

RF/PF USE OF HEAVY EQUIPMENT

The Regional Forces/Popular Forces (RF/PF) should not be thought of as unorganized civilians. They are in formed units, have shown an increasing amount of discipline and mobility, and, in the face of recent increased North Vietnamese pressure, have borne a significant share of the defensive operations burden.

The 483,000 RF/PF forces received 41,459 (30.7 percent) of the 134,787 short tons of ground ammunition issued from July 1974 to January 1975. The 395,500 ARVN regular forces received the balance of the ground ammunition, 93,328 ST (69.3 percent).

Secretary SCHLESINGER. If I may, Senator Stevens, while the RF and PF are capable of dealing with ill-equipped Viet Cong forces, now that the North Vietnamese are taking villages with tanks and heavy equipment, they are no longer as effective.

General BROWN. I might also answer that the great majority of weapons and ammunition in the hands of the RF and PF are small arms and machine guns, and light mortars; most of the artillery is in the hands of the regular force.

Senator STEVENS. The antitank guns too?

General BROWN. No, I think that is spread around, but they are small—LAW's and 57mm recoilless rifles.

Senator STEVENS. Thank you, Mr. Chairman.

OUTYEAR PROJECTIONS ON SOUTH VIETNAM

Chairman McCLELLAN. Mr. Secretary, the fiscal year 1976 budget includes $1.3 billion for South Vietnam, an increase of $600 million above the fiscal year 1975 appropriation. What do you expect the level of U.S. military assistance to South Vietnam to be for the next 5 to 10 years? How long do you think the United States must provide military assistance in such quantities to South Vietnam?

Secretary SCHLESINGER. That is a speculative question. My answer to that question would be speculative, Mr. Chairman, because it depends on the changes in attitude in Hanoi. It is fully conceivable that if the United States indicates its determination to provide the military resources necessary for South Vietnam's survival that the balance of power in Hanoi will shift toward those who favor indigenous development within North Vietnam, and as a result the war in the South will taper off. I cannot predict what they would do.

It is possible, of course, that they will be obstinate and maintain a high level of conflict in the South for many years to come. If the United States were to terminate its aid, say, 3 years from now, as has been suggested, under those circumstances South Vietnam would be placed at a very severe disadvantage.

Chairman McCLELLAN. If it should terminate even 3 years from now, South Vietnam would be at a severe disadvantage?

Secretary SCHLESINGER. If Hanoi is unwilling to change its objectives and has capacity to wage warfare.

Chairman McCLELLAN. In the justification for hoping that North Vietnam will change its objective——

Secretary SCHLESINGER. I think so, Mr Chairman. May I suggest that on that subject that you get Mr. Carver, of the Central Intelligence Agency, down here for a briefing. [Deleted.]

Now it is those internal political factors in Hanoi that will determine their ultimate objectives. If they are persuaded that they are not going to be able to take over the South or will wreck the North Vietnamese society in the process—and they have done substantial damage to North Vietnam in recent years: economic performance is down in the North, morale is down in the North—then they will be willing to taper off the conflict. I don't think we are ever going to get a formal end to the conflict.

Chairman McCLELLAN. Well, doesn't the fact that they are now accelerating activities and combat strength in South Vietnam reaffirm their original intention and plan to take over the country?

Secretary SCHLESINGER. It is fully consistent with that, Mr. Chairman, but after the signing of the agreement in 1972 presumably the North Vietnamese had the same motivations, but at that time we were providing enough ammunition to the ARVN so that the ARVN possessed the initiative and was not on the defensive. Under those circumstances, the North Vietnamese were beginning to look towards development in the North. It is only in the last year when ARVN has had insufficient ammunition and has been back in a defensive posture, that the North Vietnamese have seen the potential payoff of major attacks.

If ARVN is in a position to terminate those attacks, to defeat those

attacks, I believe the North Vietnamese will gradually decrease the conflict. But the ARVN must have enough ammunition to do so; otherwise, they can not do so.

AID TERMINATION SOUGHT

Chairman McCLELLAN. I think, Mr. Secretary—I may be speaking only for myself—but I think this would have an appeal to others. If we could have a reasonable hope or expectation, or certainly if we had the assurance that by providing the additional ammunition they need or supplies or war materials that they need during another 3-year period, that we would save South Vietnam from the conquest of the enemy, I think most Members of Congress would want to go on and do it.

But what is giving us a lot of concern is that again and again we keep providing these armaments for the defense of South Vietnam, and instead of diminishing the strength of the opposition it is increasing, and the strength of South Vietnam continues to weaken. At least these are the indications from the progress and success made by the North Vietnamese since the signing of the agreement.

In other words, are we expected indefinitely to provide South Vietnam with the weapons she needs to defend herself, or is there to be an end to it? I think if we see any light at the end of the tunnel, so to speak, maybe after all of the sacrifices we have made, we would want to see it through.

Having brought our troops home, and had what we thought to be a cease-fire agreement, we find the war not only continuing but also accelerating at this time. I am sure the American people don't want to send any more forces back over there.

Where are we? Are we simply pouring money down the drain without any hope of anything other than prolonging the day of conquest over there?

Secretary SCHLESINGER. I don't believe so, Senator. I think that there is a significant probability that South Vietnam, with adequate support, can survive. When I talk of adequate support, we are talking about 2 percent of the level of expenditures that we were spending at the peak of the war. Two percent. It is costing us a little bit over a billion dollars a year, whereas the expenditures in 1968 were running over $30 billion a year, without taking into account the increases in price that have occurred since that time. So we must remember that there is a substantial reduction to the United States in the cost of the war in financial terms, and a much greater reduction in the sense that American forces have been withdrawn.

We did give our pledge to the South Vietnamese. Across the board—85 to 90 percent of the population—do not want to be governed by North Vietnam, and more specifically by the Communist regime there. The weakening of South Vietnam in the last year, I think, is attributable to the shortages of supply that they have wrestled with. They have not been in a position in which they could move out on the offensive. That has had a detrimental effect on the morale of the ARVN forces, not only on their firepower.

THIRD COUNTRY ASSISTANCE TO SOUTH VIETNAM

Chairman McCLELLAN. Mr. Secretary, is any other country in the world now supporting South Vietnam or giving assistance?

Secretary SCHLESINGER. Yes, sir, I think there are a number of countries. Most of it is economic assistance, however. The Japanese, for example, are granting economic assistance.

Chairman McCLELLAN. No other country gives any military assistance?

Secretary SCHLESINGER. No, sir. I think that is a case in which the presupposition is that the United States will do it.

Chairman McCLELLAN. After we have had so much of that for the last generation, our allies say they will let the United States do it. When it becomes costly or becomes a burden, they let the United States carry it. That is a situation that has got to change.

Secretary SCHLESINGER. It is not universal. It is typical, but it is not universal. Some of our allies are doing a great deal but they are not numerous.

Chairman McCLELLAN. They are the exceptions?

Secretary SCHLESINGER. Yes.

Chairman McCLELLAN. All right.

Senator YOUNG. I have two or three more questions.

SOUTH VIETNAM AID IN DOD BUDGET

The total cost of helping South Vietnam, what part comes out of the defense budgets and our foreign operations?

Secretary SCHLESINGER. This year, once again, we are requesting the military assistance for South Vietnam in the Defense budget; that is $1.293 billion. Economic assistance is being requested in addition to that, and I don't remember whether it is $600 or $700 million. I will supply that for the record, but the total aid request would be on the order of two-thirds military.

[The information follows:]

The Department of State has not yet finalized the Worldwide Economic Assistance budget request. That information will be supplied by the Department of State when it becomes available. Preliminary information confirms that the range of economic assistance previously cited will approximate the final budget request.

IMPACT OF CAMBODIA ON SOUTH VIETNAM'S SURVIVAL

Senator YOUNG. My thoughts are much the same as the Chairman's. If there was hope for the future, it would be much easier to give them assistance, but now you think that in 2 or 3 years they would be in a much stronger position and not go down the drain.

Secretary SCHLESINGER. I think that is right. If they are amply funded and can avoid this process of erosion, that is going to affect the morale of the North Vietnamese just as it did in the first year after the cease-fire. The deterioration in South Vietnam has come only in this last fiscal year as a result, I believe, of the ammunition restraints that have been imposed on them.

Senator YOUNG. It seems to me the survival of South Vietnam would depend upon what happens to Cambodia. If Cambodia becomes a Communist country, it would make it more difficult for South Vietnam.

Secretary SCHLESINGER. It would be more difficult. As you recall in the late sixties and in early 1970, this issue was of deep concern. Cambodia is less significant from the standpoint of the survival of South Vietnam now because the North Vietnamese have established a logistics route that is not dependent on anything that the Cambodians do. At the present time the North Vietnamese have occupied much of eastern Cambodia, and they use it freely; so what happens in Phnom Penh, while significant in itself, does not necessarily prove to be that weighty with respect to South Vietnam. The U.S. Ambassador in Saigon does not believe that events in Cambodia would be a determining factor in the survival of South Vietnam.

U.S. AIRLIFT INTO CAMBODIA

Senator YOUNG. What chance would Cambodia have of survival if their supply is cut off by the Viet Cong or North Vietnamese?

Secretary SCHLESINGER. Virtually none.

Senator YOUNG. According to the news story we are providing airlift there now.

Secretary SCHLESINGER. Yes, but it is a minimal movement of ammunition. They cannot survive without fuel and food, and the provision of these supplies depends on having an open route into Phnom Penh. At the present time there is no route that is open. We expect to move a convoy up the river on the 18th of February, and hope that it will get through.

Senator YOUNG. What assistance, if any, do we provide these convoys?

Secretary SCHLESINGER. Only in the sense that we provide the supplies.

General BROWN. Technical suggestions as to convoy tactics are provided out of country.

Secretary SCHLESINGER. There are no U.S. personnel involved in the convoys. It is U.S. material that is being moved and U.S. money that funds the ships, but there are no American military personnel involved.

Senator YOUNG. How about the airlift that is going on now in Phnom Penh?

Secretary SCHLESINGER. The airlift is being expanded from a level of ten to 20 C–130 flights a day. These are U.S. Air Force aircraft that have been turned over to a private contractor in the area on a Government furnished equipment basis. He does not use military personnel. We got the U.S. military personnel out of the business of flying into Phom Penh approximately 6 months ago.

Senator YOUNG. Can we legally provide that support? Are there restrictions placed on it?

Secretary SCHLESINGER. Yes, sir, it is legal. I think that when we told the Congress we were doing it, it was a welcome move because we once again were reducing one of the elements of the involvement of the U.S. military services in Southeast Asia.

Senator YOUNG. No further questions.

Chairman McCLELLAN. Any further questions, Senator Schweiker?
Senator SCHWEIKER. No. Thank you.

CONCLUDING REMARKS

Chairman McCLELLAN. Mr. Secretary, thank you and General Brown and the members of your staff who appeared here today. I think we have got off to a good start on the hearings this year and the explanation or the demonstration of what is needed for the military is quite impressive.

I have many other questions which, due to the pressure of time, I cannot ask today. I shall submit them to you to be answered for the record.

PREPARED STATEMENT

General Brown, do you have a prepared statement?
General BROWN. Yes, sir.
Chairman McCLELLAN. Very well. We will put it in the record today, and then we may call you back for questions.
[The statement follows:]

Mr. Chairman and members of the committee, I welcome this opportunity to discuss the military posture of the United States and to analyze with you the challenges which may confront our Nation over the coming five or six years to which our budget actions will provide the means for response. Since we no longer possess that predominance of strategic power, which, for over a quarter of a century, has protected the peace of the free world and the security of the United States, this task takes on added complexity and continues to be of undiminished importance.

I would like to share with you two key judgments that are basic to this report:

First, the strategic balance today remains in dynamic equilibrium. By some indicators the USSR has a numerical edge which is offset by the United States' qualitative advantage. The USSR, however, has embarked upon a massive program of major strategic force improvements and deployments which, if not constrained by the negotiating process or balanced by major U.S. arms initiatives, will result in serious superiority over the United States in the years ahead.

Second, across the spectrum of warfare from strategic exchange to the lowest intensity of conflict, our military forces, together with those of our allies, possess today the capabilities to meet any foreseeable provocation with precision, discrimination, and restraint appropriate to the circumstances. We currently retain but must seek to improve the ability to employ a range of options, preferably conventional, in any confrontation when our essential national interests are at risk.

Our present strength is not so sufficient that we can be complacent. Our important interests can be threatened in the years ahead unless positive steps continue to improve the quality of our forces.

There is mounting evidence that the Soviet Union is pressing forward vigorously with massive programs for near-term deployments involving every facet of offensive strategic power. At the same time, it is improving appreciably, but at a more gradual rate, capabilities for strategic defense and development of advanced technology appropriate to the entire strategic equation.

The United States alone cannot provide the forces necessary to counter every military threat to our interests. We have only limited exclusive interests notwithstanding our need to have access to free markets and non-politicized supplies of raw materials, including oil. Our major responsibilities likewise must be shared. Increased cooperation and participation by our allies, including the provision of base rights and facilities, depend to a large measure upon our ability to demonstrate as well as to assert our determination and capability to honor our assurances of support. Security assistance plays a major role in the effort by contributing to the maintenance of stability in Northeast Asia, Southeast Asia, and the Middle East; encouraging our friends and allies to become self-reliant,

thus decreasing the probability of direct U.S. military involvement; and ensuring continued U.S. access to key bases and facilities.

In the long run, the only security we can reasonably hope to obtain flows from the deterrence global collective security provides.

I conclude with two brief observations.

The incentives for arms control as a means for fulfilling national interests have been growing in both the Soviet Union and the United States over the last five or six years. Their scope is broad; their impact, manifest. Soviet purpose is not necessarily always benign. A U.S. strategic force, stable in shape and limited in size, is, of necessity, in the Soviet Union's best interests. Each step we take in this direction, therefore, must be carefully examined to ensure an equal U.S. interest is served. The political systems of our society ensure open compliance with such agreements. We, of course, must take risks for peace, but these risks must be prudent. Arms control is a means, not an objective. The objective is peace.

The Armed Forces of the United States are capable today of fulfilling their Constitutional obligation to provide for the common defense. They will perform as the Nation directs and with tools the Nation provides. These tools must continue to be equal to the task.

Mr. Chairman, I look forward to presenting the details of this assessment in Executive Session and ask that my unclassified posture statement be inserted at this point in the proceedings.

POSTURE STATEMENT

Mr. Chairman and Members of the Committee:

I welcome this opportunity to discuss the military posture of the United States and to analyze with you the challenges which may confront our Nation over the coming 5 or 6 years to which our budget actions now provide the means for response. Since we no longer possess that predominance of strategic power, which, for over a quarter of a century, has protected the peace of the free world and the security of the United States, this task takes on added dimensions of complexity and continues to be of undiminished importance.

In November of last year at Vladivostok, President Ford and General Secretary Brezhnev established a framework for a future Strategic Arms Limitation Agreement. This framework is a significant milestone toward improving relations between the US and the USSR, reducing the risk of war, and enhancing the chances of world peace. The framework not only limits the parties to an equal aggregate level of 2400 strategic vehicles, 1320 of which may be MIRVed, but also removes from the already complex bilateral negotiations the thorny multilateral issues of Forward Based Systems and Soviet claims to compensation for allied strategic systems. Long and difficult negotiations with the USSR face us, both in structuring the agreement and in further steps toward reducing the burden of continuing strategic armament investments which the framework envisions. The success or failure of these negotiations depends in large measure on our ability to demonstrate our determination to maintain military capability -- second to none -- across the total spectrum of foreseeable challenge. The USSR recognizes that efforts to obtain unilateral advantage are inconsistent with the objectives of reciprocity, mutual accommodation, and mutual benefit to which our nations are pledged. I doubt, however,

that they would reject such an advantage if we, by default, offered it to them.

This, my first Posture Statement, is designed to measure the balance between the capabilities of the United States Armed Forces and the armed forces of our potential adversaries, today and as projected into mid-1980. It is offered subject to the following caveats:

First, neither the size nor quality of a nation's arms provides a complete yardstick of its military power. Fond as we are of totaling up divisions, missiles, aircraft, and ships, this is not the full story. There is, to begin with, the obvious and basic fact that no weapon or system is more effective than the man who bears it or the crew which serves it. More important, however, is the will of the people to make the sacrifices necessary to remain strong and free which ultimately determines the security of a democratic nation. The actions of this Committee and the Congress as a whole are the measures of this indispensable element of national will and responsibility.

Second, the criteria used for this statement are generally the same as those employed by my predecessors -- US force data are extrapolated from the currently projected Five-Year Defense Program. The USSR and PRC data are based upon my analysis of the latest intelligence estimates and projections. There is a degree of uncertainty in any intelligence appraisal. The uncertainty is increased as the estimate moves from current capabilities to future ones, from quantitative to qualitative judgments, and from observable operational matters to concealed research and development.

Third, I share with my predecessors the belief that it would be foolhardy to base the security of the United States on our ability to detect, observe, and interpret the inten-

tions of those who do not necessarily wish this Nation and its people well. "Intentions" are subject to obfuscation and instantaneous change; counter-capabilities require years to develop and maintain. More often than not, political military intentions are, in fact, dependent upon perceptions of future opportunity which, in turn, may be created by a military posture based on misconceived, benign intentions. We may never know what impact the reduction of our troop levels and the statements of our senior leaders may have had upon the North Korean decision to invade South Korea. I would suggest that these factors played a substantial role in the decision to employ North Korea's existing capability. If we measure our strength only against the intentions of our would-be adversaries, we subject our future to their intentions as well. This is a risk I do not feel privileged to take, since I believe the American people demand that we be capable of remaining free and strong without regard to the intentions of others. Therefore, this statement attempts to measure real capability, not perceived intentions.

Fourth and finally, you should be aware that there remains in all comparisons of one nation's military posture with that of another a measure of personal judgment. I have made every effort to produce a strictly objective appraisal. Overestimating the relative strength of a potential adversary may be detrimental to our national security, but not as detrimental as underestimating it. Overestimation undermines the confidence and resolve of our people and our allies in time of crisis, and could itself encourage military challenge to our interests in the world. On the other hand, underestimation of our opponent's strength leads to complacency and a deteriorating will and resolve to pursue the vigorous research and development, force improvement,

and equipment modernization programs necessary to our security. I believe there is a consensus among my colleagues of the Joint Chiefs of Staff on the fundamental aspects of these comparisons, although some may differ in specific details.

Prior to presenting the first set of charts dealing with strategic forces, I would like to share with you 2 key judgments that I have made as a result of marshalling the evidence; synthesizing the data; and analyzing the comparative, but asymmetrical, forces that preparation of this report required:

First, the strategic balance today remains in dynamic equilibrium with the Soviet numerical edge by some indicators offset by the United States' qualitative advantage. The USSR, however, has embarked upon a massive program of major strategic force improvements and deployments which, if not constrained by the negotiating process or balanced by major US arms initiatives, will result in serious superiority over the United States in the years ahead.

Second, across the spectrum of warfare from strategic exchange to the lowest intensity of conflict, our military forces, together with those of our allies, possess today the capabilities to meet any foreseeable provocation with precision, discrimination, and restraint appropriate to the circumstance. We currently retain but must seek to improve the ability to employ a range of options, preferably conventional, in any confrontation when such is necessary to preserve interests indispensable to our Nation.

Our present strength is not so sufficient that we can be complacent. Our important interests can be threatened in the years ahead unless positive steps continue to be taken to improve the quality of our forces. In a very real sense,

we have today an unequaled opportunity, by improving the war-fighting capabilities of our conventional force, to increase substantially our ability to deter aggression and, at the same time, raise the threshold of nuclear conflict. The achievement of these objectives, however, will require not only the capabililty of meeting and defeating direct challenges to our interests and those of our friends and allies on land, on the sea, and in the air, but also a manifestation of a clear and evident resolve to do so. Should we fail to take those steps and to display this resolve, others may be encouraged to abandon reason and risk the peace of the world.

STRATEGIC FORCES

Over the years, the Secretary of Defense and my predecessors have noted that the relative US strategic power had peaked and was on the decline; that we were approaching parity; and finally, that the balance was in dynamic equilibrium. The static measures of relative military strength today remain in rough equilibrium. But in a technological era marked by giant strides in both science and engineering, we must approach the future with firmness and caution -- firmness in our resolve to stabilize the static balance and caution in minimizing the chance of technological surprise.

There is mounting evidence that the Soviet Union is pressing forward vigorously with massive programs for near-term deployments involving every facet of offensive strategic power. At the same time, it is improving appreciably, at a more gradual rate, capabilities for strategic defense and pursuing with firm determination development of advanced technology appropriate to the entire strategic equation.

The Soviet Union's focus is not simply on maintaining the current advantage in terms of megatonnage and throwweight, but it applies as well to accuracy, flexibility, survivability, and MIRVing intercontinental missiles.

At the SS-9 complexes, work is underway which will permit the deployment of the heavier, more accurate, and more lethal SS-18. SS-11 silos have been or are in the process of being prepared for the SS-17 and the SS-19. Both are MIRVed, more accurate, have increased throwweight, and are more survivable than the SS-11s they are designed to replace. The SS-X-16 is judged to have appreciably greater throwweight and accuracy than the SS-13 it apparently will replace. It has many indications of being deployable as a mobile system as well. The SS-7 and the SS-8 appear destined for replacement under the terms of the Interim Agreement by modern, probably improved, SLBMs, perhaps with multiple warheads displaying greater accuracy, although their throwweight and yield are somewhat reduced. These SLBMs will be deployed, not on the modern DELTA submarine alone, but upon a modified "super" DELTA carrying many more missiles than the 12-tube standard Delta. Hardened ICBM launch control facilities have been constructed and the program continues. A new airborne command post is probably operational. The multi-purpose BACKFIRE bomber is entering the operational force. Research and development continues. On the defensive side, the Soviet Union continues to improve the capability of current forces. It is deploying improved equipment such as the MIG-25 interceptor, a product-improved SA-5, and new warning facilities. Research continues on new ABMs. Each of these systems and the US program will now be examined in some detail.

US-USSR ICBM Forces

Placing the ICBM balance in proper perspective requires a brief conceptual consideration of the legal constraints upon ICBMs flowing from the Interim Agreement on Strategic Offensive Arms which, under the Vladivostok framework, will remain in force until October 1977 when the new agreement incorporating relevant provisions will come into effect.

The Interim Agreement prevents the construction of new ICBM fixed, land-based launchers after 26 May 1972, and limited the conversion of the then existing silos to modernization and replacement which would not increase the existing dimensions of land-based ICBM silo launchers more than 10 to 15 percent. The Agreement also prohibits converting any of the ICBM launchers deployed prior to 1964 (e.g., SS-7, SS-8, and TITAN II) or launchers for "light" ICBMs (e.g., SS-11 and MINUTEMAN) into launchers for "heavy" ICBMs deployed after 1964 (e.g., SS-9). The Soviet negotiators refused to agree to a common definition of a "heavy" missile. The United States, however, inserted into the record its understanding that any ICBM having a volume significantly greater than the largest "light" ICBM then operational, i.e., the SS-11, would be considered a "heavy." Other than silo size and the mix of light and heavy missile launchers, there was no limitation on qualitative factors or research, development, or testing.

Chart 1 presents scale drawings and individual characteristics of the US and USSR ICBMs currently deployed or undergoing flight tests.

SS-7 and SS-8

The SS-7s and 8s are both pre-1964 "heavies." Launchers for the 190 SS-7s are deployed at hard and soft sites. The 19 SS-8s likewise are deployed at both hard and soft sites.

COMPARISON OF US AND USSR ICBMs

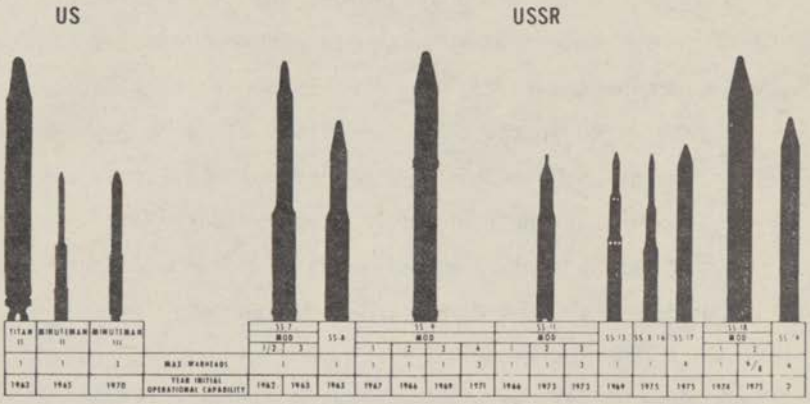


CHART NO 1

You will recall that the Protocol to the Interim Agreement permits the conversion to SLBMs of ICBMs deployed prior to 1964. It is our belief that all 209 SS-7 and SS-8 launchers will eventually be phased out for this purpose. It should be noted, however, that in June 1974, in the Standing Consultative Commission (SCC) established by the SAL undertakings, the US and USSR agreed to notification requirements and deactivation procedures which are to be implemented as replacements are undertaken. No such notification as yet has been given nor has there been compliance with the extensive dismantling/destruction requirements. We have every reason to believe that the USSR will comply when the time for compliance arrives.

SS-9

The SS-9 is a very large liquid-fueled missile with a combination of accuracy and yield giving it a significant capability to destroy silos, command and control facilities, and other hard targets. There are 4 variants of this missile. All have single warheads except the MRV MOD 4,

which has 3. The MOD 3 remains an enigma. It has been tested in both a depressed trajectory and in a fractional orbital (FOBs) mode. There has been no known test of this system since August of 1971, and we entertain considerable uncertainty as to its precise capabilities and the extent of its deployment. Nonetheless, we do not believe it has been deployed to any of the regular SS-9 operational complexes.

MOD 4 flight tests resumed in 1973. None were detected in 1974. There is no known reason for the 1973 resumption of testing, but the absence of any test in 1974 suggests either that the 1973 effort achieved some research and development objectives or that the testing supported a new program which, for other reasons, was discontinued.

There were originally 288 SS-9s deployed. Some of these silos already have been converted to launchers for more advanced missiles and other silos are now undergoing conversion.

SS-11

The two-stage SS-11, operational since 1966, remains the most extensively deployed Soviet ICBM. It has been subjected to extensive troop testing, including over 100 launches from operational silos. There are 3 versions of this liquid-propelled weapon, none of which employ a sufficient combination of accuracy and yield to constitute an effective threat to either MINUTEMAN or any other hard target.

Lack of identifiable operational testing led us to believe that the MOD 2 program had been terminated. Recent firings suggest crew training, and indicate that deployment possibly may have been initiated. Like the MOD 1, this is a single warhead weapon, but it also has been tested with penetration aids designed to assist the penetration of an anti-ballistic missile (ABM) system. The MOD 3 has 3 MRV

warheads. We believe that MOD 3s already have been deployed in the silos under construction at the time the Interim Agreement was signed. The remainder of the force is composed of MOD 1s.

SS-13

The last of the previously displayed Soviet missiles shown on Chart 2 is the SS-13. This missile has been operational since 1969 and utilizes a solid propellant. Sixty of these missiles currently are deployed. It is estimated that it will be replaced by the SS-X-16, a weapon much more accurate than the current system.

SS-X-16

The SS-X-16 utilizes a solid propellant. Apparently there had been some difficulty with this missile. It is believed now that the difficulties have been overcome. In December, 2 SS-X-16s were launched to the Pacific test range -- 4200 nm.

The SS-X-16, with much greater throwweight than the SS-13 and an advanced navigation guidance system, has a post-boost vehicle traditionally associated with dispensing MIRVs, but to date has been tested only with a single warhead. It is expected to replace the SS-13. The single warhead version probably may be operational this year. A MIRV version also may be deployed, but not until at least a year after testing begins. The anticipated SAL undertakings may constrain the MIRVing of this missile.

There is, however, a more serious question associated with the SS-X-16. Circumstantial evidence continues to indicate that this weapon is being developed as a land-based mobile system. Its deployment is probably dependent on the outcome of the more comprehensive agreement under negoti-

ation as well as successful development. Senior officers of the Soviet Strategic Rocket Force have spoken constantly of their mobile and invulnerable force; however, throughout the negotiations leading to the Interim Agreement, the Soviet Union rejected US efforts to ban deployment of land-mobile strategic offensive systems. Since we were unable to achieve any constraint on such systems, the United States delegation stated unilaterally that we "would consider the deployment of operational land-mobile ICBM launchers during the period of the Interim Agreement as inconsistent with the objectives of that Agreement."

It is against this background that the evidence of development and/or deployment should be examined.

Soviet strategic policy is shaped by a maze of complex considerations. There are many competing factors which will determine whether a mobile system will be deployed. Those favoring deployment include: increased survivability; projection of an image of Soviet strength; a hedge against lapse of the Interim Agreement; institutional momentum and sunk costs; and a bargaining chip in future negotiations. The Vladivostok framework will permit the deployment of ground-mobile ICBMs, but they will be included in the 2400 launcher cap. Reliability, accuracy, and availability are reduced considerably by the problems inherent in mobility, while operating costs, including maintenance, security, and positive control, are substantially higher than those associated with fixed deployment.

SS-17

This is a liquid propellant ICBM. The system employs a sabot "cold" launch technique with main engine ignition outside of the silo.

We believe that the missile dispenses 4 MIRV warheads from a post-boost vehicle. It is estimated that the missile will become operational in 1975.

SS-18

The SS-18 is a large liquid propellant "cold" launch ICBM comparable in volume to the SS-9. We have identified 2 variants of this missile. The over 5500 NM MOD 1 system employs a sophisticated version of the traditional Soviet "fly-the-wire" control system with an on-board digital computer. This missile, with much greater destructive power of TITAN and improved accuracy, is capable of destroying any known fixed target. This variant is now operational, while the MOD 2 test program is proceeding at a somewhat slower pace. The MIRVed version has dispensed at least 6 RVs and is believed capable of deploying as many as 8 warheads to a range of 5500 nm. This missile could be operational in 1975.

SS-19

The SS-19 is a "hot" launched liquid propellant missile, which was first tested in April 1973. Its throwweight is 3 to 4 times that of the SS-11, and it is much larger in volume. Its guidance system combines navigation with a refinement of traditional Soviet "fly-the-wire" guidance technique. An on-board computer determines deviation from the pre-programmed course and directs correction to that course or plots a new course to the target depending on the attendant circumstances. It is believed that this missile is capable of delivering, at a range of 5000 nm, 6 MIRVed warheads. The SS-19 now may be starting to be deployed in operational silos.

It was reported last year that there was some question as to whether both the SS-17 and the SS-19 were to be deployed; that it appeared the "17" was the most advanced vehicle; and that neither would be operational prior to 1975. It now appears that we again underestimated the scope and the intensity of the Soviet program.

Follow-on Systems

There are indications from diverse sources which, in combination, lead to the conclusion that the USSR is not completely satisfied despite the significant improvements in force effectiveness displayed by the 4 new systems. It appears that their R&D effort has momentum which will continue.

Launcher Inventory

Projected on Chart 2 are our latest estimates of US-USSR ICBM forces through mid-1975.

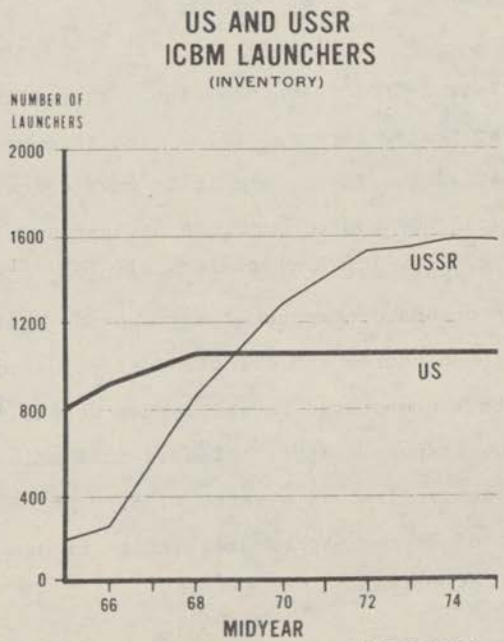


CHART NO 2

In this connection, it is essential that a very fundamental premise be understood. This chart and all those that follow are based upon the assumption that the relevant numerical limitations imposed by the Interim Agreement will remain in effect through October 1977 and that the 2400 and 1320 Vladivostok numbers will be implemented.

This chart and the quantitative ones that follow were developed in order to facilitate measuring the strategic balance. There is a considerable amount of professional judgment involved in both the measurement and the selection of criteria to be measured. I would urge in your consideration of the evidence that weight be given to each element, but that no single element be considered in isolation from the other qualitative and quantitative measures of the balance.

We estimate that the USSR at mid-1975 will have 1591 ICBM launchers.

Whatever the underlying motivation, it does not appear that they expect negotiations to negate their near-term deployment plans. It is our best estimate that the demonstrated rapid modernization of the USSR's ICBM force will continue.

With regard to US ICBMs, I have no dramatic program to present. The Secretary already has described our deliberate and modest force improvement proposals. No new ICBM system is currently under engineering development, although we are seeking to develop the technology which will allow us to improve our posture in a timely fashion if we are unable by negotiations to arrest the strong Soviet underlying momentum short of significant strategic superiority. To this end, we are exploring the opportunity to increase the yield of the MINUTEMAN III warhead. Likewise, we are seeking to develop the technology necessary to increase the number of warheads

on MINUTEMAN III. Furthermore, we expect to continue to search for software and other improvements which further will mature the MINUTEMAN guidance system and improve the system's accuracy. We also are looking at terminally guided maneuvering reentry vehicles (MaRV) for possible deployment with ICBMs and SLBMs.

As you will recall, the advanced ICBM technology program was converted in FY 1974 to an integrated development program, combining system concept studies and technology developments, to provide the basis for a new ICBM should such a vehicle become necessary. The program goals are to enlarge its throwweight over that of MINUTEMAN and to increase its survivability through further hardening or by making the system ground or airmobile.

The last MINUTEMAN I has been deactivated. MINUTEMAN IIs are being replaced by MINUTEMAN IIIs to reach a force mix of 450 MINUTEMAN IIs, 550 MINUTEMAN IIIs, and 54 TITAN IIs.

In FY 1976, we plan to continue the advanced technology approach we have been pursuing with the M-X Advanced ICBM. This initiative will provide the necessary hedge against the unknowns in the strategic environment of the mid-1980s. A decision to enter engineering development of, or to deploy, the M-X Advanced ICBM is several years away; and it will be based upon a continuing assessment of both SALT progress and the state of Soviet military developments.

US and USSR SLBM Forces

Prior to discussing the relative balance of these forces, I should like again to remind the Committee of the basic provisions of the Interim Agreement pertaining to SLBMs and ballistic missile submarines.

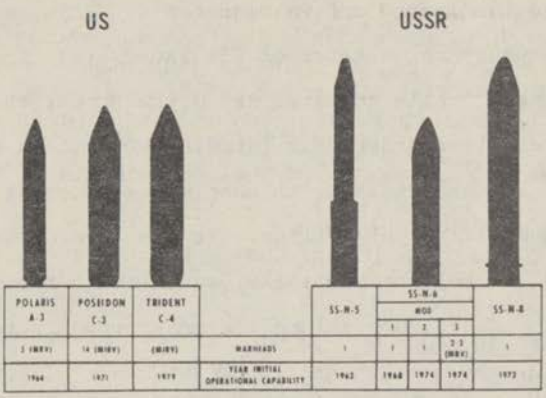
The Agreement limits SLBM launchers and modern ballistic missiles to the number operational and under con-

struction on 26 May 1972. On that date, the US construction program had terminated and we operated 41 SSBNs, each with 16 launch tubes, for a total of 656 launchers. The parties were, however, unable to agree as to the number the USSR would be permitted under this formula. Due to this uncertainty, it was necessary to conclude a Protocol establishing a negotiated artificial ceiling. It was agreed that the USSR "had" 740 ballistic missile launchers on nuclear-powered submarines, operational or under construction, as of 26 May 1972.

Also, the Agreement permitted additions to each SLBM/SSBN force subject to 2 constraints: First, the quantitative growth of the force was conditioned upon dismantling (a) an equal number of ICBM launchers initially deployed prior to 1964 (SS-7s and 8s, TITANs); (b) SLBM launchers on older nuclear-powered submarines (HOTEL and YANKEE, POLARIS/POSEIDON); or (c) "modern" SLBM launchers on any type submarine. Second, there was an absolute upper limit of 62 modern ballistic missile submarines and 950 SLBMs for the USSR and corresponding numbers of 44 and 710 for the United States. Under the Vladivostok understanding, these numbers remain valid only through October 1977, when they will be subsumed within the 2400 total strategic vehicle and 1320 MIRV limitation and will no longer operate as submarine/SLBM limits.

Chart 3 provides a comparison of US and USSR SLBMs. Even though the TRIDENT C-4 is still not operational, I have included it because of its continued importance to the future of the strategic balance.

COMPARISON OF US AND USSR SLBMs


US
USSR
POLARIS A-3
POSEIDON C-3
TRIDENT C-4
SS-N-5
SS-N-6
MOD
1
2
3
SS-N-8
MIRV
MIRV
MIRV

IOC in 1974. The most significant modification was in the propulsion system, resulting in a 300 nm increase in range to 1600 nm. We believe that the SS-N-6 is now capable of reaching any target in the United States from the 100 fathom curve off the coasts of the United States. This missile also is expected to be withdrawn in favor of more effective systems.

The SS-N-6 MOD 3 represents a further development in Soviet missile technology. This 1600 nm weapon carries MRVs and probably reached IOC in 1974. These warheads are not independently targeted. The combination of yield and accuracy for all versions of the SS-N-6 limits its effectiveness to soft targets.

We believe that the current level of 544 launchers for this missile, some of which are MRVs, will remain in the Soviet inventory until a new SS-N-6 sized missile begins to enter the inventory.

SS-N-8

The SS-N-8 has a much greater volume than the SS-N-6 and reached IOC in 1973. It is a liquid-propelled missile capable of delivering a single warhead to a range of 4200 nm. This weapon remains unique in two particulars. It exceeds, by at least 1600 nm, the range of any other SLBM currently deployed by either the USSR or the United States.

US SLBMs

The older, single warhead POLARIS A-2 missile now has been phased out of our deployed inventory completely. Only the POLARIS A-3 (3 MRVs) and the MIRVed POSEIDON C-3 missiles are currently at sea. Both are two-stage, solid-propellant, inertially-guided missiles.

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As you are aware, the TRIDENT C-4 missile has been designed with range characteristics which will permit basing in the United States without sacrifice of alert rate and which will permit an operating area increase of at least 4 times that which we currently enjoy. We are, however, asking to continue a small parallel advanced development effort to provide an option for the early 1980s for major accuracy improvement as well as the advanced development of an evading reentry vehicle (MaRV) as a hedge against Soviet actions to upgrade their SAMs to ABM capability.

The IOC of the new missile is planned for late 1977 and will coincide with the completion of the first TRIDENT submarine. It is on schedule. As you will recall, it is virtually interchangeable with the POSEIDON C-3 and will be backfitted into 10 such submarines beginning in 1979.

Turning now to the launch platforms for these missiles, Chart 4 displays the 4 operational Soviet sublaunched ballistic missile platforms and the US POLARIS/POSEIDON submarine.

OPERATIONAL BALLISTIC MISSILE SUBMARINES

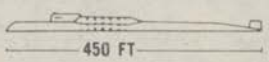
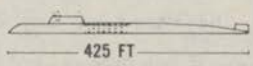
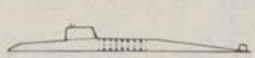
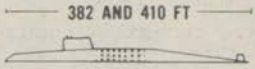
		YEAR OPERATIONAL	PROPULSION		MISSILE
USSR					
D CLASS	 450 FT	1973	NUCLEAR	12	SS-N-8
Y CLASS	 425 FT	1968	NUCLEAR	16	SS-N-6
H CLASS	380 FT	1960	NUCLEAR	3	SS-N-5
G CLASS	320 FT	1960	DIESEL	3	SS-N-4/5
US					
POLARIS	 382 AND 410 FT	1960	NUCLEAR	16	A-3
POSEIDON	 425 FT	1971	NUCLEAR	16	C-3

CHART NO 4

USSR Submarines

GOLF

The GOLF is a diesel-powered submarine and represents the first Soviet submarine class to have been built from the keel up to launch ballistic missiles. The lead ship was completed in 1958 and became operational in 1960. The 20 operational GOLF submarines are not counted in the SAL limits. The class is included here only in the interest of completeness.

HOTEL

Nine HOTEL-class submarines originally were built. This submarine is a nuclear-powered vessel capable of firing 3 SS-N-5 missiles. We believe 8 such units are now operational.

YANKEE

This 428-ft class is similar in concept, size, and layout to the United States' LAFAYETTE-class SSBN with which most of you are familiar. Missile tubes sized for the SS-N-6 are arranged in 2 rows of 8. The lead ship reached IOC in 1968.

There is reason to believe that production of the YANKEE has terminated. These 34 units, with their 544 launch tubes, are expected to constitute the bulk of the Soviet force for some years to come.

DELTA

The latest Soviet SSBN to be deployed is the 450-ft DELTA, which began patrol in mid-1974. This submarine has 12 launch tubes capable of handling the SS-N-8.

Lengthened DELTA-Class Submarines

The Soviet Union has announced that they intend to build to the full extent of the Interim Agreement limits.

We believe that they will build a force close to the 62 modern submarines and the 950 SLBMs allowed. In order to do so, at a reasonable cost, a larger launch vehicle for the SS-N-8 is required. Further, there is evidence that the USSR soon will launch the first of a lengthened version of the DELTA -- a "super" DELTA. This added length will permit the installation of more launch tubes than the standard DELTA.

US SSBNs

The United States currently operates 5 classes of SSBNs. The 2 lead POLARIS classes of 5 ships each, because of their size, cannot be converted to either the POSEIDON C-3 or the TRIDENT C-4 missile. These ships average 14 years old. The other 3 classes are being converted to POSEIDON C-3 configurations. Conversion is complete on all but 8 of these 31 vessels. These, too, will be converted by early FY 1978.

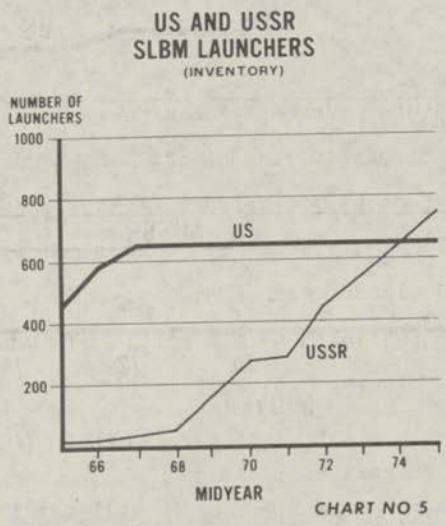
The TRIDENT submarine is designed to employ 24 missile tubes, and yet, will be faster and quieter than the POSEIDON. By the end of 1978, we hope to have TRIDENT operational.

Prior to summarizing the quantitative SLBM balance and estimating the future forces, it is important to note one further qualitative factor bearing on the relative effectiveness of the forces. The readiness of a force, particularly the SLBM force, is related clearly to the capability to maintain the material condition of individual submarines at an acceptable level by regular and timely overhaul. The average period for overhauling a US nuclear submarine is much less than in the USSR.

The current projections of US and USSR SLBM launchers operational or on sea trials are shown on Chart 5. SLBMs on

sea trials are included because of the structure of the Interim Agreement -- the dismantlement of older systems must be initiated when sea trials begin for any new SLBMs.

We estimate that by mid-1975, the Soviet Union will have a total of 700 missile launchers on 52 nuclear-powered submarines. The US force will be composed of 656 missiles on 41 SSBNs.



US and USSR Strategic Bomber Forces

Chart 6 shows US and USSR Strategic Bomber Forces projected through mid-1975.

US Bombers

More than a decade ago, we identified the requirement to modernize the manned bomber portion of our strategic deterrent forces. The B-1 has been designed as an extremely versatile aircraft capable of performing in hostile environments with a high degree of safety and mission success probability. Its variable-geometry (swing) wing will permit it to use shorter runways and to maximize performance at altitude and speed extremes. The radar cross section has

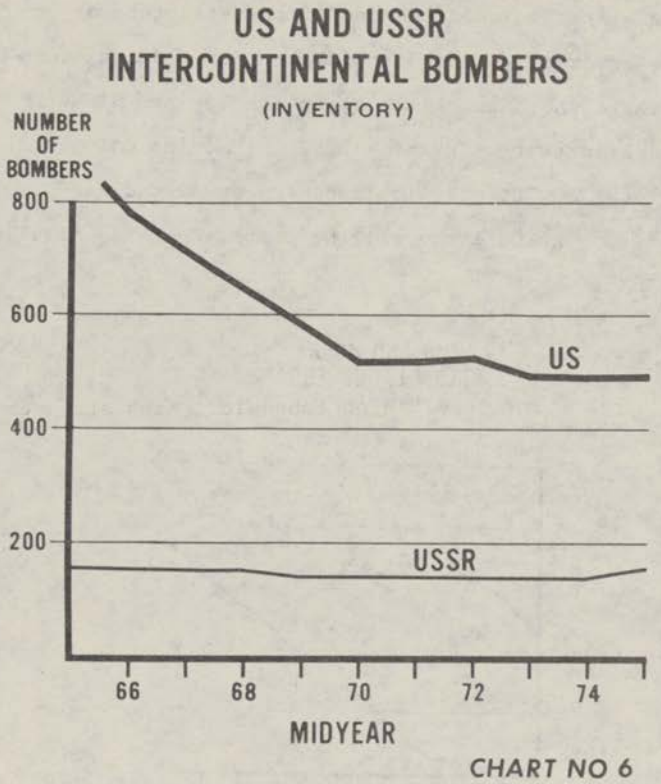


CHART NO 6

been reduced greatly over the B-52. It will get into the air in far less time than is required by the B-52 and will carry about twice the weapons load over the same intercontinental distances. Armament planned for the B-1 includes the SRAM, both nuclear and conventional bombs, and special electronic countermeasures designed to assist in the penetration of the most sophisticated defenses we can project into the 21st Century.

The B-1 began flight testing late last December. A production decision will be made in late 1976 subsequent to detailed performance evaluation of the 3 prototype aircraft now scheduled for construction. The B-1 will provide the Nation with capabilities far beyond those currently provided by the B-52 and FB-111. It also will have important quali-

tative advantages over the impressive capabilities of the BACKFIRE, which the USSR has deployed recently. I consider the capability of the B-1 as a virtually indispensable element of our deterrent force and urge your continued support of this essential program.

Until the 1980s, when the B-1 would enter the inventory in significant numbers, the B-52 and the FB-111 will continue to constitute the US intercontinental bomber force. The structural modification program for the B-52Ds in order to maintain this force level is on schedule. Wing strength testing began in October 1974. By September 1976, we expect to have completed the required partial reskinning of the wing and fuselage.

USSR Bombers

The new Soviet variable-geometry wing bomber, BACKFIRE -- under testing since late 1969 -- is now entering the operational inventory. With inflight refueling and staged from Arctic bases, BACKFIRE could cover virtually all of the United States on two-way subsonic missions with limited low-level penetration. Staging from the Chukotsk Peninsula, the unrefueled radius would cover the Western United States in an arc generally extending from the Western US-Mexican border to the eastern tip of Lake Superior. On one-way missions, recovering in friendly or neutral territory, the BACKFIRE is capable of delivering weapons anywhere in the United States without refueling. Carrying ASMs, the BACKFIRE would have somewhat reduced capabilities, but the potential range of the ASM would produce comparable target coverage. Tanker support would be required for intercontinental missions involving supersonic dash or extended low-altitude operations. In this connection, it should be recalled that while some 50 of the BISON aircraft are tankers, the other bombers could

be converted eventually to tankers. BISON probably could refuel BACKFIRE, and all the BACKFIREs produced are believed to have a refueling probe. Further, there is some evidence that the Soviet Union is developing a tanker variant of the IL-76 CANDID jet transport.

At any rate, the BACKFIRE is a versatile, multipurpose aircraft capable of performing nuclear strike, conventional attack, antiship, reconnaissance, and electronic warfare missions. It has extensive capabilities for various types of peripheral missions against NATO Europe and the PRC. Unrefueled, it probably is best suited for that role. Its intercontinental capabilities cannot be prudently ignored, particularly in the face of thinning US air defenses.

This chart reflects only long-range bombers. Intermediate-range bombers are omitted from the force displayed here, notwithstanding the fact that some of them have a potential intercontinental strike capability if Arctic staging and one-way flight profiles are used. We do not know precisely how the Soviet planner intends to utilize the BACKFIRE weapons system. Evidence derived from basing, operational activities, and training patterns ultimately will answer this question. This is an excellent example of why I believe we must deal realistically with demonstrated capabilities, not perceived intentions. The Soviet general staff could change the BACKFIRE mission in a matter of hours, if not minutes; but preparing a defense against such an increased threat could require years.

Our ability to detect Soviet aircraft at the developmental stage prior to the rollout of a new prototype is limited. Continued development of BACKFIRE indicates a continuing interest in the bomber as a strategic weapons system.

The BACKFIRE, an improved version thereof, or a new bomber with increased range and payload probably would satisfy new bomber requirements through the 1980s. We have no evidence of such a new system. The design of any new Soviet bomber would be tailored to the Soviet Union's perception of its requirements. If the USSR decides to develop a new long-range bomber, we would expect to become aware of its existence a number of years prior to its IOC.

USSR Air-to-Surface Missiles

In the event of a strategic attack against the United States, we believe the USSR would employ stockpiled nuclear bombs with a wide range of yields. In addition, the BEAR B and C carry the large AS-3, KANGAROO, air-to-surface guided missile. We believe that an air-to-surface missile is being developed for the BACKFIRE.

US Air-to-Surface Weapons

On the US side, a new bomb is now in engineering development. A mixed air-launched cruise missile/SRAM force will complicate Soviet defensive planning, extend bomber range, and provide increased coverage for lower priority undefended targets. Furthermore, the decisions to equip B-52s with HARPOON antiship missiles will add to the ability of strategic aircraft to support interdependently the sea surveillance mission.

US and USSR Strategic Offensive Balance

I will now summarize quantitatively the strategic offensive balance between the forces of the United States and those of the USSR. Quantitative measures are, however, only one segment of the equation; and caution is required in order to avoid over-reliance on any single factor or com-

bination of such factors in making the judgments necessary to a full understanding of the relative power of the United States and our ability to deter attack by the USSR. Alert rate, command, control, communications, attack warning, survivability, systems reliability, range, penetration capability, and accuracy are among the many factors not subject to reasonable quantification which play a very significant role in assessing balance. I have noted in the preceding analysis some of these factors and will address others in subsequent parts of this discussion. I have retained the four general measures -- delivery vehicles, megatons, warheads, and throwweight/payload -- which have become traditional in this presentation. Only those weapons readily available for employment are displayed.

Chart 7 reflects the fact that the USSR has surpassed us in the number of delivery vehicles.

The principal significance of this small lead is in historical perspective. Less than a decade ago, the United States enjoyed a 5 to 1 lead. Balanced bomber construction, the restraints on new construction imposed by the Interim Agreement, and the reduced availability resulting from the intensive silo modernization program now underway in the USSR should ensure that the Soviet lead is not widened substantially over the period of this report.

Strategic offensive megatonnage is a very gross measure of the balance. The greater the Soviet effort to modernize and to MIRV, the more rapidly its total megatonnage will fall. This is also the explanation for the rapid reduction in total US megatonnage from 1970 to date.

The number of strategic warheads and bombs is a very significant measure of the balance. Mr. Brezhnev has been quoted as stating "Warheads -- not launchers -- kill." This

US AND USSR OPERATIONAL STRATEGIC OFFENSIVE DELIVERY VEHICLES

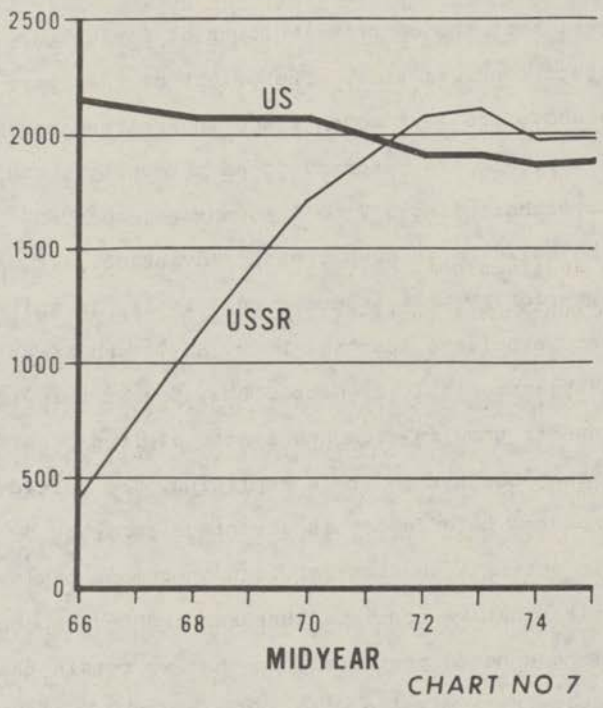


CHART NO 7

fact adds a degree of importance to the relative number of warheads. Last year, it was believed that even if the Soviet Union pursued a program of rapid modernization, our substantial lead could be "diminished but not eliminated." It is now clear that this judgment understated both the breadth and intensity of the Soviet effort to surpass the United States in this measure of the strategic balance.

If the Soviet Union continues its present rapid modernization effort, the substantial US advantage will be lost by mid-1979. Unless we initiate new programs or restrain this massive Soviet growth by the ongoing arms control negotiations, we reasonably may expect the Soviet Union to dominate this measure of the balance. If, as the Secretary has indicated,

they are attempting to develop a hard-target kill capability, a numerical advantage of even 1000 warheads has considerable strategic significance.

I suggest that the continual growth of Soviet throwweight is an important consideration. The weight of that part of the missile above the last boost stage and representative loadings of aircraft are referred to as throwweight and payload. Notwithstanding a 2 to 1 advantage, the USSR appears to be building an even greater advantage. It may be that this superiority will exceed even 3 to 1. In spite of the fact that we believe that the heavy SS-7s and SS-8s may be replaced by appreciably lighter SLBMs, Soviet throwweight could continue to grow as each new system deploys greater throwweight than the system it is replacing. The United States is expected to offset this advantage somewhat by continuing to retain a substantial lead in bomber payload. It is essential that we continue Research and Development activities I have noted previously so that we retain the option of deploying a missile with increased throwweight in the event such deployment becomes necessary in order to preserve a viable deterrent.

US and USSR Strategic Defense Forces

The strategic equation places great stress on the ordinary meanings attributed to the terms "offense" and "defense." Either type force can be used for aggression or protection. Thus it is clear that if a nation has the ability to destroy a given percentage of a potential adversary's force by a preemptory strike and is able to defend against the remainder, the capability of launching an effective disarming first strike has been achieved. In this arena, a potential adversary's defensive effort must be

viewed in the same context as his attack capability if a viable deterrent is to be maintained.

Prior to discussing the relationship between the US and USSR defensive forces, it is again necessary to set the stage in terms of the results of agreements on limiting strategic arms. The 1972 ABM treaty limits each party to a relatively small and equal ABM force -- originally 2 sites each of no more than 100 launchers and 100 missiles and a controlled number of associated radars. One site may be centered on the national capital and the other, on ICBM silos. The parties also undertook not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based. On 3 July 1974, we signed, in Moscow, a protocol to the ABM treaty which, upon ratification, will further limit the USSR and the United States to only 1 such ABM site. Each party, after properly notifying the other, will have the right to dismantle or destroy its current site and to deploy ABMs otherwise permitted in the alternate area. This site exchange may take place during the first year of successive five-year intervals beginning in October 1977, but this option may be exercised only once.

ABM

The Moscow ABM system consists of battle management radars, engagement radars, and GALOSH missile launchers. As you will recall, 8 complexes were originally under construction, but only 4 with 64 missile launchers have been completed. Each operational complex consists of 2 large target-tracking radars, 4 smaller or interceptor guidance and tracking radars, and 16 missile launchers.

This system, which we have designated ABM-1B, includes target acquisition and tracking radars such as DOG HOUSE,

CHEHKHOV, and HEN HOUSE. It provides little defense against a large-scale or penetration aided attack. It would, however, provide a credible defense of Moscow and a large portion of Soviet ICBM silos against a small, accidental, or unauthorized attack.

The US Army has completed the SAFEGUARD test program which began at Kwajalein Island in 1970. By April, we expect to reach IOC at the Grand Forks site. The scheduled Equipment Readiness Date of 1 October 1974 was met and, by October 1975, we expect to have a full operational capability with SPARTAN long-range and short-range SPRINT missile interceptors, a Perimeter Acquisition Radar for acquisition at long-range, a Missile Site Radar for accurate tracking and interceptor guidance, and Ballistic Missile Defense Center to net the system with the CONAD Combat Operations Center.

We thus will be able, within the capabilities afforded by SPARTAN and SPRINT missile interceptors, to provide a terminal defense of a portion of the Grand Forks MINUTEMAN field and a limited area defense against accidental/unauthorized launches in the Colorado/Dakotas region covered by the SPARTAN footprint. After all subsystems are interfaced and brought to full operational condition, we will be able to validate the total spectrum of the subsystem design, including compatibility with the national command and control structure.

The USSR is pursuing vigorously the development of advanced technology applicable to its ABM force.

I do not believe that the USSR has deployed its extensive SAM network to provide ABM defense, nor do I believe that it is currently suitable for that role. I remain

convinced that we would be able to detect any program designed to upgrade SAMs to an effective ABM capability, but we must be alert to that possibility.

During the latter part of this decade, the Soviet Union may deploy follow-on systems around Moscow to the level permitted by the ABM treaty.

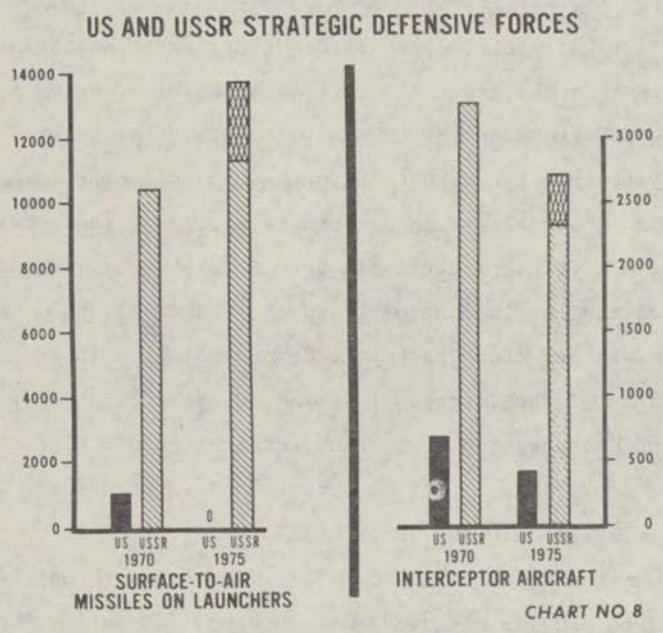
The Site Defense program is the US effort to maintain an equivalent capability. It provides a hedge to deploy a credible ABM defense for MINUTEMAN to counter the Soviet capability to threaten MINUTEMAN survivability in the 1980s, if follow-on negotiations do not otherwise insure the survivability of a sufficient strategic retaliatory force. We are emphasizing the development of improved subsystems and components, rather than "prototype demonstration," in accordance with guidance of the Congress. In the Advanced Technology Program, we are pursuing a vigorous research effort embracing technology applicable to all components and functions of ballistic missile defense, which must be understood to maintain our technological lead. The objectives of the effort are to provide an advanced technology foundation for future systems, to avoid technological surprise and to assist in the design and evaluation of US strategic offensive systems.

Air-Defense

The Soviet Union's strategic air defense is by far the most extensive and expensive in the world. It operates over 4000 radars located at early warning and ground control intercept (EW/GCI) radar sites, over 2600 fighter interceptors, and about 12,000 strategic surface-to-air missiles (SAMs) on launchers.

Chart 8 displays the numerical imbalance in the current force structure. However, it must be remembered that many

of the currently deployed Soviet air defense systems were designed originally to counter the medium-to-high altitude bomber and stand-off-missile threats represented by the B-70 and the evolving technology of the late 1950s and early 1960s. The force, nonetheless, displays significant capabilities.



Interceptors

The right side of the chart compares US and USSR home defense interceptors projected through mid-1975. The Soviet deployment levels have continued their steady decline (about 100 aircraft per year) which began in 1964, but the overall capability of the force continues to mount. Older, largely gun-armed interceptors, such as FRESCO (MIG-17) and FARMER (MIG-19), are being replaced by more sophisticated, all-weather interceptors, such as the FOXBAT (MIG-25) and FLAGON E (SU-15). The FLAGON E entered operational service just over a year ago. It employs a new and more powerful propulsion system, which increases both speed and range, and

improved avionics in addition to advanced air-to-air missiles. It appears that the MIG-23 (FLOGGER), a single-engine variable-geometry wing fighter, armed with 4 air-to-air missiles and an internal gun, also is being prepared for an air defense role.

We expect the Soviet Union to deploy in the 1977-1980 timeframe a new interceptor. In the interim, the USSR is expected to continue widening the capabilities of the interceptor force by emphasizing the modification of existing aircraft rather than introducing entirely new systems. The fundamental constraint on Soviet interceptors' effectiveness against low-altitude bombers is that they have not demonstrated the capability of developing a radar capable of detecting and tracking from high altitude a bomber at low altitude against a background of signals reflecting from the ground.

The mid-1975 US operational interceptor force will be composed of 116 F-101s, 56 F-102s, and 233 F-106s. All these interceptors entered the inventory in the 1950s. This force will, however, be 65 percent Air National Guard. By mid-1980, the force will be reduced to 122 active and 90 Air National Guard F-106s. General purpose augmentation aircraft stationed in the United States, of course, will be available to assist in the air defense mission prior to their deployment to overseas locations.

Shown on the left side of Chart 8 are US and USSR home defense SAM forces. The US strategic SAM force was totally deactivated in 1974. There was a slight increase in the Soviet number in 1974.

Soviet Strategic SAM Force

This force is composed of four systems. The SA-1 (GUILD) is a liquid-propelled missile first deployed in

1954. We estimate that the mid-1975 level of sites will decrease gradually as Soviet modernization increases.

The SA-2 (GUIDELINE) is the command guided high-altitude missile which the North Vietnamese employed with a reasonable degree of effectiveness during LINEBACKER II. This system, which was first introduced in 1958, like virtually all Soviet strategic SAM systems, has been modernized during its lifetime with new versions increasing its range and improving its performance at low altitudes. Some of the guidance systems have been modified with optics, thus providing improved FCCM and low-altitude capabilities. We estimate that the SA-2 force will continue to decline.

The SA-3 (GOA) is a road-transportable, solid-propelled medium- and low-altitude command guided missile employed in both the point defense and barrier role. This system, first introduced in early 1961, is capable of intercepting attacking aircraft at low altitudes within a limited range of the launch site. We estimate that the mid-1975 level of sites will increase.

The latest Soviet strategic SAM system is the SA-5 (GAMMON), which was initially operational in 1967. It provides point defense for certain vital areas of strategic importance.

Although not a strategic system, the highly mobile SA-6, employed with notable effectiveness in the recent Middle East hostilities, has impressive capabilities, particularly in dealing with low-altitude attacks.

Despite the size of the Soviet air defense force and the projected improvements, there exists major weakness in low-altitude defense against penetrating bombers and in defense against the US short-range attack missile (SRAM). This will require the USSR to attempt to attack and destroy

the SRAM carriers as early as possible. Early detection is indispensable to this effort.

The MOSS aircraft noted in this statement over the past several years still provide the USSR with its limited airborne controlled intercept (ACI) capability. The aircraft has worked in overwater exercises, but is unequal to the more challenging overland task. If the USSR intends to improve its air defense, a new airborne warning and control aircraft system, a better radar network for GCI, and better airborne radars probably will be required. There is as yet no evidence that the Soviet Union is developing an airborne warning and control system (AWACS) capable of detecting and tracking aircraft at low altitudes over land.

Last year, you will recall, the Secretary of Defense announced a decision to readjust the primary air defense mission to encompass surveillance; peacetime control of US airspace; and warning of a bomber, missile, or space attack. This decision was forced by tight budget constraints and the fact that without effective ABM defenses, air defenses are of limited value against potential aggressors armed with strategic missiles.

I would be less than candid if I were to leave you with the impression that there were no risks in this phased-down program. By mid-1976, our limited interceptor force will average about 18 years of age. The majority of the general purpose fighters are committed to other contingency plans and may not be available for air defense. We will be without terminal defense of high-value urban/industrial areas against either a bomber or cruise missile attack. It is, therefore, essential that the Congress provide funds to preserve the option of deploying on a timely basis a new interceptor (e.g., F-15 or F-14), a new SAM system (e.g.,

SAM-D), and AWACS for strategic defense should some significant change in the strategic structure become necessary in the future. These programs now are being provided for the general purpose forces, and they deserve consideration in the context of both that mission and the defense of the United States in time of crisis. They will make it possible to provide a pool of strategic and general purpose tri-Service assets from which resources could be drawn to provide air defense for threatened areas overseas as well as in the United States.

PRC Strategic Forces

The dramatically increasing prominence of the Peoples Republic of China (PRC) in foreign policy calculations is only partially reflected in her military program. There is a steady, almost painstaking quality about this relatively small, but carefully conceived, strategic program. A modest, but credible, nuclear retaliatory capability against the USSR has been achieved, and this undoubtedly has influenced the decision to move ahead slowly, but deliberately, with the task of increasing the effectiveness of PRC nuclear forces. Emphasis is clearly on programs with long-range implications such as the construction of 2 of the world's most modern shipyards at Hu-lu-tao and Kuang-chi; impressive new facilities for producing large quantities of nuclear materials; solid propellant missiles; and R&D initiatives addressing advanced airframes and sophisticated engines. The temptation to yield to programs which would provide a more immediate strategic posture and perception of growing strength apparently has been resisted.

MRBM Force

This force is composed of a single-stage, liquid propellant, transportable system developed from Soviet models. The estimated range is about 600 nm. It can reach targets in the Eastern USSR, peripheral nations, and some US bases in the Far East. It is an obsolescent and cumbersome missile system with slow reaction time.

IRBM

This single-stage, liquid propellant ballistic missile presently is deployed at permanent sites. Its range is about 1500 nm. During the past year, deployment of this system continued at a measured deliberate rate.

Limited Range ICBM

We now estimate that a limited range system could become operational during 1975. The program, however, continues to be a major enigma in the PRC's strategic weapons effort. When it reaches IOC, the PRC will have a limited capability to cover targets in the European USSR -- possibly including Moscow. The PRC may consider the creation of such a capability sufficient justification for deploying only a few of these largely untested missiles. The reasons behind this decision, of course, are unknown, but could include political, budgetary, and strategic factors.

ICBM

This is a large ICBM in the same class as the US TITAN and the Soviet SS-9. It could have a range of about 7000 nm.

Full flight testing of this missile will require launches to a broad ocean impact area, probably in the Pacific, but possibly into the Indian Ocean. Analysis of

such launches will provide much more data about characteristics of the system than we now have.

The PRC has made a substantial investment over the past 15 years in research, developmental testing, and production facilities for both liquid and solid propellant missile systems. All current operational Chinese ballistic missile systems use liquid propellants.
The PRC's continuing interest in facilities capable of developing and producing solid propellant rocket motors of various sizes up through intercontinental missiles has considerable significance for the future.

SLBM Systems

Although we continue to have difficulty in forecasting the rate of progress of the PRC SLBM program, we remain convinced that the PRC is determined to develop a submarine-launched ballistic missile and a modern nuclear-powered ballistic missile submarine. It is estimated that the first-generation Chinese SLBM will be a solid propellant system comparable in size to the early US POLARIS missiles.

Bomber Force TU-16 (BADGER)

PRC production of the TU-16 jet intermediate-range bomber began in 1968, but apparently ceased after some 60 of this Soviet-designed bomber were built. It is too early to determine whether production will resume. The TU-16 was first observed in the Soviet Union in 1953 and has a combat radius of 1650 nm.

IL-28 (BEAGLE)

The IL-28 twin-jet short-range bomber is an old (1950) and vulnerable bomber, but the PRC military planners still appear to consider it an important weapons system. More

than 400 IL-28s are now operational. The PRC may plan to equip some of these aircraft for a nuclear attack role. There are about 100 airfields in the PRC from which IL-28s could operate. Staging from those airfields closest to the border would permit strategic operations against substantial portions of the contiguous Soviet Union, all of South Korea, parts of South Vietnam, and some of India. The limited range of the aircraft suggests that it also might be used in a theater support role within the PRC.

Strategic Defense

There continues to be no indication of any PRC effort to deploy an ABM system. The PRC's air defense system remains subject to major weaknesses, including the severe shortage of all-weather interceptors, a limited number of SAM sites, and an outmoded air defense operating system.

The over 3500 operational home defense interceptor force consists of MIG-17s, MIG-19s, and MIG-21s. The PRC has produced a number of MIG-21s, but for reasons which are not yet fully clear to us, production was suspended, and only a small number of PRC-produced MIG-21s are operational with the PRC Air Force. The balance of the operational FISHBEDs were Soviet-provided some years ago. The Chinese are now developing a new all-weather interceptor of Chinese design. The PRC has a number of years of R&D effort invested in this aircraft. We had expected production of the MIG-19 to terminate, but we now believe it will continue until the new interceptor is introduced. A Chinese variant of the Soviet SA-2 missile remains the basic PRC operational SAM system. The PRC operates a relatively thin, well organized defense, short of the massive system deployed by the USSR. The PRC has deployed a massive array of antiaircraft artillery pieces to defend key military and industrial facilities in

addition to major population centers. Our experience in Vietnam and our observation of the Middle East lead us to give this capability more consideration than we may have 10 years ago. It may be concluded that, for the near term at least, the PRC will rely on size, dispersal of industrial facilities, and a modest air defense program to be its basic active defense against air attack.

Summary

The Chinese now have a capability for nuclear strikes by missiles and bombers all around the periphery of the PRC, at distances up to 1650 nm. Their capacity to produce fissionable materials is expanding. The Chinese have no present capability to attack the Continental United States directly and are unlikely to obtain one for at least several years.

Overall Strategic Balance

The PRC force is small and relatively insignificant when compared to the intercontinental forces of the United States and the USSR, and we do not believe the PRC will initiate a nuclear attack. Nevertheless, when one contemplates the impact of the 2 nuclear weapons thus far employed in conflict, and recognizes the simple fact that the PRC's capability is at least several orders of magnitude greater, a different appreciation suggests itself. This capability cannot be ignored by those charged with the defense of our Nation.

The relative strategic balance between the United States and the USSR remains in an unstable equilibrium. Decisions already made in the Soviet Union and programs already in progress display massive momentum toward significant force increase and modernization. Only the pace and

size of this effort remain uncertain. Apparently unconcerned about the economic burden of such spending, the Soviet leadership, in the face of detente or maybe to ensure it, continue to maximize their strategic power. To meet these challenges, we must continue to pursue diligently those programs designed to improve the ICBM force and ensure MINUTEMAN survivability; maintain and improve the SSBN force, while protecting it at sea from a technological breakthrough; and significantly improve the manned bomber element of the TRIAD. We may be required to develop alternate basing modes for our land-based ICBMs in the event the USSR does develop and deploy that combination of accuracy and yield which would threaten the survivability of MINUTEMAN as currently deployed. We also must provide an option to increase the number of RVs and the throwweight of our present systems in the event such action becomes necessary to preserve the perception of equilibruim which, in the long run, may be as important as equilibrium itself and is essential for stability. In the meantime, we must continue a broad-based search for the technology necessary to insure the viability of our deterrent in the years ahead. These modest programs, requested by the President and described in more detail by the Secretary, will stabilize the balance within the framework of the Vladivostok understandings. These things we must do or we, at worst, will jeopardize our survival as a nation or, at best, forfeit the assurance that we will maintain that strength which has permitted 3 Presidents to say we "never fear to negotiate or negotiate out of fear."

GENERAL PURPOSE FORCES

The post-World War II years were initially characterized by a US nuclear monopoly. Even subsequent to the development by the USSR of fission and fusion weapons, a vast and un-

challenged US superiority made viable a strategic doctrine of "massive retaliation." These circumstances and the harsh rhetoric of "containment" were not sufficient to roll back Soviet expansionism nor free the captive nations of Eastern Europe. They were, however, sufficient to restrain further Soviet territorial expansion. Overwhelming US strategic power was capable -- in the words of General Taylor -- of preventing the "great war" but was unable to maintain the "little peace." The bluff and bluster of the 1962 Cuban Missile Crisis have been replaced in 1975 by massive Soviet strategic strength. Even "the larger peace" is now beyond the protection of strategic nuclear forces alone. Versatile general purpose forces, combat-capable and rapidly deployable, are essential if we and our allies are to prevent encroachment upon our important worldwide interests. The causes of war have been reduced, but they have not been eliminated. The world still scrambles for scarce resources. Political and social unrest describe a number of the developing nations of the world, and mature nations are not totally exempt. The adventurous and the ambitious have not abandoned the hope of opportunity. Just as we try to make strategic war unthinkable by developing and maintaining a stable strategic situation, we strive to make lesser levels of conflict unwinnable for our adversaries.

Our general purpose forces support and protect our military, diplomatic, and economic interests; demonstrate our resolve to honor worldwide commitments; and permit us assurance that we can deter conflict and, by the controlled application of power, meet any attack if deterrence fails.

The details of specific US programs designed to ensure our continuing general purpose capabilities will be discussed with you by each Service Chief appearing with his Service

Secretary in support of Departmental funding requests. My purpose is to present a comparison of the principal elements of the general purpose forces of the United States, the Soviet Union, and the Peoples Republic of China. This comparison will consist of an overview, including significant initiatives, a discussion of readiness, a description of the force balance, and a brief analysis of 4 regional perspectives.

Overview

A numerical comparison of the sizes of the Armed Forces of the USSR, PRC, and the United States shown on Chart 9 results in a distorted picture of capabilities, but is required in order to proceed to a more refined analysis. These are the forces that would be available with varying degrees of effectiveness and timeliness in the initial stages of a major conflict. All three nations could generate much larger force levels over time.

ARMED FORCES PERSONNEL
(MILLIONS)

	US	USSR	PRC
ACTIVE	2.1	4.2	3.0+
RESERVE	1.9*	5.7	.1
ARMED MILITIA AND OTHER AUXILIARY UNITS	–	–	8.0
TOTAL	4.0	9.9	11.1

* INCLUDES ARMY NATIONAL GUARD AND AIR NATIONAL GUARD

CHART NO 9

You will note that the active duty strength of the Soviet Union's Armed Forces is still assessed at about 4.2 million men and women. A new analysis of the number of personnel assigned to the command and general support portions of the Soviet Armed Forces is underway. There are individuals assigned to supply, research, and training elements as well as ministerial and service staffs who may not now be accounted for. In this connection, it should be noted that while basic trainees compose about 5 percent of the US Armed Forces, Soviet personnel in this category are trained prior to induction and are not included in the calculation. The Soviet Armed Forces include about 2 million conscripts or 85 percent of those annually available to the draft. The average Soviet conscript serves 2 years in the active force and then is transferred to the reserve, where he serves until age 50. The Soviet reserve force includes 5.7 million men who have served at least 12 months with the active forces in the last 5 years. The total ground force reserve alone is composed of 20 million men, over half of which have had 12 or more months of active service.

The Soviet Union apparently continues to view her neighbors, with very few exceptions, as either vassal or adversary, and sizes her armed forces accordingly. Our forces, on the other hand, reflect that we are unthreatened by hostile neighbors and are not encumbered by the disposition to dominate anyone. We seek to maintain austere but capable Reserve Components to provide the added combat and support capabilities required to achieve national objectives not available within the active force. Our Reserve Components include about 900,000 individuals in selected units plus others who are individually available for immediate service.

The capability of these forces to serve as effective complements to the active forces will be enhanced appreciably if the authority that the Secretary has requested to call selected and limited numbers of reservists to active service prior to the declaration of a national emergency is enacted by the Congress. Even this modest increase of deterrent force, which could be accomplished by a limited call as the Secretary proposes, could, in itself, preclude the maturing of a pending crisis into a national emergency.

Chart 10 shows the principal US and USSR initiatives designed to improve general purpose force capabilities. I include this chart for two purposes: first, to assist you in understanding the scope and intensity of the Soviet program, and second, to illustrate our limited ability to detect planned improvements for Soviet general purpose forces at an early stage in their development.

Only 2 of the US initiatives have reached the deployment stage, whereas all but 3 of the Soviet systems are being deployed. It appears that the USSR has embarked on a vigorous development and modernization program designed to increase significantly the military capabilities of its general purpose forces, even though apparently at a level somewhat below its massive strategic effort. Each of these initiatives will be dealt with in somewhat greater detail later. A generalized evaluation of the initiatives in the 3 combat mediums does, however, appear appropriate.

The Soviet ground force initiatives may have more significance collectively than they do individually, since they may reflect Soviet doctrinal change as well as modernization. The USSR appears to be improving its ground forces in 3 phases or cycles. It now produces the T-55, the T-62,

SIGNIFICANT US & USSR INITIATIVES
GENERAL PURPOSE FORCES SYSTEMS

US		USSR
	GROUND FORCES	
ARMY "BIG FIVE": AAH & UTTAS		• M-1970 MEDIUM TANK
XM-1 TANK & MICV		• NEW FIGHTING VEHICLE (BMD)
SAM-D		• SP ARTILLERY (122mm, 152mm)
• DRAGON & TOW ANTITANK WEAPONS		• TACTICAL SAMS (SA-8)
		• HIND A HELO
	NAVAL FORCES	
688 CLASS ATTACK SUB		KIEV CLASS CARRIER
LHA AMPHIB ASSAULT SHIP		• KARA CLASS CRUISER
PATROL FRIGATE (HARPOON EQUIPPED)		• KRIVAK CLASS DESTROYER
		• AMGA CLASS MISSILE SUPPORT SHIP
		ROPUCHA CLASS LST
	TACTICAL AIR FORCES	
A-10 CLOSE AIR SUPPORT A/C		• SU-19 (FENCER A) VGW FIGHTER BOMBER
F-15 (EAGLE) FIGHTER		• MIG-23 (FLOGGER) FIGHTER
EF-111A		• SU-17/20 (FITTER C) FIGHTER BOMBER
• F-14 (TOMCAT) FIGHTER		V/STOL FIGHTER
ACF (F16)		
NACF		
AWACS		

• CURRENTLY BEING DEPLOYED; STILL IN PRODUCTION

CHART NO 10

and the M-1970 medium tank. This represents the first phase -- develop and deploy a strong tank force. The M-1970 continues the improvement cycle of that phase. The second phase involves deployment of armored troop-carrying fighting vehicles to enable the infantry to move with the tank forces. These vehicles, first the BMP and now the BMD, are designed to operate in close proximity to main battle tanks. They have significant armament and antitank capability and incorporate CBR protection. Consequently, their role differs from that of the conventional armored personnel carrier which essentially provides the infantryman a ride to work.

The appearance of self-propelled artillery on the chart probably signals the third phase -- equipping artillery to keep pace with highly mobile tank and motorized rifle units. Further evidence of this development is presented by the self-contained SA-8 and SA-9 systems, which join the fully-

tracked SA-6 in providing highly mobile, responsive air defense to the armored column on the move. All the artillery of our mechanized and armored divisions is self-propelled as is that deployed by the majority of our NATO allies. This emphasis on conventional artillery as distinguished from missiles, may represent a Soviet doctrinal conclusion that conventional war need not escalate to a strategic nuclear exchange now that the strategic balance is in dynamic equilibrium.

The HIND A helicopter now entering the force carry 57 mm rocket pods and antitank missiles or alternatively, 8 to 16 troops. The extensive armament payload gives it formidable ground attack capability against tanks, trucks, or troops in addition to enhanced mobility. These are not revolutionary developments, but over time, they will substantially increase the effectiveness of Soviet ground forces.

The initiatives associated with Soviet naval forces reflect slow stable growth much below capacity. Nonetheless, the first of the 2 KIEV-class carriers now under construction (formerly designated the KURIL-class) is expected to join the fleet in 1976 with a variable aircraft complement of mixed helicopters and V/STOL aircraft. This development, together with the capabilities represented by the AMGA-class support ship, the BORIS CHILIKEN-class replenishment oiler, and the ROPUCHA-class LST, indicates a continuing effort to improve worldwide operations. The recently introduced cruiser and destroyer represent a further continuation of the substantial naval modernization program which has been reported here over the last several years. These are powerful, modern ships capable of significantly interfering with our projection of military power across the ocean and expanding the global reach of a Soviet Navy.

The SU-19 (FENCER A) is the first modern Soviet fighter aircraft designed specifically to engage ground targets. The MIG-23 (FLOGGER), in addition to the interceptor role previously mentioned, has impressive interdiction and close air support capability. The SU-17 (FITTER C) is an extensively modified version of an aircraft first observed at an airshow near Moscow in 1967. The export version of this aircraft is designated the SU-20 and was seen in the recent Middle East war. Both mount 2 30 mm internal guns in addition to 8 weapons pylons and are ideally suited for ground attack. Each of these aircraft represent, to some extent, the recently demonstrated Soviet penchant for extensive subassembly modification rather than completely new design aircraft. These newer generation aircraft have produced dramatic improvements in the combat capabilities of all Soviet tactical aviation.

Readiness - US and USSR General Purpose Forces

Deterrence is the mission of the Armed Forces of the United States. Ready forces with their necessary support, projecting a clear capability to successfully prosecute conflict, are essential to this task. Although all our forces need not be maintained at the highest state of readiness, a suitable portion must be prepared to engage in localized subtheater conflict with little or no warning. The remainder of the active and reserve force must be maintained in a sufficiently high state of readiness to permit response to major theater-level conflict within the pre-attack warning period we reasonably can expect our intelligence systems to provide.

The readiness status of Army forces has, over the past year, significantly improved. It was General Abrams' goal

to raise the combat readiness of the Army to an acceptable level. The Army responded with enthusiasm and the result is a tribute to him.

Tactical air squadrons have, in spite of turbulence, responded to increased emphasis on combat capability and maintained a reasonably high standard of readiness.

The general purpose Navy, again this year, reflects an adverse readiness trend caused by insufficient special skills and manning, deferred preventive maintenance, and the high tempo of operations. A Navy effort to stem that trend was supplemented by a decision to further reduce force levels. This effort should produce favorable results in the not too distant future.

The materiel readines of our forces remains below desired levels. Our materiel deficiencies are the cumulative result of many years of constrained funding for materiel requirements, especially during our protracted active involvement in Southeast Asia, with its associated attrition of equipment, drawdown of stockpiles, and the tempo of operations which militated against proper equipment maintenance.

Materiel readiness properly should have improved in the period since our direct involvement in Southeast Asia ended. However, in spite of the efforts of the Military Departments, materiel readiness remains a major problem due to austere funding, the energy crisis, and unprogrammed materiel demands for support of allies.

Two factors that may have serious impact on our future readiness require your urgent attention. First is the impact of inflation. The Operation and Maintenance portion of the Defense Budget does not require authorization, and more importantly, is not developed with an escalator which will adjust automatically for price increases. The prevailing --

not the projected -- price determines the funds requested and appropriated for such items as maintenance; spare parts; fuel; training; exercises; operation of the supply system; the worldwide command, control, and communications complex; and medical services. These funds cover the necessary day-to-day costs of the military establishment and, to a large extent, determine the ability of our forces to react quickly, deploy effectively, and maintain a reasonable state of readiness. I must report that we have gone as far as we can go in deferring maintenance, canceling exercises, reducing supply levels and abandoning minor construction without major impact on our readiness. I need not remind you of the tremendous increase in prices, especially the price of fuel so important to the maintenance of a reasonable state of readiness.

Second is the All-Volunteer Force. The President and the Congress directed that we develop and maintain an All-Volunteer Force. I'm sure you share with me pride in the way the Armed Forces have met that challenge. Nonetheless, problems remain. We need your continued assistance in attracting for a full career skilled and dedicated men and women who provide the technical expertise and leadership that a modern and ready armed force requires. We will be increasingly unable to do this if the constant barrage of criticism continues. Those who make the still required sacrifices of peacetime service and stand ready to make the even greater sacrifices inherent in battlefield protection of this Nation require an occasional word of praise and appreciation. I do not ask that legitimate criticism be stifled nor abuses covered up. They must be exposed to be corrected. However, we will not attract to the Service anyone but pretentious second-raters if the real value of a

Service career must be ferreted out of an image of inept second-class citizens. Our military tradition requires that even unjustified and unsubstantiated attacks remain unanswered publicly by uniformed personnel. Your judgment and fairness publicly expressed, together with the voices of the Secretary of Defense and his civilian associates, are the only real protection the Armed Forces have against those who constantly belittle a Service career.

US, USSR, and PRC General Purpose Forces/Weapons Systems

Ground Forces

The Soviet Army, on the basis of our current information, is estimated to deploy 166 divisions in various states of readiness.

The Joint Chiefs of Staff have been concerned, for several years, over the risks inherent in NATO's marginal ability to meet a Warsaw Pact attack. Substantial qualitative and quantitative improvements in Warsaw Pact forces have increased appreciably the "no room for error" risk which was associated with the 13 1/3-division US Army. NATO forces have remained relatively stable as the size, mobility, firepower, and flexibility of the Warsaw Pact continued to increase significantly. In the past, we counted on the superior quality of Western weapons, equipment, and technology to offset the decided advantage the Warsaw Pact enjoyed in quantity. That time is now past. The hard fact is that the Warsaw Pact has achieved near qualitative parity with the West in general purpose weapons and equipment. The strength, speed of mobilization, mobility, and sustaining power of the Warsaw Pact, in our estimation, have increased significantly.

In order to meet this challenge, we plan to raise the active Army division force to 16 divisions by the end of

1976, while retaining an end strength of 785,000 men and women. This will increase appreciably the US strategic posture, raise the Soviet perception of US capability, raise the nuclear threshold, and generally decrease the risk to a more acceptable level. This enhancement of visible deterrent power is being accomplished by converting headquarters and support spaces into combat spaces. The Army's effort to examine every space outside the combat division is truly impressive. Drastic cuts in headquarters support and administrative elements have been made in order to make these 16 active divisions possible. The new divisions, consisting initially of 2 brigades plus the division base, will be stationed at Fort Ord, Fort Hunter Stewart, and Fort Polk. The third brigade of the divisions at Fort Ord and Fort Hunter Stewart will be drawn from the Reserve Component in accordance with the Affiliation Program. This program provides for the assignment of reserve brigades and separate maneuver battalions to round out parent active Army divisions. They should receive the same priority for equipment and other support as the active division. In time of war, the Reserve Component unit would be deployed and fight as an organic part of the division. The division at Fort Polk will consist of only 2 active Army brigades until FY 1977 when a third active brigade is scheduled to be added.

We also plan to deploy 2 brigades -- 1 each from the Second Armored and Fourth Mechanized Division -- to Europe. The combat elements of these brigades will be reconstituted in the United States and the brigades stationed in Europe will rotate combat battalions on a 179-day cycle. In addition to enabling the Army to respond to the Supreme Allied Commander Europe's long quest for more early combat power in a NATO/Warsaw Pact engagement, the additional combat power and flexibility

would clearly signal to the Soviet Union that the United States will sustain and improve the force to protect US vital interests. The increase of US combat forces in Europe will assure our allies that even under inflationary pressures, we intend to honor our commitment. I urge your full and complete support for this bold new program.

Chart 11 provides a comparison of US, USSR, and PRC inventories of selected major ground force weapons and equipment.

GROUND FORCES
MAJOR WEAPONS AND EQUIPMENT
(JAN 1975)

	USSR	US	PRC
MED TANKS	40,000	9,000	8-9,000
APC & FIGHTING VEH.	30-40,000	22,000	3-4,000
ARTILLERY	15-20,000	6,000	15-16,000
HEAVY MORTARS	5-10,000	3,000	5-6,000
HELICOPTERS	2,000	9,000	500-1,000

CHART NO 11

Estimates of Soviet and PRC ground force weapons inventories are based to a large extent on our evaluation of their force requirements, division structure, and tables of organization and equipment (TOE). Therefore, accurate comparisons are difficult. The usual problems of definition and classification provide an additional factor of difficulty to this analysis. It should, however, be noted that in most major categories, the USSR and the PRC inventories are growing, while over the past year, there has been a decrease in most US levels.

The United States has never attempted to match the USSR in either quantities of ground force personnel or materiel, relying instead on technology. There are strong indications that the technological gap between the United States and the

USSR is being closed. US technology is still, by and large, superior, but the new Soviet trend to add sophistication to its already massive quantitative superiority makes it imperative that we continue to modernize our ground force equipment and to pursue those potentially rewarding new areas of technology which may, in the future, become useful.

The Soviet tank force consists of approximately 40,000 medium tanks plus other medium tanks in storage and heavy tanks.

The newer Soviet tank is the M-1970. Improvements over the T-62 are evident in mobility and armor protection. Series production of the M-1970 continues. T-62s also are being produced. This significant increase in Soviet armor is not to be taken lightly.

The PRC is continuing to produce the Type 59 tank -- a copy of the Soviet T-54A. We estimate that the great majority of these tanks are being used to bring existing units to full or even a slightly expanded TOE strength and to replace older model tanks and assault guns.

Although approximately equal to the PRC inventory, the US medium tank inventory is less than one-quarter of our estimate of the total USSR inventory.

Our main battle tank, the M-60, is comparable to the Soviet T-62, but in terms of ballistic protection, firepower, and agility, there are certain specific deficiencies with regard to the future threat; that is, full deployment of the M-1970 by the Soviet Union. The M-60 series now constitutes over half of the US inventory and delivery to the Marine Corps was initiated in September 1974. Over the next 3 years, the M-60 series should replace all of the old M-48s in both active and reserve Marine Corps units. The M-60 series will be in the inventory until at least 1990. Therefore,

the Army has undertaken a modest program of product improvement designed to increase reliability, durability, firepower, and mobility. The product-improved tank completed developmental testing on 21 October 1974 and incorporates a new track, a laser range-finder, passive night vision, and an improved stabilized gun system.

For the 1980s, the Army is developing a completely new main battle tank, the XM-1, designed to provide a significant improvement in the Army's offensive ground combat capability by improving ballistic protection, cross-country agility, and firepower. This tank is now 19 months into a 34-month competitive validation program. FY 1976 will be a most significant year for the XM-1 tank program. The contractors will complete tentative prototypes and submit them for Army test and evaluation beginning in February 1976. It is hoped that the winner of this competition will be awarded a full-scale engineering development contract for the continuation of the program. Limited production is programmed to begin in late 1979 if unforeseen difficulties do not develop and a production decision is made.

The newer Soviet fighting vehicles are the airborne combat vehicle -- the BMD -- and the armored infantry combat vehicle -- the BMP. These vehicles are entering the Soviet inventory in increasing numbers and will make significant contributions to the Soviet fighting capability. The BMP is a tank killer -- a capability not built into our armored personnel carriers.

Although continuing its gradual expansion, the PRC inventory of indigenously designed and produced APCs and fighting vehicles remains small when compared to that of the US/USSR. However, in view of the PRC's ground force structure, known tactical doctrine and, particularly, apparent perceptions

of potential ground force employment, such a small figure is not surprising.

To counter the proliferation of Warsaw Pact lightly armored vehicles and personnel carriers, particularly the Soviet BMP, the US Army has designed the Mechanized Infantry Combat Vehicle (MICV). It will provide increased mobility, protection, and firepower to the mechanized infantryman while he operates as a member of the US combined arms team. Notwithstanding some recently discovered technical difficulties, which appear to be largely resolved, we anticipate that this vehicle, when it enters the force, will constitute a decided improvement in our mobile combat capability.

Both the USSR and the PRC, with their much larger ground forces, have more than twice the number of artillery pieces and heavy mortars as the US. The PRC apparently is pursuing a program of standardization of artillery pieces, having adopted a basic "family" of towed pieces.

New US ammunition developments underway are designed to close the range gap between the US artillery and USSR and PRC pieces. Plans for the laser-guided, cannon-launched projectile are proceeding toward the "fly off" directed by the Committee of Conference on last year's Authorization Bill.

The new Soviet self-propelled (SP) artillery systems now being fielded mark a change in the long-standing Soviet reliance on towed field artillery. These weapons designated 122 mm SP Gun M-1974 and 152 mm SP Gun M-1973, mark the culmination of development programs that began in the early 1960s.

Both the US and USSR ground forces face an air threat in the 1980s consisting of large quantities of versatile, well equipped aircraft, which will be fast, maneuverable,

possess electronic devices to neutralize defense systems, and deliver ordnance with extreme accuracy. In order to meet this threat, the Soviet Union deployed the tracked SA-6 surface-to-air missile with which most of you are familiar and the new self-contained SA-8 and SA-9 surface-to-air systems. These new SAM systems provide an excellent defense against air threats at all altitudes. The recent Middle East War made it clear that a land army can be given the capability to defend itself against air attack by employment of sophisticated, mobile, integrated surface-to-air missile systems. I believe it is of particular importance that we move ahead with a more mobile, capable, and responsive family of battlefield air defense weapons.

The NIKE HERCULES and basic HAWK surface-to-air systems reflect 15- to 20-year technology. They are relatively costly to operate and maintain. Basic HAWK is presently being replaced by the IMPROVED HAWK system. Both systems, IMPROVED HAWK and NIKE HERCULES, are programmed to be replaced during the 1980s by SAM-D, currently in the system demonstration phase of development. The SAM-D has the capability to engage up to 8 targets simultaneously with each fire section and to maintain its effectiveness in the face of enemy countermeasures with less maintenance and operating personnel than the present systems. The track-via-missile (TVM) guidance principle began testing this year. Full-scale development will not be initiated until the completion of these "proof-of-principle" flights. The SAM-D and other air defense initiatives are being designed to keep pace with maneuver units and to effectively counter air attacks in a heavy ECM environment.

To complement SAM-D in the forward battle area, a new SHORAD (Short Range Air Defense) SAM program is in the

development cycle to provide an all-weather, day/night, low-altitude capability. The new SHORAD will replace CHAPPARAL. The man-portable SAM system, STINGER, is being developed to replace REDEYE and will engage both incoming and outgoing aircraft with advanced IRCM. A new LOFAAD (Low Altitude Forward Area Air Defense) gun is under consideration to replace the VULCAN Air Defense Gun. LOFAAD will be a radar-aimed medium caliber air defense gun system mounted on a track vehicle. Like SAM-D, all of these battlefield air defense systems I have discussed will be capable of keeping pace with Army maneuver units in the field.

I have been unable to find a simple quantitative measure with which to compare the US, USSR and PRC inventories in antitank weapons. I, therefore, have omitted from this chart any reference to them. The Soviet Union deploys SNAPPER, SAGGER, and SWATTER antitank missiles. They are generally ground/vehicle mounted, but have been mounted on Soviet helicopters.

Our Army is continuing to improve its antitank capability, particularly in view of the numerical superiority of Soviet armor in Central Europe. TOW is a tube-launched, optically-tracked, wire-guided, antitank missile, the principal mission of which is the destruction of enemy tanks, armored vehicles, and field fortifications. It has an effective range of 3000 meters and replaces the 106 mm recoilless rifle in the infantry battalion. DRAGON is a man-portable, antitank weapon system utilizing a command to line-of-sight guided missile, which is capable of defeating the heaviest known armored vehicle. The DRAGON weapon will be organic to and will provide medium-range (60 to 1000 meters) antitank/assault fire for all infantry companies. It will replace the 90 mm recoilless rifle.

The PRC has a large inventory of crew-served weapons, particularly a native-designed 82 mm recoilless gun -- and thousands of RPG-2/7 weapons. The most recent Middle East conflict demonstrated the deadly effectiveness of these weapons, particularly in the hands of dedicated soldiers.

Although basic development is complete for both the TOW and the DRAGON, we continue to develop additional capabilities for the weapons systems. Of particular importance is the development of a thermal-imaging, night sight for both systems, which will provide them with a 24-hour operational capability. The final item on Chart 19 is helicopters. In addition to the numerical advantage, we believe ours are superior in design to those the USSR currently employs.

I have already mentioned the HIND A. There also has been a significant buildup in the MI-8/HIP transport helicopter.

These are dramatic improvements in the Soviet helicopter force, both quantitative and qualitative. In order to maintain our current technological superiority in the helicopter arena, we are continuing development of both the AAH -- the Advanced Attack Helicopter -- and the UTTAS -- the Utility Tactical Transport Aircraft System. The AAH will be an integrated helicopter weapons system which will provide a day/night/adverse weather antitank capability not presently existing. The AAH will enhance significantly our overall antitank capability, thereby providing a means of countering the growing armor threat of the Warsaw Pact nations. This helicopter will have a crew of 2 and be armed with the TOW antitank missile system and a 30 mm cannon. It will be armored against the 12.7 mm projectile and will include other features to enhance survivability in the mid-intensity battlefield. Until the AAH is available, the Army will field the AH-1S to provide additional antiarmor capability.

The AH-1S is the standard AH-1G (COBRA), with an improved engine, transmission, and drive train, together with the TOW subsystem. The UTTAS will be the Army's first squad-carrying assault-lift helicopter and will replace the UH-1 in the assault helicopter, air cavalry, and aeromedical evacuation units. Goals include improved reliability, maintainability, survivability, and performance.

Naval Forces

The United States cannot pursue the role of a great or responsible nation without concern for our maritime interests. Our alliances are within an inter-oceanic community, and our national security objectives are rooted in the fact that the Atlantic and Pacific separate us from Europe and Asia. Thus, US security demands that we possess the capability of controlling crucial sea lines of communication to our friends and allies; of projecting US power ashore when this is needed in support of US indispensable interests; and of providing a ready, meaningful, and controllable US presence anywhere on the seas as national policy dictates. Thus, our Naval forces have an essential part of our assets for deterrence across a broad spectrum of possible conflict.

The Soviet Union initiated major post-World War II shipbuilding several years before the United States. Its fleet had about 220 major sea-going warships with a total displacement of roughly 400,000 tons in 1946. Major sea-going warships are defined here as including carriers, major surface combatants (cruisers, frigates, destroyers, and ocean escorts of 1000 tons or greater displacement), general purpose submarines, amphibious lift ships, and major fleet support and underway replenishment ships. Coastal and inshore vessels and craft -- to which the Soviet Union traditionally has given great emphasis -- are excluded.

Most of these ships were poorly equipped and inadequate for open ocean operations. In contrast, the US fleet comprised about 300 major sea-going warships totalling roughly 18 million displacement tons. The Soviet Union carried out several major combatant ship construction programs during the early 1950s, increasing its fleet size to include about 700 major sea-going warships by the late 1950s, in addition to about 2000 coastal patrol and mine warfare vessels. This force was relatively younger than the US fleet at the same time; for example, the Soviet major surface combatant force of some 240 vessels at mid-CY 1957 had an average age of roughly 7 years.

The US Navy active fleet was greatly reduced in size following the end of World War II. Only 375 major sea-going warships remained active at the end of FY 1950, just before the outbreak of the Korean War. Virtually no new construction was begun until the early 1950s. Major force additions from new construction did not commence until the mid- to late-1950s. By 1960, the average age of the 325 US major surface combatants (carriers, cruisers, frigates, destroyers, and ocean escorts) was roughly 16 years, compared with 7 years for the USSR major surface combatant force.

The US Navy began to take delivery of a significant number of new construction warships during the early 1960s. Major new construction programs have continued into the 1970s, helping to curtail further increases in the average age of most major warship categories. At the same time, the increased size and complexity of new design warships have led to much greater unit procurement costs, making one-for-one replacement of World War II-construction ships impossible. Further, decisions made during 1970-72 led to the early retirement of a significant number of older warships earlier

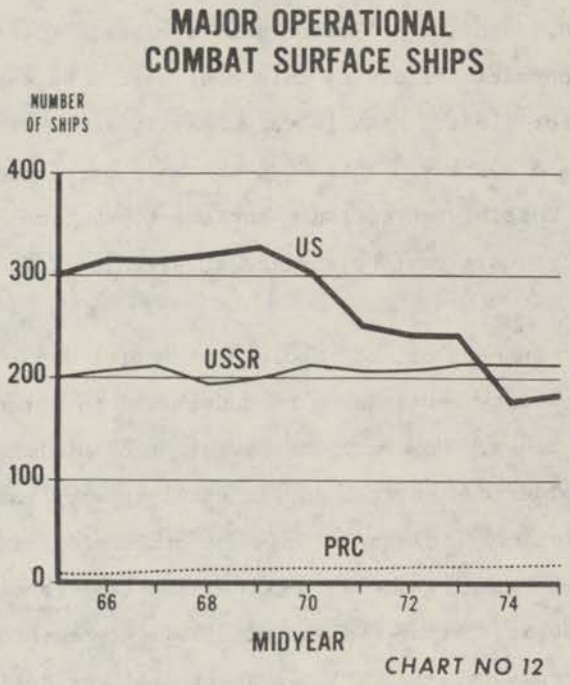
than previously planned in order to make additional funds available for new construction programs. The Navy is scheduled to drop 27 ships from the active fleet in FY 1976, including 2 carriers, 3 destroyers, and 1 submarine. Our projected US Navy active fleet level for FY 1976 is 496 ships, the lowest number since 1939. Soviet naval shipbuilding programs of the 1960s and early 1970s have had a different emphasis from those of the 1950s. Recent new ship designs are individually more capable, but more costly, units. New additions are replacing aging ships on a less than one-for-one basis. USSR's general purpose submarine force levels are falling significantly as older diesel-powered submarines of the mid-1950s are inactivated. Its surface combatant force levels have been roughly level for many years and probably will begin to decline soon if current production rates continue into the late-1970s. The average age of its surface combatant force has increased slightly and will increase further later in the decade unless a major increase in shipbuilding or a concomitant increase in scrapping takes place.

Chart 12 illustrates past trends in the number of US, USSR, and PRC major operational combat surface ships.

Soviet Forces

The mid-1975 composition of this portion of the Soviet forces is expected to consist of 2 guided missile helicopter ships, 19 missile cruisers, 12 gun cruisers, 45 missile destroyers, 36 gun destroyers, and 106 escorts, for a total of 220 ships. However, with the continuing addition of heavier and more complex ships, the force's capabilities will continue to rise.

The extensive Soviet naval modernization program is introducing a number of new classes of combat surface ships.



At the same time, more capable modern weapons systems are being installed on older classes of ships.

Fitting-out continues on the new Soviet KIEV-class aircraft carrier. This is the largest combatant ever constructed in the Soviet Union. It is about 900 ft long and will displace approximately 35,000 tons when fully equipped. Although KIEV should be capable of carrying up to 25 V/STOL aircraft or up to 36 helicopters, we expect a mix of about 35 new V/STOL aircraft and HORMONE helicopters as the most probable aviation complement. This new ship will have surface-to-air missiles and possible surface-to-surface missiles, in addition to several antisubmarine systems. KIEV should be operational in the Soviet fleet during 1976. A second aircraft carrier of the KIEV class has been under construction for over a year and could join the fleet by 1978.

As expected, a third KARA-class guided missile light cruiser became operational during this past year. We expect more in the Soviet fleet. KARA is very heavily armed with 3 separate missile systems. This 9000-ton ship carries an ASW missile and possibly an antiship surface-to-surface missile system in addition to 2 surface-to-air missile systems.

Significant numbers of the obsolescent Soviet gun destroyers and escorts continue to be modernized to extend their effective lives. However, the Soviet Union will have to replace its older destroyers; and it still appears that the KRIVAK- or follow-on class is the best option for replacement. The Soviet Union has drawn together its experience gained since 1960 in fitting various missile systems into destroyers and cruisers. KRIVAK's armament includes antiship, antiair, and possibly an ASW missile system.

The Soviet naval growth is slow and below capacity, but steady. While the priority for general purpose naval construction is not the highest, the USSR is building continuously. The BORIS CHILIKIN-class underway replenishment ships in the 16,000-ton class are being constructed.

Peoples Republic of China

As shown by Chart 12, the PRC inventory of major surface combat ships, although small, is growing slowly. The current force is a mixture of Soviet-designed destroyers and destroyer escorts over 20 years old and a number of Chinese-designed, missile-equipped ships built during the past 10 years. More surface combatants of Chinese design are being constructed.

The Chinese-designed LUTA-class destroyer, displacing 3700 tons and equipped with missiles, joined the PRC fleet

in 1971. LUTA carries 6 STYX-type missiles, antisubmarine weapons, and antiaircraft guns. This is the largest class combatant in the PRC fleet. Currently, the Chinese have 4 LUTA-class DDGs; more are fitting out and under construction.

We expect slow growth of major surface combatants to continue. Thus, by mid-1980, the PRC is expected to have only a relatively small number of major combat surface ships. The new KIANGTUNG-class destroyer program continues.

As the PRC acquires new open ocean capabilities, it also is expanding rapidly its guided missile boat force. These fast boats are armed with the Chinese version of the highly effective Soviet-designed STYX surface-to-surface cruise missile. The burgeoning missile boat force significantly enhances the posture of vital coastal areas and increases the mobility of main surface force units.

United States

As shown on Chart 12, the decline in the number of US major combatant surface ships is programmed for reversal.

The multimission aircraft carrier still forms the heart of the most capable naval task groups for both sea control and projection of power ashore. We are actively seeking ways in which to make use of other types of platforms to perform these missions as the number of carriers is reduced.

A priority concept to design and construct a new, nuclear-powered strike cruiser, the CSGN, is under intense study as a method of meeting this goal. Carrying the AEGIS missile system for countering aircraft and missiles, a long-range surface-to-surface missile derived from the strategic SLCM, and the HARPOON for shorter ranges, and several VTOL aircraft, the CSGN will be able to assert sea control independently in all but the severest threat areas. CSGNs will

combine with carriers operating in mutual support to carry out missions in the high threat areas.

The Navy remains firmly committed to the high-low mix, and continues to program adequate numbers of less expensive, specialized ships such as the Patrol Frigates and Patrol Hydrofoils which, when operating together in mutual support, can carry out missions under conditions of less severe opposition.

The HARPOON missile is to be the primary surface-to-surface weapon, not only for the patrol frigate, but also for launch in an encapsulated form from the torpedo tubes of attack submarines. It also will be adapted to launch from shore-based aircraft, both Navy P-3 ASW, and Air Force B-52 bombers. This very effective cruise missile weighs about 1400 lbs in the surface-launch configuration (1100 lbs for the air-launched version) and is capable of delivering a 500-lb conventional warhead to about 60 nm. It is of standard size and is compatible with existing launchers for TERRIER, TARTAR, and ASROC. The HARPOON's flight tests continue to demonstrate considerable success. During environmental development phase firings completed as of 14 January 1975, almost all shots resulted in direct hits against a variety of surface targets from both surface and air platforms. It is expected to be operational, in both surface-to-surface and air-to-surface delivery modes, in late FY 1976.

The projections for US, USSR, and PRC cruise missile and attack submarines through mid-1975 are displayed on Chart 13.

In the foreseeable future, the USSR will continue to have the world's largest submarine force and is expected to continue replacing older diesel submarines with newer, more effective submarines.

CRUISE MISSILE AND ATTACK SUBMARINES

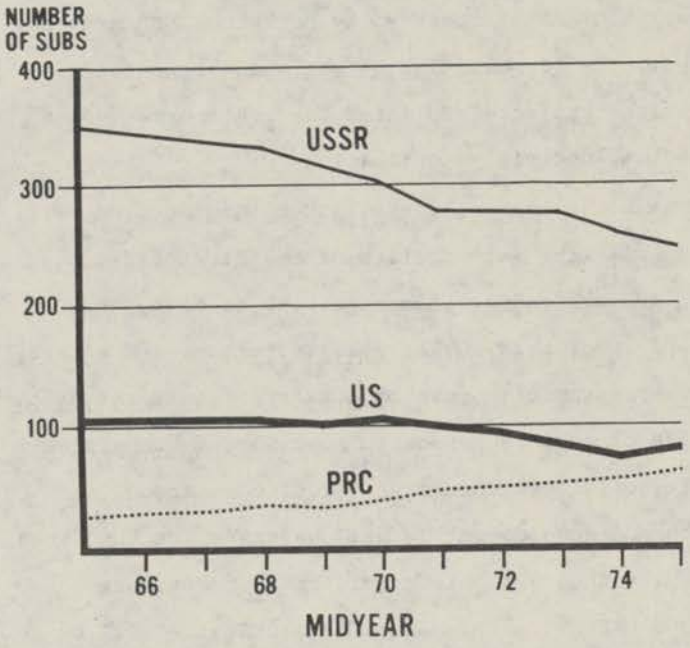


CHART NO 13

The Soviet nuclear-powered CHARLIE-class submarine, which has the unique capability of launching antiship cruise missiles while submerged, has been operational for 7 years.

Although the total number of nuclear-powered Soviet submarines continues to rise, over one-half are still diesel-powered. The new diesel-powered TANGO-class attack submarine is operational.

The PRC submarine force, except for a single HAN-class submarine, continues to operate the Soviet-designed and Chinese-built WHISKEY- and ROMEO-classes of medium-range units. These submarines, well designed and compatible with the PRC's coastal shelf defensive role, constitute the main body of the PRC forces.

In the next several years, we expect the PRC to acquire a substantial number of attack submarines, some of which may

be nuclear-powered. The remainder of the PRC submarine force will be distinctly inferior to the long-range nuclear-powered attack submarines operated by both the USSR and the United States. The capabilities of the nuclear-powered attack submarines projected to enter the inventory are not as yet subject to definitive evaluation.

The US attack submarine force, after long decline, will start to rise with the introduction of the first 688-class submarine in 1976. Congress has approved, to date, the acquisition of 26 of this nuclear-powered class, and we are programming a construction rate of 5 every 2 years through 1980. The 688-class is superior to most Soviet submarines due to greater quietness and more effective sonars.

Research and development is well underway for the first US submarine-launched antiship missile, an encapsulated version of the HARPOON. This 60 nm range missile will be deployed aboard submarines of the 594-/637-/688-classes. These classes are expected to have HARPOON capability as early as FY 1978. A long-range (1400 nm) strategic Sea Launched Cruise Missile (SLCM) is being developed for SSN platforms. The SLCM also will have a shorter range tactical variant for antiship application.

Soviet Naval Aviation (SNA), a significant arm of USSR naval forces, is equipped with a variety of aircraft capable of performing diverse missions. The primary threat of SNA to US naval forces rests in some 350 ASM-equipped BADGERs and BLINDERs, which have an antiship strike role. The introduction of the new supersonic BACKFIRE ASM bomber into SNA is expected in 1975, thus substantially expanding the antistrike role of SNA in range and capability. Currently, the SNA strike aircraft are supported by intermediate and long-range reconnaissance aircraft and BADGER tankers. SNA

also has an ASW role performed by long-range BEAR Fs, intermediate-range MAYs, short-range MAILs, and HOUND/HORMONE helicopters.

To counter the sea denial capability of SNA bombers, the US Navy relies on the interceptors of its carriers and missile systems of surface combatants. In certain geographical areas, the land-based interceptors of the United States and its allies are available to inflict attrition on bomber raids before they reach naval task groups at sea.

The new F-14A TOMCAT is now replacing the F-4 PHANTOM as our first-line fleet air defense interceptor. The F-14 has the speed and endurance, the sensor, and weapons system to deal with the BACKFIRE threat to naval task groups.

The AEGIS surface-to-air missile system complements the F-14 in neutralizing the sea denial efforts of Soviet Naval Aviation. The AEGIS system is built around the advanced phased-array SPY-1 radar, and a sophisticated fire control computer. AEGIS can, in a jamming environment, detect, track, and intercept hostile missiles at rates far higher than present systems. It also has the reaction speed to intercept sub-launched cruise missiles "popping up" from short ranges.

Our evaluation of the relative capabilities of the US and Soviet general purpose naval forces, I believe, always must be set within the framework of strategic requirements and force objectives. These requirements and objectives determine the structure of the respective forces. On the one hand, the United States is greatly dependent on sea lines of communication, in peace and war, both for the transport of essential raw materials and for the support of our overseas interests and alliances. This dependence requires assured access and use of the world's sea lanes.

The US Navy, for its part, is charged in wartime with 2 tasks: first, securing adequate control of the sea lines of

communication to reinforce and resupply our overseas deployed forces and our allies; second, projecting naval power directly ashore by sea-based aircraft and amphibious forces. The Soviet Navy, on the other hand, has the mission of sea denial. Successful sea denial both protects the Soviet homeland from attack by sea and severs the sea lines of communication of the major Western alliances.

Sea denial is inherently less expensive than sea control because of the covert nature of submarines and the concentration of firepower possible with long-range land-based bombers. It takes more naval resources to assert sea control successfully and to project sea-based power ashore than it does to deny that control and thwart projection. Sea control and projection require surface ships; sea denial requires the sinking of surface ships. It is in the light of these considerations, fundamental to naval warfare, that we evaluate the relative strength of the two navies.

In crisis confrontations, the missile-firing combatants of the Soviet Navy are useful platforms. Because they pose the threat of a preemptive initial strike, they can offset the effect of the US Naval task groups which have been routinely dispatched to crisis areas as signs of American intentions to influence the outcome.

Once major war has commenced, however, Soviet surface ships do not constitute a sea denial threat to US forces of the severity of the submarine and air threats. In order to reach open water, the Soviet surface combatants must pass through geographical choke points where they are vulnerable to US and allied land-based aircraft or barriers of mines and submarines. Once in open water, the missile-armed Soviet surface combatants must contend with carrier strike

aircraft well before they can reach the launch points for their surface-to-surface missiles.

The respective roles, sea control and sea denial, are reflected in the naval force structures and ship designs of the United States and the USSR. The new, heavily armed surface combatant forces and increasingly sophisticated submarines present a growing Soviet threat to our control of the sea lines of communication and an increasing capability to obstruct the projection of our military power, especially in areas of high Soviet interest.

Moreover, the changing Soviet force structure reflects an increased interest in the USSR's capability to project power from the sea. The KIEV-class carrier will add a new capability for sea-based tactical air support of surface combatants. The newly constructed underway replenishment ships will allow more sustained freedom of movement by Soviet naval forces in distant areas. Those who view the Soviet Navy in the traditional context of coastal defense allow history to subvert current reality. This projection of Soviet power is limited in capability against significant opposition. Nevertheless, it is real and slowly growing.

In my judgment, the US Navy is superior to the Soviet Navy, at this time. We are superior in our capability to project sea-based power, and the quality of our attack submarine force is superior to that of the Soviet Union. Our current capability to control the essential sea lanes versus that of the Soviet Navy to deny us their use is, however, far more difficult to assess with reasonable assurance. I believe, nonetheless, that we could prevail in the most likely situations. My concern rests with the momentum of the Soviet Union's expanding naval capabilities. There is no question but that the capabilities of Soviet naval forces

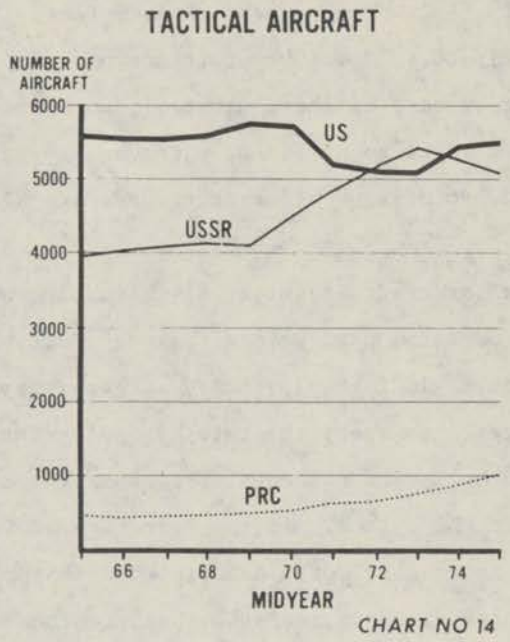
are growing. This is of real concern as we look to the future. The United States must move forward aggressively in modernizing and rebuilding its naval force levels if we are to preserve our margin of superiority.

Tactical Air Forces

The tactical air portion of the US general purpose forces program embraces a broad and diverse mix of capabilities and weapons systems, structured to respond to the widest range of military contingencies. Briefly, the mission of these forces is to conduct air operations to destroy or neutralize enemy forces, which include countering air, ground, and naval threats. While the emphasis of the tactical air force structure is on the fighter/attack force, there are other tactical air elements that perform essential support roles, such as reconnaissance surveillance, electronic warfare, command/control/communications, aerial refueling, tactical airlift, and special operations.

The organization concepts and structures of Air Force, Navy, and Marine Corps tactical air forces as a total force recognize the need for balanced forces within each of the Services and the complementary roles of the respective Service forces. This is supplemented by the contribution of allied tactical air forces. However, the contribution of the allies must be assessed in terms of country and regional orders of battle, employment concepts, doctrine, projections of allied warfighting capability, and political considerations.

Shown on Chart 14 are the US, USSR, and PRC tactical aircraft inventories, including fighter, attack, intermediate-range bomber, and reconnaissance aircraft.



The high projection reflects the Soviet Union's capability to assign the new BACKFIRE bomber to a theater as well as intercontinental strategic mission. The US figures include all such aircraft, both active and reserve, in the Air Force, Navy, and Marine Corps, but exclude those used for training (about 900 in 1975) and those assigned to and discussed previously under Continental Air Defense (about 500 in 1975).

The Soviet figures similarly exclude tactical-type aircraft used for training (about 3000 in 1975) and fighter aircraft assigned to the PVO Strany (Air Defense of the Nation) forces (about 2500 in 1975). However, some of these aircraft could be diverted to the tactical role.

In the PRC, most fighter aircraft are assigned a strategic home defense mission (over 3000 in 1975). The PRC figures, therefore, include only the tactical aircraft (attack fighters and light bombers) in the active inventory of the air force

and naval air force. On the other hand, home defense interceptor units participate in ground support training exercises. It is believed that as many of these strategic home defense aircraft as required would be utilized, whenever necessary, in a tactical role. No reserve aircraft figures are available for the PRC.

The US tactical aircraft inventory has slightly, but steadily, declined over the past several years. Partially offsetting this decline in total inventory is our substantial modernization program. However, the rate of deployment of the F-14, F-15, and A-10 will not equal the numerical attrition of older aircraft in the system. As the Secretary of Defense has indicated, the increasing costs associated with sophisticated high-performance aircraft are such that programmed modernization is not as rapid as desired.

From a qualitative standpoint, we are witnessing the divergent trends of US TACAIR's introducing some low-mix aircraft while the Soviet Union, conversely, is introducing high-mix aircraft; that is, aircraft which are significantly more sophisticated and capable than their predecessors.

The F-14 and F-15 are the two finest fighters in the world today, and procured in sufficient numbers, they will provide the thrust of our TACAIR fighter capability of many years to come. Each is a multimission aircraft with the range, speed, and weapons system necessary to execute the missions for which they were designed. Having sufficient numbers of these high-mix aircraft, however, is critically important since we can expect to be outnumbered in virtually any scenario we project.

On the low-mix side, the Air Force F-16 Air Combat Fighter (ACF) and the Navy/Marine version, the NCAF, will supplement these fighters and also provide a significant

air-to-ground capability. In later years, the ACF and its derivatives can provide substantial benefits from both a commonality standpoint and provide the dollar savings necessary to accommodate a larger TACAIR force level. Maintaining a sufficient total fighter capability is crucial and a proper ratio of these low- and high-mix fighters is important.

In the active Navy, the new F-14A (TOMCAT) is scheduled to replace about half the F-4s. It also will replace 4 squadrons of F-4s in the active Marine Corps. A-7Es will replace the older versions of the A-7 and A-4 in the active Navy in a primary light attack role; while in the active Marine Corps, this role will continue to be assigned to the A-4 (the improved version, A-4M) and the AV-8A (HARRIER). The V/STOL-capable HARRIER has exceeded expectations in its initial operational service and adds a new flexibility to US TACAIR forces.

The F-14A (TOMCAT) is designed to operate from FORRESTAL and larger class carriers, as well as from Marine Corps fields ashore. It provides air superiority for our air and sea lines of communication and projects US power across hostile beaches. The first 4 active Navy squadrons are now operational and 2 squadrons are deployed aboard ENTERPRISE (CVN-65). The first active Marine Corps F-14A (TOMCAT) squadron will be operational in FY 1976.

One of the most important features of the F-14A (TOMCAT) is its AWG-9 fire control system and the long-range, all-weather, air-to-air PHOENIX missile. This weapons system is capable of simultaneously engaging multiple supersonic targets at extended ranges and at almost all altitudes. Intensive testing of this newly operational missile against aircraft and cruise missiles has confirmed its outstanding effectiveness.

The attack capabilities of the Navy A-6 and A-7E and the Marine Corps A-6E and A-4M aircraft should be improved by new systems under development. The target acquisition and attack multisensor system (TRAMS) will be installed in the A-6 and A-7E, and the angle rate bombing system (ARBS) will be retrofitted into the A-4M.

In the US Air Force, the major changes in the tactical aircraft programmed inventory will result from the introduction of the A-10 close air support aircraft, the F-15 (EAGLE) air superiority fighter, and the F-16 air combat fighter.

The A-10 is programmed to phase into the active force beginning in CY 1976. A full production decision for the A-10 aircraft will not be made until October 1975.

The close air support mission dictated design criteria for the A-10. The Short Take-Off and Landing (STOL) capability of the A-10 will permit it to use short battlefield area airstrips. Its large fuel capacity will provide its long staying power over the battlefield to deliver sustained, effective firepower. In addition to its internal 30 mm Gatling gun, the A-10 has 11 external pylons to carry a large mixed ordnance payload, including antitank ordnance such as MAVERICK, ROCKEYE, and laser-guided weapons. Its survivability under high intensity battlefield conditions is greatly enhanced by armor installed around the cockpit and other critical components, including: redundant structural components, backup flight controls, and self-sealing, foam-filled fuel tanks. The simplicity designed into the A-10 will allow it to be serviced and operated from bases with limited facilities close to the forward edge of the battle area. From these forward locations, it will be immediately responsive to the needs of the combat soldier.

The F-15 (EAGLE), a most capable air superiority fighter, has been flying since July 1972; and its performance has either met or exceeded all expectations. The first operational aircraft were delivered to Tactical Air Command as scheduled in November 1974. The extensive flight test program, to include the operational test and evaluation, will continue through FY 1976.

The Air Force will deploy F-15s to bases in Europe and the Far East, as well as in the United States. Their integration into the tactical forces will provide a counter to the continuing numbers of modern sophisticated Soviet aircraft.

The F-15 was designed primarily to provide an air-to-air combat capability superior to that of enemy aircraft projected for the 1980s. The high thrust-to-weight ratio and low wing-loading of the F-15 also provide a capability to carry large external loads. The "hard points" built into the wings and fuselage to carry fuel tanks are compatible with multiple ejector racks for conventional weapons. This aircraft has the computational and display systems required for various manual and semi-automatic ground attack missions. Therefore, the F-15 has an excellent visual ground attack capability once air superiority in the battle environment is achieved.

In order to maintain the effectiveness of these tactical aircraft in today's SAM environment, it is imperative that they be equipped with and supported by modern electronic warfare (EW) systems. Our aircraft must have EW equipment that is capable of countering hostile weapons systems that operate in a wide range of frequency bands and modes. Our Service EW programs are designed to obtain these results.

The Air Combat Fighter Program, or ACF, which was initiated last year, evolved from the very successful Lightweight Fighter (LWF) Prototype Program. The F-16 possesses exceptional maneuvering and handling characteristics; uses limited avionics subsystems for navigation, communications, and fire control associated with guns and IR-type missiles; and demonstrates advanced technology. Prototype flight test results, cost analyses, and projections of operational capability indicate that a lightweight fighter offers a means of accomplishing the needed modernization and expansion of our Tactical Air Forces.

The new ACF will decrease the numerical deficiencies in the fighter force, replace a portion of the older force, and will enable the Air Force to continue its modernization of the total force by freeing some F-4s for transfer to the Air Reserve Forces. While this new fighter will be designed principally for air-to-air combat to complement the F-15, it also will have a potent air-to-ground weapons delivery capability. Because of the similarity of our requirements and those of our NATO allies, the ACF is under active consideration by Belgium, Denmark, Holland, and Norway as a replacement for their aging F-104s and F-100s. The Air Combat Fighter should prove to be a major step in reversing the trend of rising weapons systems procurement costs.

A combined force, consisting of F-15s and F-16s, is an example of what we mean by the term, "high-low mix." By moving toward a force structure composed of both types of air superiority aircraft, we will be able to maintain a larger force for equivalent budget expenditures, and therefore, will be capable of countering more effectively the expected threat in the 1980s. This larger mixed force also will reduce the quantitative advantage of the Warsaw Pact countries

without placing our forces at an unacceptable qualitative disadvantage. For these reasons, a transition program has been established to accomplish steps toward full-scale development of the F-16; and the Air Force will be requesting funds to continue full engineering development of the ACF early this year.

We can realize full effectiveness from our tactical air forces by providing adequate means to employ them in an environment characterized by high target densities composed of aircraft of many different types, missions, and performance capabilities. Current land-based surveillance and control systems deployed to provide this support have certain fundamental limitations. They are fixed and vulnerable to enemy attack. In addition to being located on the ground, they have a limited capability for detection of low-altitude aircraft over enemy territory. These systems also are vulnerable to electronic countermeasures, which severely limit their effectiveness in an intense and sophisticated conflict environment.

The Airborne Warning and Control System (AWACS) was designed specifically to overcome these deficiencies. AWACS will be a highly mobile and flexible national military resource designed to provide unprecedented all-altitude surveillance and data exchange for air defense and tactical forces across a wide range of possible conflicts. It will be a rapidly deployable and survivable warning and control system, integrated with ground-based systems where they exist, or providing effective control where such systems do not exist, or are degraded or destroyed by hostile action. It is a system which is essential for continued quality improvement of our response options in view of declining force levels.

Experience has emphasized the importance of effective electronic warfare systems operating in the modern SAM environment. For example, the Group of Soviet Forces Germany has between 50 and 75 battalions of SA-2s, 3s, and 4s, as well as several regiments of SA-6s. Hostile environments such as these must be neutralized if air superiority is to be achieved.

Not only do our forces face a formidable threat from increasing numbers of sophisticated Soviet SAMs, but they must also contend with modern, highly capable fighter aircraft.

The Soviet Union apparently is continuing a determined effort to erase the long-held advantage in the ground attack role held by US tactical air forces. The USSR traditionally has emphasized air defense in its tactical air forces and has gained thereby a clear quantitative advantage and some qualitative advantages in this role.

Increased Soviet emphasis on tactical aircraft has required a reevaluation of our earlier inventory projections for the next 5 years. We now estimate that, in the next few years, most of the older fighters (MIG-17s and MIG-19s) and short-range bombers (IL-28s) will be phased out of the forces.

In considering the overall changes in the various roles of Soviet tactical aviation, the slight numerical increase may be misleading if considered alone because there was a significant qualitative improvement, in that some of the older MIG-21s (FISHBEDs) have been replaced by late models and MIG-23 (FLOGGERs).

MIG-23s (FLOGGERs) are also replacing MIG-17s (FRESCOs) and MIG-19s (FARMERs). There was a significant increase in the number of FLOGGERs. The increase in MIG-25s (FOXBATs)

represents a significant change when considered in respect to deployment and the capabilities of the aircraft.

Soviet tactical aviation has 16 tactical air armies -- 1 in each of 12 military districts in the USSR and 4 with the Groups of Soviet Forces in East Germany, Czechoslovakia, Poland, and Hungary. The primary emphasis is against Central NATO, with Southern NATO and the Far East accounting for the bulk of the remainder. The major qualitative change has been in the area opposite NATO, where most of the newer aircraft have been deployed.

The newer aircraft are better able to conduct air-to-ground operations. Airborne electronic countermeasure capabilities are being upgraded. More weapons can be carried, and new weapons, including tactical air-to-surface missiles, are being developed. The most significant addition was the MIG-23 (FLOGGER). A new variant (FLOGGER C) was observed in East Germany. Unlike other FLOGGERs, this is a tandem seat model. It is probably a trainer; however, like any other Soviet trainer, it is combat-capable. Five pylons have been observed on the FLOGGER C. The MIG-21 (FISHBED) force has also been upgraded.

Now operational, the SU-19 (FENCER), a new fighter-bomber, has been deployed. Previously referred to as the SUKHOY advanced variable-geometry wing (VGW) fighter-bomber, FENCER has now reached operational status. It carries a variety of guided and unguided air-to-ground weapons and appears to be the first Soviet fighter specifically designed for ground attack.

The rapidly rising importance of electronic warfare has not been ignored by military planners in the USSR. Five years ago, there was only limited use of active electronic countermeasures (ECM) by Soviet tactical air forces -- primarily utilizing the IL-28 (BEAGLE). In 1970, the first

operational ECM escort aircraft, YAK-28 (BREWER E), was deployed. This was followed by the AN-12 (CUB C).

The PRC tactical aircraft inventory continues slowly, but steadily, to increase slightly to a total of over 800.

A hiatus is occurring in the development of new Soviet fighters. For reasons unknown, a new prototype fighter has not been observed since 1970. During the last 20 years, there have been other periods in which new fighter prototypes have not appeared, but the pauses were of shorter duration. These periods can be attributed to a variety of reasons. New prototypes appeared in 1970; namely, the SU-19 (FENCER), a VGW fighter-bomber, and a naval associated V/STOL fighter. The FENCER and V/STOL fighters are being developed for operational deployment. Although no prototypes of new fighter aircraft have appeared since 1970 and the rate of prototypes entering flight test is expected to continue to decline, significant qualitative improvements to weapons, avionics, and propulsion have been identified.

Our Military Forces must be prepared to operate in a variety of combat situations against a variety of threats and targets if they are to be able to deter aggression against an equally broad spectrum of US interests. Critical, if not essential, to this capability is high accuracy of delivered fire. Precision-guided weapons, which raise the single shot kill probability and reduce the scope and duration of the combat exposure of the delivery vehicle, produce a significant advantage. This is one of the clear lessons of our direct experience in SEA and our observation of the 1973 Middle East War. Such weapons appreciably increase our capability to apply force directly to a selected military target rather than to the surrounding area. In addition, such weapons produce target kills at a unit cost lower than

unguided weapons primarily as a result of the reduced attrition of the delivery vehicles.

The Navy and the Air Force employ a family of weapons in this category and are seeking to develop others. Guidance systems include passive and semi-active radar homing, radio command, T.V., electro-optical contrast edge trackers, imaging infrared seekers, and laser spot seekers which detect laser energy from a target being illuminated by a laser designator, thus giving the United States systems capable of being targeted in all-weather and ECM environments. The weapons carry warheads suitable to mission requirements.

Although our information is incomplete, we believe that we currently enjoy a considerable edge over the Soviet Union in the military application of this technology.

Our edge in this technology is a major part of the margin of US superiority and we must ensure that we are capable of holding it over time. The continuation of development programs in this field is essential if we are to provide the American soldier the air support he requires to survive on a battlefield where he is likely to be numerically outnumbered.

I believe US tactical air forces will continue to be superior in both the counter-air and ground-attack roles by mid-1980, providing we actively pursue the modernization programs already underway, particularly the F-14A (TOMCAT), the F-15 (EAGLE), the F-16, the Navy NCAF, the AWACS, and the precision-guided weapons noted above.

Theater Nuclear Forces

A visible, responsive, and versatile theater nuclear capability is indispensable to successful deterrence and defense. Tactical nuclear weapons complement and extend the capabilities of general purpose forces. Theater tactical nuclear forces, however, cannot substitute for conventional

forces, and the converse is equally true. Each one of these force elements -- conventional, strategic, and tactical nuclear -- has unique capabilities. All are complementary and mutually supportive.

Should it appear that aggression cannot be contained and the situation restored by direct conventional defense, the doctrine of flexible response provides for a carefully controlled, deliberate raising of the scope and intensity of combat to a level where the costs and risks of continuation become disproportionate to the aggressor's objectives. Within this context, theater nuclear weapons could be employed to induce the enemy to limit the scope of his aggression, to yield allied territory, to avoid an extended war of attrition, or to make the political decision to restore peace short of all-out destruction. Thus, theater nuclear weapons for deterrence and defense make a major contribution to options which ensure that the United States will never be faced with capitulation or strategic nuclear war as the only alternative. To deal with an almost unlimited range of possible hostile actions, the United States must maintain a broad range of selected responses.

Theater nuclear weapons offer inherent advantages in the process of deterrence and control of escalation. First, their limited range and yield pose no direct threat to the survival of the USSR as a nation. Second, their accuracy allows targeting of military forces with limited collateral damage. Third, many of these weapons, such as atomic demolitions and SAMs, are primarily defensive in nature, and thus, are not as destabilizing as other type nuclear weapons may be. Fourth, the inherent mobility and dispersal capability of these weapons enhance their survivability and reduce the temptation to attempt to destroy them by preemption. A

potential adversary is confronted with possible nuclear capability in every artillery position across the entire front. This spread of common delivery means presents the enemy with a most difficult targeting problem.

Tactical nuclear weapons provide the capabilities for a range of employment options for defending US and allied interests while seeking to control escalation. An adversary cannot be certain as to how the United States may react and must recognize that we have the option of responding through a wide spectrum of military power previously withheld. Two classes of capability are of special importance: First, militarily effective employment in the immediate battle area, and second, a range of limited attacks against fixed theater-wide targets. These missions require a mix of immediately responsive warheads and delivery vehicles. The systems must provide range and yield flexibility and an all-weather capability if they are to be, in fact, immediately responsive.

The concept of deterrence, in the final analysis, is as dependent upon the perceptions a potential adversary may have of our will and determination to employ our capability -- if necessary -- as it is upon the capability itself. A theory of controlled and limited escalation is inherent in the American ethic and lends great credence to the possibility of employment of this capability. Lack of the capability to resort to a limited response could tempt an aggressor to use nuclear weapons in a limited way in a crisis. Our ability to employ a controlled response, therefore, makes deterrence more effective and initial use less likely.

The conventional balance in Europe is such that in the event Warsaw Pact forces are able to mass secretly and to apply armored pressure to any given point in the defense

line, NATO ability to defend with conventional forces would be greatly weakened. The ability to employ nuclear weapons selectively under all-weather conditions against armored thrusts greatly contributes to theater deterrence and is an intermediate option between conventional warfare and general nuclear war. These theater nuclear weapons, with their delivery systems, provide a quick response to counter difficult-to-acquire, fleeting, regenerative battlefield targets. The destruction of these targets could be essential to a successful defense of Western Europe or any other area of the world where our vital interests are at stake.

In addition to ensuring that those forces are capable of controlled, discreet responses, we are seeking ways to provide some reasonable degree of assurance that the limited scope and size of the response is clearly perceivable by the enemy. Additionally, we are making every effort to ensure that our theater nuclear forces and their support are structured to provide a high level of security against surprise attacks, terrorists, and unauthorized use.

The Soviets currently possess a significant tactical nuclear capability, but it will be some time before the developing PRC nuclear capability will influence significantly military operations in Asia.

The number of Soviet SS-4 and SS-5 launchers remained essentially unchanged over the last year. It is believed that the total number of MR/IRBMs on operational launchers will be about 600 by mid-1975. Allowing for refires and spares, we estimate the inventory totals over 1000 MR/IRBMs -- all of which are assumed to have nuclear warheads available.

The US inventory does not contain any ballistic missiles in the MR/IRBM class. The deployment of PRC MR/IRBMs was discussed earlier because we believe this deployment is more consistent with a strategic offensive role from a PRC perspective.

The US inventory includes a variety of nuclear-armed artillery rounds, atomic demolition munitions, and surface-to-air weapons with nuclear warheads.

The Soviet Union has deployed a large number of nuclear-capable tactical missiles and rockets -- primarily the short-range (85-160 nm) tactical ballistic missiles, SCUDs, and surface-to-surface unguided free rocket over ground, FROGs.

Our PERSHING, SERGEANT, and LANCE tactical surface-to-surface missile systems are armed only with nuclear warheads. A conventional warhead has been developed and type-classified for LANCE, and the Army is requesting funds to procure a limited number for use with annual service practice missiles. The US HONEST JOHN rocket system has both a nuclear and high explosive capability. SERGEANT and HONEST JOHN continue to be phased out of the US inventory, but HONEST JOHN will be retained by certain Reserve Components and allied forces for a longer period. Most of the Soviet tactical aircraft are capable of nuclear weapons delivery. Similarly, most of the aircraft assigned to US tactical air units are capable of delivering either nuclear or conventional weapons.

The primary PRC nuclear weapons delivery aircraft is the TU-16 (BADGER) when deployed in a strategic role. Also available as nuclear weapons carriers are the IL-28s (BEAGLEs). In addition, the Chinese-designed F-9 ground support fighter may have a nuclear weapon delivery capability.

Turning now to naval forces, we still do not expect the PRC to have any naval nuclear weapons deployed by mid-1975. As for the USSR, although there are many uncertainties as to the number of such weapons in its inventory, their existence is clearly established.

As I have noted, the United States is doing development work on the HARPOON antiship missile, but the earliest we could deploy such a weapon with a nuclear warhead is late FY 1979.

It remains difficult to draw precise conclusions as to the relative balance between the United States and the USSR in theater nuclear weapons because of the uncertainties inherent in estimating and evaluating Soviet weapon inventories. Nevertheless, I continue to believe the United States is equal or superior to the USSR in overall capability and remains superior in nuclear weapons technology. While the PRC's effort to become a regional nuclear power has been successful, they remain far behind the US and the USSR.

Nuclear warfare, whether strategic or tactical, is undesirable; but that is not the issue. As the debate as to utility of theater nuclear weapons continues, ultimate need for such weapons should not be confused with desirability. Our current inventory is becoming obsolete; the issue is not whether we want to use such weapons, but how we replace the deterrent capability that these weapons provide. A failure to replace the capability clearly risks the peace. There is nothing immutable about the size of our stockpile or the precise nature of our deployments; but that, too, is not the issue. The issue is how best to deter war. These weapons play an important role in that endeavor.

In many situations, a favorable military balance depends on the qualitative advantages our weapons possess. Today's technology in warheads and delivery systems can provide an improved tactical nuclear stockpile with greater accuracy and modern security devices. Exploitation of this technology on the part of the Services, working in close concert with the AEC, would provide major improvements in response time,

flexibility in employment, lower collateral damage, and enhanced security.

The warhead for LANCE, which has been deployed to Europe, replacing HONEST JOHN and SERGEANT in all US units, remains the only new theater nuclear warhead or bomb now in production. We also have Congressional approval to build additional B-61 bombs this year with improved security features. This modern bomb provides our airmen with a versatile weapon compatible with improved aircraft design. Technological advances must continue in this area so that the United States is not deprived of a viable option between conventional warfare and the orgy of destruction associated with strategic nuclear warfare.

Chemicals and Biological Agents

The past year has been both active and productive. On 16 December 1974, the Senate gave its advice and consent to the ratification of the Convention on the Prohibition of Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons and Their Destruction (BW Convention) and to the 1925 Geneva Protocol. In the BW Convention the parties undertake not to develop, produce, stockpile, acquire, or retain biological agents or toxins of types or in quantities that have no justification for peaceful uses, as well as weapons, equipment, and means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

In late 1969, after a review of our chemical and biological warfare policies, the United States renounced the use "of any form" of bacteriological or biological weapons that either kill or incapacitate. At that time, steps were taken to dispose of our existing stocks of bacteriological agents. The United States no longer possesses any such

agents or the munitions for deploying them. With the ratification of this convention, the United States formally joined in an international cooperative effort to reduce the possibility of these weapons ever being used by any nation. The Joint Chiefs of Staff do not believe that the capability of waging biological warfare is essential to our deterrent posture. I believe that the ratification of this treaty will have no deleterious impact on our national security and could enhance it.

The Geneva Protocol of 1925, in effect, prohibits the "first use" of chemical and biological agents in war and is not a "non-use" treaty. The United States has now joined the other militarily important countries of the world by becoming a party to this agreement. The President has renounced, as a matter of national policy, first use of herbicides in war except use for control of vegetation within US bases and installations and around their immediate defensive perimeters. He has also renounced first use in war of riot control agents except in defensive military modes to save lives. The Joint Chiefs of Staff fully participated in the interagency process leading to the President's decision and they support it.

There is a strange and sinister aura surrounding biological weapons; and although allegations of their use are many, no government and no responsible government official has ever admitted waging offensive biological warfare. However, history is replete from ancient times with examples of chemical warfare. The earliest recorded use of chemicals in military operations was in 428 BC, when the Spartans burned wood saturated with pitch and sulphur under the walls of Plataea. Since World War I, toxic chemicals have been used only against forces unable to defend against them or to

retaliate in kind. It is also interesting to note that since World War I each known use of chemicals has been by a signatory to the 1925 Geneva Protocol. Therefore, we seek to maintain a chemical capability, not to violate the Protocol, but to insure compliance.

During World War II, President Roosevelt threatened the leaders of the Third Reich with immediate devastation in the event they resorted to chemical warfare. At that time, the Germans possessed massive stocks of chemical weapons, including nerve agents not found in any allied arsenal. Most historians attribute the failure to employ such weapons to a fear of overwhelming retaliation by the allies. Whatever the deterrent, "gas" was not used in World War II, although the capability was widespread among the combatants. Significant tactical advantage accrues to the user of chemical weapons because of the encumbrances of protective equipment on the defender if the user is not so encumbered. Retaliation or a capability to retaliate in kind precludes ceding any such advantage to any enemy. Should the United States be attacked on significant scale with chemicals, and lacked the ability to retaliate with chemicals to redress the situation, it could force an unwanted or premature US/Allied-initiated nuclear attack in order to prevent total defeat and a military disaster.

The USSR currently has an unsurpassed capability to conduct chemical warfare. Highly toxic chemical agents and dissemination means have been developed and standardized. There is considerable firm intelligence to support the assessment that the USSR could initiate and sustain large-scale chemical warfare either alone or with conventional or nuclear weapons. It is not possible with any reasonable degree of assurance to predict or estimate the size of the

USSR's CW agent stockpile. Other evidence, however, reflects a requirement for a sizeable stockpile both in bulk agent and filled munitions. The USSR's stockpile is probably more than adequate to meet its minimum requirements. The Soviet Union would have no problem producing ample supplies in the event of war. At the present time, there are many major installations believed to be associated with the testing, production, or storage of toxic agents, munitions, and protective equipment. Neither production nor storage facilities are believed to be limiting factors. The USSR has a variety of CW agents and munitions to satisfy most operational requirements.

A review of USSR delivery systems for CW agents shows a well developed capability to employ a wide variety of effective munitions for ground, sea, or air delivery of toxic chemical agents throughout the theater. Soviet chemical personnel are distributed throughout the ground forces.

Soviet forces are considered to be the best trained and equipped in the world for operations in a toxic environment. Extensive training in CBR protective equipment is a requirement for Soviet ground, sea, and air forces and is an integral part of major military maneuvers and exercises. Soviet Armed Forces possess large quantities of a wide range of effective protective and decontamination equipment for use in a toxic environment, and new equipment which will further upgrade their operational ability continues to appear. Equipment and training for chemical, biological, and radiological protection are provided. The training and protection of forces for operation in a toxic environment allows first-use of chemical weapons by the Soviet Union with an acceptable assurance that it could defend against retaliation with chemical weapons.

Our policy is to retain a chemical warfare capability designed to deter the use of these weapons against us or our allies, and should deterrence fail, to permit us a reasonable degree of retaliation with chemical weapons. US Forces must be equipped adequately with a credible capability to deter an adversary from initiating chemical warfare, and should deterrence fail, to place the enemy under a similar severe operational constraint in order to preclude the attacker from gaining a significant tactical advantage.

A complete and viable deterrent posture includes both a defensive and offensive aspect. Definitive programs for the procurement of required quantities of standardized defensive materials have been established. By FY 1981, provided that these programs are approved, we will have the means for equipping all US forces with required defensive equipment. Research and development programs are being pursued to provide additional critical defensive equipment. Modernization of the chemical weapons stockpile is needed if the United States is to maintain a limited, but credible, capability in this area.

The primary aims of modernization are: (1) provide a stockpile in an amount consistent with requirements; (2) allow for rapid deployment of munitions from storage to theater locations; and (3) provide greater employment flexibility through more variations in delivery configurations.

Modernization of the chemical warfare deterrent/retaliatory stockpile can be accomplished by either upgrading the present stockpile within the limits of agents already available or by converting the stockpile to binary munitions. Binaries offer a feasible, economic, safe, and more desirable alter-

native. Modernization by developing binaries would provide the following advantages:

- Limited potential hazards to areas surrounding storage sites.

- Greater deployment flexibility because of the elimination of degradation of agent purity since components remain stable in storage.

- Flimination of costly disposal programs when munitions become obsolete and reduced cost in government production plant facilities.

This year's budget contains a modest request to provide the long lead time equipment and facility requirements for a binary production facility.

The Navy has included a budget request for the development of a binary bomb which also will be used by the Air Force. I urge your support for these modest modernization programs to ensure that the United States will maintain a minimum, but adequate, CW retaliatory deterrent capability.

Regional Perspectives

In this section, I will address our worldwide interests and the global challenges to those interests on a regional basis. The world, as divided here, is arbitrary and somewhat overly structured. It is necessary, however, in order to present the data in an understandable way. As the previous discussion has shown, the major military challenge to the security interests in the United States is the rapidly developing military capabilities of the Soviet Union. Despite its ongoing advances, the USSR currently possesses only a limited capability to project substantial general purpose military power beyond the Furasian Continent.

The major external constraints on the application of Soviet power are the continued strength of the United States,

the vitality and cohesiveness of our Alliance structure, and the continued ideological and territorial confrontation between the PRC and the Soviet Union. The United States alone cannot provide the forces necessary to counter every military threat to our interests. We have only limited exclusive interests notwithstanding our need to have access to free markets and non-politicized supplies of raw materials, including oil. Our major responsibilities likewise must be shared. Increased cooperation and participation by our allies, including the provision of base rights and facilities, depend to a large measure upon our ability to demonstrate as well as assert our determination and capability to honor our assurances of support. Security Assistance plays a major role in the effort by contributing to the maintenance of stability in Northeast Asia, Southeast Asia, and the Middle East; encouraging our friends and allies to become self-reliant, thus decreasing the probability of direct US military involvement; and ensuring continued US access to key bases and facilities.

In the long run, the only security we can reasonably hope to obtain flows from the deterrence global collective security provides.

Europe

Background

Western Europe's strategic importance to US national security interests is second only to that of the territorial United States itself in strategic importance. US forces are located in Western Europe to contribute to an effective deterrent against the threat to US interests represented by the conventional forces of the Warsaw Pact in Central Europe.

The best place to begin the defense of the United States is as far forward as possible. Our European Command acts as a viable force protecting US national interests, and through the NATO Alliance, supports the mission of deterrence against all forms of aggression. However, should aggression occur in Europe nonetheless, then the mission of our forces will be to: conduct an initial conventional defense as far forward as possible; preserve or restore the integrity and security of the NATO area; conduct deliberate escalation of the conflict if aggression cannot be contained; and provide an appropriate nuclear response if the aggression is in the form of a major nuclear attack.

The Threat

In recent years, the Soviet Union and the Warsaw Pact have substantially improved their forces in Central Europe. Over the next 5 years, we believe they will continue to improve their military posture to be able to negotiate from a position of visible strength. The USSR, while developing a whole new family of strategic missiles, is cooperating with its East European allies to increase qualitatively the strength of the Warsaw Pact general purpose forces. Currently there is a force of some 58 divisions capable of attacking Central Europe. Given one month to mobilize, this force could be increased to 80-90 divisions. Since 1971, we have seen the capability of these forces improve through advances in mobility, weaponry/firepower, improved logistical support, more effective command and control, and increased numbers.

As I have previously noted, a continuous upgrading of Soviet/Warsaw Pact aviation forces has been underway in recent years. The emphasis has been and continues to be on the ability of those forces to fight a conventional war in Europe.

Within the Pact, the naval threat is posed primarily by an emerging Soviet Navy more capable every day of conducting extensive combat operations worldwide, as well as supporting peacetime political objectives. It is clear that the Soviet Union deliberately and resolutely is striving to develop a powerful Navy. The home base of most of this force and its prime operating areas lie within the US European Command area of responsibility from which it can seek to perform its mission of interdiction of NATO's lines of supply and reinforcement.

NATO and Warsaw Pact Comparison

Improvements in US and NATO forces during the past several years have increased capabilities considerably, with particular emphasis on conventional warfare. The thrust is to avoid being forced into nuclear war as the only alternative to unacceptable losses in a conventional battle. Strengthening conventional capability will raise the nuclear threshold, but this requires a tailored force with capabilities adequate to both initial and sustained combat. Toward this end, in the last 2 years, headquarters and support manpower spaces numbering 17,000 have been reduced -- 98 percent of which are being added to combat units. An additional 18,000 "support" spaces will be eliminated beginning this year and added to combat strength in the theater. The ratio of combat to support ground force manpower has been altered from 58/42 percent in 1968 to a current 62/38; and by the end of FY 1977, it should be 73/27. As I have noted, we plan to deploy 2 additional brigades to Europe. This increase in initial combat power at the expense of sustaining capability can be accomplished only with some risk, but it is a calculated risk based upon the threat. In an effort to reduce the risk flowing from a shortfall in essential support elements, we

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have been working with our NATO allies to ensure adequate support. Overdependence on others, however, is not desirable. We must be careful not to upset the balance through reduction of support forces without obtaining firm assurance that their missions will be accomplished by other resources. To do so would result in a certain degradation of our ability to conduct a conventional defense which, in turn, would cause a lowering of the nuclear threshold.

Overall, NATO has the forces and equipment for a successful defense, particularly in view of the improvements in the Alliance's conventional capabilities now being implemented. In all 3 NATO regions, national ground forces amount to 1.78 million, while Warsaw Pact forces amount to 1.62 million in the East European Pact countries and the 3 Western USSR military districts abutting NATO territory. Pact forces, however, have increased by over 120,000 since late 1971, while NATO forces have remained relatively static. Pact increases appear to be related to upgrading of weapons systems, as noted above.

NATO tanks, while outnumbered by a factor of 2 1/2 to 1 or 3 to 1, are, in general, superior to those of the Warsaw Pact, particularly in first-shot kill probability. Pact artillery, however, outnumbers that of NATO by a factor of 2 to 1 and the larger caliber weapons have greater range. With respect to available tactical aircraft, at the beginning of hostilities, Pact outnumbers NATO by a factor of about 2 to 1; but in general, NATO aircraft have greater range and payload capability, with crews that have better night and all-weather training. NATO's ground air defense provides an effective high- and medium-altitude air defense capability. In addition to conventional strength, NATO maintains an ability to carry out tactical nuclear operations in conjunction

with the strategy of flexible response. Security measures for protection of weapons have been improved over the past year, and new devices and weapon designs have reduced the likelihood of unauthorized detonations. Our ability to conduct selective tactical nuclear operations would be enhanced by an improved and more survivable command and control communications system.

Overall, the asymmetries in NATO and Warsaw Pact tactical nuclear weapons and employment concepts enhance the NATO deterrent by complicating enemy judgments of possible allied responses. In either a conventional or nuclear conflict, however, a significant advantage to the Warsaw Pact rests in the initiative. The Pact ability to select the time, places, and nature of the attack requires great flexibility in defense by NATO forces. Currently, NATO possesses considerable flexibility in responding.

A broad spectrum look at NATO and Warsaw Pact capabilities reveals that NATO currently has a firm basis for successfully implementing the flexible response strategy, is aware of those areas needing upgrading, and is studying programs to ensure the adequacy of the defense. Improvements are required in the critical areas of force modernization, war reserve stocks, and resupply arrangements. Accordingly, NATO's air-ground team is capable of conducting an initial defense in Western Europe.

Military Balance by NATO Region

In the Northern Region, USSR M-Day forces opposite Northern Norway outnumber those of CINCNORTH; but geography and climate aid in the defense, and NATO can augment with troops and tactical fighters. NATO can control access to and egress from the Baltic through coverage by land-based air and mining, but Pact forces may be able to control the

Eastern Baltic, employing air and naval forces to protect the flank of Pact forces along the Littoral.

In the Central Region, Warsaw Pact M-Day ground forces significantly outnumber NATO-assigned and earmarked forces. Counting all the forces of the NATO Central Region nations, together with the in-place forces of Canada, the United Kingdom, and the United States, Pact superiority is reduced. Pact tactical fighters in the Central Region outnumber those of NATO by a factor of almost 2 to 1, but numbers of fighters with an attack role are almost equal on both sides.

Comparisons of NATO and Warsaw Pact capabilities in the Southern Region are complicated. Nato M-Day ground forces outnumber those of the Pact in the South almost 2 to 1.

Special Problems

Of note is Section 302 of the 1975 Military Procurement Authorization Act, which has had an immediate effect because it requires, inter alia, that US military non-combat strength in Europe be reduced by 18,000 men by 30 June 1976. At least 6000 of that number must be removed from Furope by 30 June 1975. On the other hand, the law allows the Secretary of Defense to increase the combat strength in Europe by amounts equal to the reduction in support forces. Specific proposals for implementing this requirement are being examined now. The bulk of the reduction must come from US Army Europe units. The law has a narrow definition of combat units. As defined in the statute, the combat component of the Army only includes the Infantry, Cavalry, Artillery, Armor, Combat Engineers, Special Forces, Attack Helicopter Units, Air Defense, and Missile Combat Units of battalion or smaller size. Omitted from this definition are many military

personnel whose duties require that they close with the enemy and apply fire to him, with all the hazard that this entails. This portion of the law dictates that combat increases made to offset "support" reductions must be made in front line battalion-sized or smaller units. Problem areas associated with the implementing of this law are: (1) stationing; (2) local training areas; (3) hiring of civilians; and (4) costs.

Stationing and the associated problems of adequate training areas are the major complications we will have to overcome. Unlike the Continental United States, where large multipurpose military reservations such as Fort Hood and Fort Bragg provide considerable flexibility in organizing and training additional combat units, the US Army Europe primarily is located on numerous small "Kasernes" scattered throughout Southern Germany. Most of these Kasernes are pre-World War II German Army installations established in the 1930s on the outskirts of major cities. During the past 2 decades, the German population and economy have expanded, and these Kasernes have become surrounded by industrial complexes, high-rise apartments, homes, parks, and the like. This leaves little or no room for expansion and creates a premium on real estate. US Army Europe is faced with added requirements for training combat units when these Kasernes and training areas already are crowded. Support activities withdrawn under the law will free some facilities, but such activities are largely to the rear and do not have the hard stands, maintenance facilities, and maneuver areas required by tank, mechanized infantry, and artillery battalions. The construction of new facilities will require additional funds, and such funds will be extremely hard to find. It will be difficult and probably impossible to acquire additional training areas as well.

As support units are reduced, it will be necessary to hire local civilians to perform certain tasks previously done by military men, e.g., providing transportation, maintenance, and medical support. Whether these local nationals can be attracted in sufficient numbers for an acceptable wage is subject to some doubt. Inflation has struck Europe hard. In the past 5 years, the average dollar cost for local national labor in Europe has risen from approximately $3,400 per man year to almost $10,000 per man year.

It is estimated that negotiations with host nations on wages and fringes in FY 1976 will result in approximately the same rate of annual escalation of costs; that is, between 14 and 17 percent. Thus, there are preliminary indications that Section 302 will cause an increase in the US Army Europe budget. The European Command is now formulating its recommendations for the implementation of Section 302. The thrust of those recommendations -- and the law itself -- is a conversion of a sizeable amount of manpower from support to combat rather than a reduction in total strength. It is likely that the peacetime impacts of such conversion can be overcome by diligent effort.

Aside from the issues associated with Section 302, logistics remain of continual concern. Increased emphasis has been placed on logistical aspects of all exercises, to include US unilateral and NATO exercises.

Recent Accomplishments and Planned Improvements

Among significant accomplishments is the marked improvement in automated intelligence data handling systems as well as in the area of electrical transmission of imagery. The latter is of substantial importance both for the warning of potential enemy intentions and for the planning and conducting of military operations. Nonetheless, there is a need to

improve further our capability to provide the right photography to the right man at the time he needs it. We continue to emphasize electrical transmission of imagery to obtain full value from our expensive, sophisticated national systems.

Among the other areas where accomplishments are noted, but in which further improvements are necessary, are communications in EUCOM. Communications are furnished primarily by the Defense Communications Systems, Europe, as a part of the worldwide DCS. The DCS-EUR, with organic, service-owned systems, provides USCINCEUR with communications in support of the WWMCCS and USCINCEUR's command and control, including information on: status of forces; surveillance; intelligence; alert/warning; consultations/decisions; nuclear weapons, custody and release; reconnaissance; logistics; augmentation control/coordination between lateral and subordinate headquarters, SAS sites, airfields and combat elements within the theater. The reliance on out-dated equipment and the lack of redundant circuitry in automatic switching facilities continue to hamper this important upgrade of NATO communications system.

The Military Worth and Value of NATO

Nato has served and will continue to serve US security interests. The Alliance has continued to carry out successfully for 25 years its mission of defense and deterrence while, at the same time, supporting solidarity and formulating the initiatives of detente. It has demonstrated that it is adaptable to a greater degree than is generally recognized. The Alliance is beset by economic difficulties and marked by social changes. The cumulative results of these factors have placed pressures on NATO at a time when the Alliance also is faced with the difficulty of repairing the damaged security of the southern flank following the Cyprus affair.

These problems do not lend themselves to simple solutions by the military staffs since the breadth and influence of their scope are highly pervasive and therefore fall in the political structure of NATO.

Common problems, such as inflation and scarce resources, demand economic cooperation, standardization, shared research endeavors, and a closer mutual look at common political problems. The problems, old and new, which are now arising exceed the classic military concerns, such as a massive land attack or confrontation. The continued solidarity of NATO and the composition of its member states are critically important assumptions underlying US military strategy. Any significant disruption or fragmentation of the NATO Alliance will have a profound effect on the US strategic outlook, and hence, the strategy for meeting the security objectives of the United States.

Atlantic

The Soviet strategic threat in the Atlantic is embodied in its submarine-launched ballistic missile force, including YANKEE patrols in the Western Atlantic. The newest weapon in the Soviet naval strategic inventory is the DELTA-class SSBN with its SS-N-8 missile. From existing YANKEE patrol areas, the DELTA could target the entire Continental United States, and from areas as distant as the Barents Sea, a DELTA can cover any target along the eastern seaboard now being targeted by YANKEE SSBNs.

Soviet general purpose naval units represent a substantial and capable force equipped with modern multipurpose platforms, weapons, and sensors. The primary weapons system of this force is the cruise missile, which is deployed on most classes of surface combatants as well as in submarines.

A new antiship missile system, the SS-NX-13, is currently under development by the Soviet Union.

An important mission of the Soviet Navy is to counter the POLARIS/POSEIDON deterrent. In the Atlantic, the Soviet Union has the capability to conduct coordinated antisubmarine warfare against the US submarines, with a quality force of major surface combatants, fixed-wing ASW aircraft, plus other forces which are supported by capable intelligence, surveillance, and adequate command and control systems.

After the POLARIS/POSEIDON, the major naval deterrent to the Soviet Union is the aircraft carrier task force. To neutralize this deterrent, the Soviet Union is capable of utilizing BADGERs, BISONs, BLINDERs, cruise missile/torpedo submarines, and conventional submarines plus surface-to-surface missile ships and BEAR D targeting support aircraft.

The Soviet Northern Fleet has the capability to conduct amphibious landings with a regimental-size naval infantry force, which could be reinforced by administrative lift of Soviet Army motorized rifle units. These forces could be brought to bear in Northern Norway or Iceland. Continued improvement of Soviet capabilities for sustained deployment can be anticipated.

Atlantic Regional Considerations

From the Soviet point of view, the Northeast Atlantic and the Norwegian Sea constitute the primary threat area for SLBM and other seaborne attacks against Northwestern Russia. We see the North Atlantic air and sea LOC as the avenue for US reinforcements and resupply of Western Furope. The Soviet Union maintains significant sea and air surveillance in this region, and its objectives in wartime almost certainly include denying us its use.

Because of its strategic geographic location in relation to the North Atlantic and Norwegian Sea LOC, Iceland is an element of major importance in the equation of Atlantic power.

By virtue of its strategic location, the air base at Lajes, in the Azores, is important to the control of the Atlantic.

Achievements and Shortfalls

The Atlantic Command must be able to contribute to deterrence in the face of the anticipated threat. The strategic forces can perform their mission.

In the area of achievements, the Atlantic Command's contribution to the Nation's strategic forces will continue to grow as POSEIDON-equipped SSBNs enter the fleet. In addition, the CINCLANT Airborne Command Post attained final operational capability on 1 January 1974, significantly increasing CINCLANT's capability for ensuring continuity of operations in the execution of strategic nuclear war plans.

In spite of the shortfalls noted above, the overall readiness of the Atlantic Command forces has remained constant over the past years. Also, CINCLANTFLT was able to deploy an impressive augmentation force to USCINCEUR during the Middle East conflict last year and for the mine-clearing operation in the Suez Canal which followed. Some problem areas were noted, however, particularly during the past 2 years, when it has been necessary to increase the level of naval units deployed to the Mediterranean in order to help counter the Soviet presence in that area.

Furthermore, the material condition of some of our surface ships continues to be a problem. It is aggravated by the shortage of enlisted supervisory personnel to provide

routine preventative and corrective maintenance, and by the fuel crisis and increase in fuel prices which have necessitated a curtailment of fleet operations. This, in turn, resulted in inadequate opportunities to conduct at-sea exercises, type training, and individual ship exercises with a consequent degradation in training readiness.

In addition, our Navy has lagged behind the Soviet Union with respect to surface-to-surface weapons, but it is anticipated that a significant improvement will be realized with the introduction of the HARPOON.

Because of budgetary problems and inflation, antisubmarine warfare systems are not being upgraded as fast as they could be. Support of essential fleet training operations and base support requirements has been highly diminished. Substantial FY 1975 shortfalls in ship, aircraft, and base operating funds could have serious short- and long-term effects. It is anticipated that inflation and the cumulative effect of funding shortfalls in FY 1975 will negate the prospect of any substantial improvement in fleet mission readiness in FY 1976. In addition, personnel deficiencies continue, with serious shortages in certain ratings, particularly in the middle pay grades E-4 through E-6 of the electronic warfare and tactical missile technician and engineering rate areas.

Strategic Problems

From the beginning of NATO, we have proceeded on the basis that the NATO Alliance would be able to control and use the high seas; and up to the present we have planned on the ability to carry out, more or less simultaneously, the full range of CINCLANT/SACLANT tasks, such as the conduct of operations to gain control of the sea; to contain the threat posed by Soviet nuclear-powered ballistic missile and attack submarines; to deal with Soviet surface forces; to

protect the transit of the combined amphibious force and strategic reserves; to defend the Iceland Command, and finally, to defend merchant shipping carrying economic cargo essential to the Alliance. Reinforcement of Europe will depend on our first getting the submarine threat under control. This reinforces the Secretary of Defense's urgent action to have our NATO allies upgrade their conventional forces, including their maritime forces, which are essential as a complement to our own, and highlights the problems associated with reduction of prepositioned equipment required by a reduction in support personnel.

The Americas

Latin America Background

The countries of Central and South America remain important to the United States. The extension of unfriendly foreign influence into this area or use of the area by hostile forces would endanger US security. The proximity of the United States to Latin America, particularly Central America and adjacent waters, makes it an area from which a wide range of military actions, including strategic attack, could be launched against the United States.

Some threat to US security interests is already posed by the regime in Cuba. Soviet naval and air activity in the Caribbean, and an increasing tendency toward confrontation with the United States in several other countries, add to the potential threat. Despite some notable failures in efforts to export revolution through guerrilla warfare, Fidel Castro probably will provide limited support to selected leftist insurgencies in the region. Cuba, in addition, poses a potential threat as a source of supply, training, money, and perhaps personnel for subversive and insurgent

activities in Panama. This prospect, in turn, would cause security problems for the Canal.

Regional Overview

Change continues to be the hallmark of Latin America; change characterized in part by a new regime in Chile, escalating terrorism in Argentina, and extensive arms purchases by Peru, including some from the Soviet Union. The past year has been a period of impressive economic growth for some Latin nations, but for others it has simply been another year of struggle to keep up with the increasing requirements of a growing population aggravated by escalating world inflation.

Nationalism continues to set the political and economic framework for the area's foreign policies. The Latin Americans often regard the US presence as overwhelming. Thus, we have become the natural target for much of their nationalistic sentiment. Increasingly, they are pursuing more independent foreign policies and are more and more unwilling to align themselves with the United States as in the past. Furthermore, US rapprochement with the PRC and the process of detente with the USSR has led Latin American neighbors to reassess their relationships with all Communist countries, particularly Cuba.

One element remains strongly in US favor, however, and that is the rapport between representatives of the US Armed Forces and the Latin American military. A wellspring of goodwill towards the United States seems to exist within the Latin American military fraternity, which more often than not comprises the leadership of the governments in these countries. Against this backdrop, it would seem to be prudent to relax existing restrictions on foreign military sales to Latin America and continue to extend selective

military assistance within the region in support of US policy objectives. It is apparent that Latin America's geographical proximity to the United States, its economic potential, and its existing commercial relationships with the United States, make it an area of prime strategic significance.

The Threat

US interests and objectives in Latin America continue to be threatened by both internal and external forces. The principal external threat is posed by the USSR, whose naval and air assets, when deployed in the Caribbean, could threaten the Panama Canal and important shipping lanes. Soviet efforts indicate a long-range policy of building its following in the region while undercutting US interests whenever the opportunity arises. The Soviet Union does not possess currently the capability to embark on military aggression in the region; however, the USSR can be expected to make inroads in the form of arms sales as Latin American nations press for modernization of their armed forces. Following serious defeats in its attempt to export revolution, Cuba, with USSR support, now has adopted a policy of attempting to capitalize on anti-US sentiment prevalent among several of its fellow Latin American countries. This effort has been well received, and Cuba's goal of breaking out of its isolation has been partially successful. Venezuela's reestablishment of diplomatic relations was the latest gain along these lines. Panama's earlier recognition of Cuba may present a challenge to the future security of the Canal.

Accomplishments and Problem Areas

Our influence has been greatly enhanced by our contribution to improved professionalism by the Latin American Armed

Forces. Progress toward the goal of self-sufficiency through our continued emphasis on developing managerial and logistics expertise within the Latin armed forces has been the objective of the US advisory groups. Furthermore, US Forces, particularly the US Navy, continue to conduct joint exercises with the armed forces of the Latin American republics. Combined antisubmarine and amphibious exercises are held off those countries and in the Caribbean training area. The Inter-American Treaty of Reciprocal Assistance (1947 Rio Treaty) commits the US to participation in hemispheric defense efforts. Additionally, the US has bilateral common defense agreements with 11 Latin American countries and participates in the Central American Defense Council through the day-to-day working agencies. Furthermore, humanitarian efforts in the field of disaster relief, civic action, and search and rescue continue to record important gains for the United States in the region. Following the pattern of efforts in Peru and Nicaragua, US Forces responded in the past year with relief efforts in Colombia and Honduras, particularly in mitigating the effects of the recent Honduran hurricane disaster.

Probably foremost as a general regional problem is the continued uncertainty among the Latin American countries with respect to current and projected US policy. The US ought to give more visible support to its often-voiced general statement that Latin America is important to the United States. The Panama Canal, of course, warrants special emphasis by virtue of its strategic importance.

Throughout Latin America it is apparent that there is an intense desire on the part of individual governments to modernize their armed forces. This is in consonance with the basic thrust of nationalism. Within this context it is

significant that except for a handful of smaller nations, grant materiel has been supplemented by FMS or commercial purchase. The few grant materiel aid countries are in the process of shifting to FMS or commercial acquisitions as permitted by their budgets. Whatever the arrangement, it is clear that security assistance is regarded by the republics of Latin America as a basic and highly important element in their relations with the United States. The countries continue to manifest the desire for responsive security assistance programs and for strengthening of the military ties that have united their forces with those of the United States over the span of many years. It is heavily in the interest of the United States to support this desire through expanded FMS credit and retention of selective grant aid, both materiel and training. Such support would constitute a sound and reproductive investment in furthering US-Latin American relations, both political and economic.

North America

Our 2 contiguous neighbors, Mexico and Canada, represent the ideal relationship between neighbors, which is to live distinct from, but in harmony with, each other. Mexico, one of the most highly developed countries in Latin America, flanks the maritime lines of communication between US ports and the Panama Canal as well as connects the US transportation network with numerous lines of communication with Central America. Canada's military importance to the United States stems from its geographic location on the great circle air approaches to the United States from the USSR, its role in North American defense, including partnership in NORAD, and its membership in NATO.

Alaska

Alaska is of major importance and significance. Although not contiguous to the Continental United States, it is important due to its strategic location; its close proximity to the USSR; and its natural resources, particularly its oil fields. All of this makes Alaska a probable military target in connection with any attack upon the principal targets in the United States.

The Forces remaining in Alaska today are adequate only to provide warning, limited aerospace defense, and minimal deterrence to Soviet military adventurism. The deficiencies are particularly apparent in the failure to capitalize upon the training opportunities which abound in Alaska. The opportunities are in danger of being ignored or forgotten in the attempt to save training dollars as the US military remains largely warm weather-oriented.

Because of Alaska's remoteness from CONUS, its proximity to the USSR, and the demands for unity of effort during peacetime crisis operations or in time of war, contingency plans for Alaska must articulate clearly the means of command and control within the region in order to provide for quick responsiveness to national level direction.

Asia/Pacific

Strategic Importance

The Pacific side of Asia needs no introduction to the American people. Three times in the last 35 years the United States had made tremendous investments in blood and treasure in the interest of the right of individuals and the countries they live in to determine their own destiny, free from external force.

This area is a source of many of the raw materials, such as oil, iron, coal, tin, rubber, and many others, upon

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which modern civilization is dependent. Economic and political demands, unrest, and uncertainty are increasing. In nearly all cases, significant quantities of imports, particularly oil, are required to keep the wheels of progress turning.

This is the arena where the interests of 4 major powers -- USSR, Japan, PRC, and the United States -- converge. The power and influence of this vast area, with approximately two-thirds of the world's population, will have important impact on the global balance of power.

The area has great potential for growth; but, additionally, great potential for conflict. Peace is still incomplete after 2 long and bitter wars, and insurgencies, often with foreign support, continue to harass many nations which, more than most, require relative security and freedom from external threat to develop according to their individual desires and capabilities. While we have removed US personnel from the conflict in Southeast Asia, peace is not present.

In addition to our significant economic ties to the area, we have linked ourselves to a number of countries -- Japan, Korea, the Republic of China, and the Philippines -- with bilateral defense treaties.

US Mission

US policy, in recent times, has been to promote stability in this large and complex area. A credible US commitment is important for this effort. Serious international confrontations could occur if regional stability were to deteriorate seriously and tempt outside powers to seek greater influence or dominance. Our specific policies must adapt to daily realities, while at the same time, continuing to serve our long-term objectives.

Our primary policy objective continues to be to maintain a stable military and political balance in Northeast Asia

and to seek an end to hostilities in Southeast Asia without sacrificing opportunities for a peaceful political outcome in South Vietnam, Laos, and Cambodia. Japan, because of its size, political and economic strength, and close relationship to the United States is key to our policy in Asia. Retention of close security ties with Japan continues to be an important objective of our defense policy. More specifically, our policy is to encourage Japan to maintain military forces adequate for the defense of the Japanese Islands against air attack and seaborne invasion, and to develop an ASW capability complementary to our own.

In Korea, the presence of modest American forces is now appreciated by the major powers as a stabilizing element, not only in preventing a renewal of hostilities between North and South, but obviating any further clash of major power interest over this strategically important piece of terrain. At sea, our mission has taken on additional importance with the growth of both Soviet and Chinese naval capabilities and the dependence of Japan and other allies on the movement of oil from the Middle East. In addition to protecting our own and our allies' interests in these areas, we will continue to honor our other treaty commitments in Asia and provide a nuclear shield.

The Threat

The principal military threats in the Asia/Pacific region are those emanating from the Soviet Union and the Peoples Republic of China. Of the two, that posed by the Soviet Union is the more serious in that the Soviet Union has a more powerful and technologically advanced military capability than does the PRC.

USSR

The Soviet naval force consists primarily of strategic submarine weapons systems capable of being targeted against the United States. Additionally, it consists of strong sea denial forces in the form of general purpose air, submarine, and surface ship elements. The Soviet air threat consists of some 1900 combat aircraft and approximately 1000 transports and helicopters.

Most of the 18 divisions and 2 brigades in the USSR-Far Eastern military district are oriented towards the PRC. It is unlikely that the Soviet Union would consider deploying its strength from this position on the Chinese frontier in other than emergency situations.

Soviet strategic offensive missile forces in the Far East consist primarily of ICBMs. Obviously, all ICBM launchers in the USSR are capable of being retargeted to cover Far East targets.

Since the Soviet Union is the only power which has the potential to significantly challenge the United States militarily at this time, we must consider the power of the Soviet Union as our primary military concern. Fortunately, the current detente with the USSR, and the Sino-Soviet rift, lessen the probability of overt conflict with the USSR in Asia.

PRC

Although the PRC perceives the Soviet Union as her major adversary, she classifies both the US and the USSR as imperialists. While the PRC has only a limited capability for deploying its forces for any extended distance beyond its borders, it can be expected to rely on the impact of its growing nuclear capability as a means of projecting its influence throughout the region.

The PRC ground forces, totaling over 3,000,000 actives, are the largest in the world; are expanding their armed units; and are taking steps to modernize equipment, logistics support capabilities, and command and control techniques. The PRC navy is basically a coastal defense force. While it is acquiring a limited offensive capability in the form of its substantial and growing fleet of conventional attack submarines, it is highly restricted in its operational scope at this time. The PRC air force is composed of both air defense and tactical aircraft. Although large in numbers, the air force is equipped primarily with older model Soviet-designed airplanes and has only a very modest all-weather capability. The PRC is believed to be developing a modern supersonic all-weather fighter interceptor.

Other Threats

While the USSR and PRC pose the primary strategic threat in this area, we should continue to be mindful of the local insurgencies and threats to political-military stability which affect many of our allies.

These include the continuing pressure on the Republic of Vietnam (RVN) by North Vietnam (DRV); the uneasy peace in Laos; the internal attack of the Khmer Communists in Cambodia; potential for insurrection in Burma; insurgency in Thailand and Malaysia; the Muslim problem in the Philippines. The recent nuclear explosion in India cannot be ignored. To deal with these problems, the United States looks primarily to the countries involved, but also to other allies.

The Military Balance

United States

To defend its interests and to meet its treaty commitment in the Far East, the United States maintains limited, but potent, forces deployed in East Asia and the Western

Pacific. By the end of FY 1976, Air Force tactical squadrons are planned to decline from an FY 1974 level. Ground troops deployed beyond Hawaii will consist of 1 Army division in Korea, and two-thirds of a Marine amphibious force in Japan. Our Naval forces consist of 3 carrier task forces and 3 1/3 patrol squadrons. By the end of FY 1976, we plan to deploy approximately 152,800 military personnel in the area.

Japan

On the allied side, Japan remains our most important friend in the region. Asian peace and stability depend to a great degree on the character and direction of Japan's political and economic evolution. Inflation has plagued Japan, however, and could slow down the development of her self-defense forces. It is in our interest to encourage Japan to build on our common interest for peace and stability by maintaining forces adequate for the defense of the Japanese homeland and contiguous areas.

Korea

With respect to Korea, the outlook suggests little change on either side. North Korea remains a military threat, but has no overall clearcut military advantage. It is difficult to predict, but moderation, dialogue, international pressures, and self-restraint probably will continue to avert major hostilities in Korea. US Forces in Korea remain an important stabilizing influence to Northeast Asia and will remain so for the foreseeable future.

Vietnam

The continued life of the RVN is linked directly to continued US economic and military assistance. A secure RVN would contribute significantly to stability in Southeast Asia. The probability of the DRV's causing the RVN's collapse

through political and clandestine warfare is decreasing; however, the NVN's constant attacks, steady buildup of war materials in the south, and generally increasing offensive make it essential for the United States to provide the RVN with the means to defend itself. The alternative to sufficient military and economic aid is the eventual collapse of RVN. We have scrupulously abided by the Paris Agreements, while North Vietnam has consistently violated its provisions, including full disclosure of the fate of our more than 1300 missing in action.

Cambodia

In Cambodia, the Khmer Republic continues to survive, but under increasingly perilous conditions. The Khmer Government has offered to negotiate a peace settlement, but the Khmer Communists have not been receptive. Neither side has shown the capability to wage a decisive military campaign, and so the conflict drags on. Without some modest level of continuous US assistance, the Khmer Communists will have no real incentive to open negotiations.

Thailand

Thailand continues to be a friendly and valuable ally, but Thailand is observing carefully the outcome of the war in the RVN and Cambodia and is scrutinizing US actions in Southeast Asia. Thailand is already showing evidence of adjusting some of its policies to the changing political climate in the region. Thailand's primary military concern is vulnerability to attack by the NVN through Northeast Thailand. In the meanwhile, she continues to fight the persistent insurgency centered there.

Republic of the Philippines

The Republic of the Philippines faces a continuing struggle to become a strong and modern nation. Insurgency in the south hinders her progress. The Philippines and the United States continue to have strong ties and benefit mutually from our security relationships.

Problem Areas - Requirements

Current US forces in the Pacific would require rapid augmentation from outside the theater if a major war occurred. Considering the vast geographic area involved, strategic mobility is a vital problem. We must be capable of moving and supporting forces in response to threatening situations. A shortage of amphibious shipping continues to be a major problem. Accordingly, it is essential that we maintain our forward deployment and bases. US ground forces in Korea and Okinawa, the Seventh Fleet, and our deployed tactical air forces help deter aggression and reassure our allies that we intend to live up to our treaty commitments. Military power in plain sight, close at hand and ready to fight, greatly influences perception on both sides. Any changes we make in the size and location of our forces anywhere in the Pacific will be taken as indicators of US intent.

We should not hastily cut back our military forces and bases in the Pacific. We need to continue our forward deployment strategy and security assistance. These are the positive steps which will promote growth and suitable evolutionary change, and in the final analysis, are in our best national interests.

Middle East/Africa/Indian Ocean

The Middle East today stands as the area where the potential for military conflict is the greatest. The Middle

East is strategically important because of both geographical and geological factors. As the corridor connecting the Eastern Hemisphere's 3 major continents, it is perhaps the most notable area where the interests of the major powers converge. In addition to its strategic geographical importance, the Middle East has economic importance because of petroleum resources, so important to the US and indispensable to her allies. Control of this area by any single power or by a coalition of powers opposed to the United States could threaten Western military security, economic viability, and political stability.

Middle East oil is not only essential to the land, sea, and air forces which support US defense commitments, but also to the general economy of the United States and her allies. Seventy-five percent of Western Europe's oil requirements and 85 percent of Japan's must be imported from the Middle East. These requirements cannot be met from other sources. Thus, these major US allies, and to a significant extent, the US as well, will continue to be dependent on Middle East oil for the foreseeable future.

US Mission in the Middle East

US policy in the Middle East continues to be directed primarily towards maintaining peace and stability in the area, obtaining a just settlement of the Arab-Israeli conflict, and preventing hegemony by the Soviet Union or any other power with interests adverse to the United States. In addition, we continually are mindful of our national commitment to the survival of Israel. Our programs in the Middle East have reflected an awareness of the myriad complex factors which influence the attitudes and interests of the many countries of the area. Recent initiatives to increase cooperation between the United States and the governments of

Iran and Saudi Arabia in economic, military, and technological matters are indicative of our overall efforts to enhance the security and development of the area.

By means of our balanced military assistance programs with several countries in the area, and the resultant military relationships we have established over an extended period of time, we seek to improve stability in the Middle East.

Middle East Threat

In addition to the danger inherent in the continuing Arab-Israeli conflict, we are concerned about the activities of the USSR in the Middle East. The Soviet Union has a great deal at stake in the Middle East, and can be expected to capitalize on opportunities to increase its influence in an area. If a permanent resolution of the major disputes in the Middle East, foremost of which is the Arab-Israeli problem, is not found, the Soviet position is likely to be further enhanced, especially in Egypt, Syria, and Iraq. While Soviet attempts at political influence with individual states in the Middle East have met with only limited success to date, they have resulted in improved relations with the Peoples Republic of Yemen and with the Somali Democratic Republic, across the Gulf of Aden. The USSR may still be expected to try to reduce Western presence and influence in the region, although we expect they will seek to avoid any direct military confrontation with the United States. It is more likely that the Soviet Union will continue to resort to covert techniques of subversion, economic and military aid programs, and exploiting of lower risk opportunities.

US Forces in the Middle East

The United States maintains very limited forces in the Middle East. Only the Middle East Naval Force of 2 destroyers and a command ship are permanently stationed in the area.

Strategic Importance of Africa

The vast African Continent has become of increasing importance to the United States and could provide significant challenges to the US' strategic interests in the future. Our primary military focus remains on the Mediterranean littoral states because of their location along NATO's southern flank.

Further south, in the Horn of Africa, our strategic interests stem from its geographical relationship to the LOCs to the Indian Ocean and Persian Gulf. Elsewhere in Black Africa, we are primarily concerned with air and sea routes and the area's vast raw materials that are becoming increasingly important to the industrial world. This neglected area could take on increasing importance in the years to come.

US Mission in Africa

The US military presence in 5 countries of the Continent is related directly to our Security Assistance programs. These small programs are designed to ease arms imbalances and to foster favorable bilateral relationships. The service-to-service rapport we have developed is proving very beneficial. As a result of increased Congressional restraint on worldwide funds, most grant aid programs have been phased out. Legislative restrictions against the use of grant or credit funds for providing sophisticated equipment also have had direct implications on our arms supply program for Africa. Since many emerging African states have been turning to the United States for help, the present constraints have made it difficult, if not impossible, to render such assistance, and our efforts have been undercut by the easy availability of arms from other sources.

The Threat in Africa

The USSR and the PRC have shown considerable interest in the African Continent, with both apparently seeking the same principal long-range goals of weakening African links to the West and encouraging African nations to identify with the Socialist Movement. The Soviet Union has been notably successful in its efforts to establish a foothold on the eastern coast of Africa in Somalia. Soviet technicians, advisors, and military personnel work closely with the Somali Government and military at all levels. In addition, there is a permanent Soviet naval presence at the Somali port facility of Berbera, and recently the USSR has delivered MIG-21 aircraft and missiles to Somalia as well. On the west coast of the Continent, the USSR has acquired access to a port and airfield in Guinea and, since mid-1973, has occasionally deployed long-range aircraft to Guinea for maritime reconnaissance over the Atlantic. The Soviet Union also has extended military aid to 15 Black African countries.

The PRC currently has extended almost $90 million in military aid to 11 Black African countries of which some $62 million has been concentrated in Tanzania, where many of the liberation groups have their training camps. Of the approximately 1000 PRC advisors and technicians in Africa, most of them are in Tanzania.

Military Forces in Africa

The military personnel who support our communications facilities in Morocco and Ethiopia, the personnel associated with our Military Assistance Advisory Groups, satellite tracking stations, and Defense Attaches represent the only US military presence in Africa. This presence is very small and is one of low visibility. The intermittent port calls

by US naval vessels and occasional military aircraft transits provide the only other military contact with African countries.

Special Problems Relevant to Africa

Although there is no serious external military threat to the African countries at this time, aside from the Arab-Israeli conflict, the dispute which could lead to further conflict on the Continent exists between Ethiopia and Somalia, and it is likely we will see an increase in the growth of insurgencies against the white regimes of southern Africa.

Strategic Importance of the Indian Ocean

The Indian Ocean derives its importance from its geographic location and the LOCs running through it. The United States desires to promote and maintain the status of a leading world power sincerely interested in world peace and is committed to the peaceful pursuit of its national interests. We attempt to avoid major power confrontation with the USSR, but to maintain transit rights and the security of lines of communication which support US interests in contiguous areas.

Indian Ocean Threat

Soviet presence and influence in the Indian Ocean have increased since 1968. No major external power has predominant influence in the area, but the interests of several major powers extend into it. It is apparent that the Soviet Union intends to remain in the Indian Ocean. Its naval presence enhances its influence. The Soviet presence includes combatants, air transport, mine sweeping, auxiliary ships, and facilities, as well as scientific research and merchant shipping.

There are differing views as to whether the opening of the Suez Canal, anticipated sometime this year, will result in an increase in Soviet presence in the Indian Ocean. What

we can say for certain is that the opening of the Suez Canal will greatly facilitate the resupply and reinforcement of any naval forces which the Soviet Union operates in the areas of the Red Sea, the Persian Gulf, the Arabian Sea, and the Indian Ocean. The distance from Odessa, on the Black Sea, through the Dardanelles and the Suez Canal to Soviet anchorages near the Island of Socotra (belonging to the Peoples Democratic Republic of Yemen) is 3155 nm; to make the same trip around the Continent of Africa would require a distance of 10,715 nm.

The British and French also operate naval units in the Indian Ocean. We welcome this presence. Our presence, although considerably less in numbers than the Soviet effort, demonstrates our continuing interest in the area and our concern that it not be dominated by any outside power.

Since 1971, three UN General Assembly resolutions have declared the Indian Ocean as a "zone of peace," and since 1973, an ad hoc committee of the General Assembly has been set up to study the implications of an arms race in the Indian Ocean. The matter continues to be an active issue.

Political stability in a number of countries is likely to be a continuing problem during the mid-range period as a result of the increasing popular expectations of economic advancement and the inability of existing governments to satisfy many of these aspirations. Increasing anti-Western sentiments could jeopardize the Western presence in the area.

Should any of these special problems require naval presence, US forces, other than the Middle East Force, must come from the Atlantic or Western Pacific. Accordingly, because of the long distances involved, it is necessary to secure bunkering and limited support from friendly countries in the area. The modest expansion of the Diego Garcia

facilities proposed by the President will alleviate most of this problem without the establishment of a major base.

With Britain's almost complete divestiture of her once mighty overseas military presence, and with the pullback of most of the British forces east of the Suez, British influence in the Indian Ocean has diminished substantially. The UK 1974 Defense Review has proposed, in addition to reduction of operating forces, the closing by 1976 of the RAF staging Air Base at Gan in the Republic of Maldives and the Royal Navy Communications Station in Mauritius. The United States, with France, will be the only Western Powers with forces in the area. We will maintain an enhanced and frequent naval presence in the area in order to demonstrate a balance to Soviet naval strength. The US presence is important in balancing Soviet attempts to consolidate their influence in the Indian Ocean by providing evidence of US interest to the nations of the Indian Ocean littoral.

Unified Command Structure

Prior to concluding this regionally oriented global analysis, it may be helpful to discuss in broad terms the basic objectives of the intensive review of our command structure, which is now being conducted. First, we recognize that our interests are global, and that fact alone makes all commands and regions interdependent. Second, there were lessons learned in both the Southeast Asia conflict and the Middle East crisis that should be incorporated in the structure. Finally, management and command effectiveness should be subjected to continuing examination. The creation of a peacetime posture which is compatible with the requirements of an immediate and smooth transition from peace to war or other contingency is a prudent risk. Simplification of headquarters structure and manpower economies are the underlying

rationale. This effort is designed to produce a more streamlined, austere structure. The manpower savings thus achieved will permit increased combat power.

OTHER FACTORS BEARING ON THE BALANCE

The number of factors impacting on the relative strategic balance is virtually limitless. They run from the obvious static measures, such as megatonnage, through such qualitative functions as weapons' accuracy to imponderables like the morale of a nation's population. All are not capable of measurement. Some are not capable of comparison. There are, however, 3 functions which appear particularly relevant. The discussion that follows will deal briefly with the facilities, equipment, and communications available for the planning, directing, and controlling of military operations; the relative capabilities of the Forces of the United States and the USSR to move from place to place while retaining the ability to fulfill their primary missions; and the comparative efforts and capabilities of the research and industrial programs of the United States and the Soviet Union in support of national military objectives.

Command, Control, and Communications (C^3)

Command, control, and communications are the connecting links between national strategy and the actual employment of military force by operational commanders. These are the instruments which translate decisions into action. Development of the C^3 capability for normal peacetime command and control, for crises management, and for conflict control has been a continuing effort within the Department of Defense. In our earlier efforts, we concentrated on C^3 for massive strategic nuclear war. We now are implementing follow-on decisions -- as reflected in the policy enunciated by Secretary Schlesinger

last year -- which retains the C^3 objectives required to respond to massive strategic conflict, but also provides for implementing flexible response options. We previously stressed the characteristics of responsiveness and survivability; we are now adding the characteristic of flexibility.

Our C^3 capability must give commanders at all levels for all types of forces the means to apply force with reason and restraint. It must provide our national leaders a means to perceive strategic and tactical warning so that they can develop appropriate precise responses. If conflict should ensue, our leaders must be able to discriminate available response options and to direct the desired mix of forces to deny the enemy his objectives. They must be able to assess accurately damage to our own forces, as well as to the enemy, and to adjust our activities to these assessments. These functions are performed by the interaction of command centers, sensors, data processing, communications facilities, personnel, and procedures, which we call the Worldwide Military Command and Control Systems or WWMCCS.

The priority component of the WWMCCS is the National Military Command System (NMCS), which supports the National Command Authority. It provides the national level command and control of our strategic and general purpose forces and provides our attack, strike, and damage assessment capability.

Our plans and procedures are being revised to implement new strategies and tactics as they are developed. Data processing support for our commanders is being upgraded. We are striving to provide more timely and meaningful information to decision-makers at all levels. We hope to standardize data bases and software, as well as to interface further the European Command C^3 system with the NATO system. Reporting procedures will be streamlined so that more data can be

captured at its sources in machine-readable form. Coverage by our sensor system should be expanded. Satellite communications support needs to be expanded to provide more terminals for our forces and greater capacity in our satellites. A good framework for most of these programs either exists or is well along the way in development. We continue to stress research and development for new capabilities at the present time and will procure equipment when we are ready to incorporate the general purpose forces into our new plans.

Our goal is to achieve maximum effectiveness in the employment of our forces, providing our national leaders and commanders the means to perceive danger, to analyze its impact, and to employ our forces at their full combat potential. In this way, our potential adversaries will perceive that our forces are able to discreetly respond to any threat of aggression.

The Secretary of Defense has dealt at some length with our C^3 program and systems. I will, therefore, limit my remaining discussion of this topic to the Soviet system with only a few comments as to ours.

Soviet Command and Control

The decision to employ Soviet military power rests with the 16-member Politburo. In the event of a national emergency, military decisions could be expected to be made by the Defense Council, which includes party General Secretary Brezhnev; President Podgorny; Premier Kosygin; and Marshal Grechko, Minister of Defense. In extreme emergencies, the party General Secretary probably would assume his wartime role of Supreme Commander in Chief and make critical decisions himself.

Significant advances in Soviet command and control technology have been made during the past few years, and

these subjects are expected to continue to be given high priority status during the 1975 to 1980 time period. The command-control-communications systems at the disposal of the Soviet Armed Forces are extensive and modern. An idea of the size and magnitude of the Soviet command-control-communications system can be appreciated from the fact that thousands of sites are distributed over an area twice the size of the United States, from Eastern Europe to the Pacific Ocean. When mobile platforms are considered, they would include command-control-communications ships such as ZHDANOV and ADMIRAL SENYAVIN of the SVERDLOV-class command light cruisers as well as airborne command posts and trawlers.

The Soviet command and control system is exercised frequently and realistically in multiforce exercises.

Survivability

By far the most significant aspects of Soviet command and control systems are the tremendous comprehensiveness and diversity being developed and deployed to ensure the survivability of those systems. Most of these efforts are to ensure the survivability of both personnel and equipment.

Survivability is achieved through various means such as dispersal, redundancy, hardness, concealment, mobility, as well as through the sheer number of facilities. Besides having many facilities that are dispersed and redundant, the Soviet Union, in addition, began a program in the 1950s wherein important command-control-communications centers were constructed to withstand nuclear attacks. Hardened headquarters have been dispersed throughout the Soviet Union, Eastern Europe, and Mongolia. The first echelon command-control-communications centers of the Soviet Government and Armed Forces at a national level are dispersed within an 80-mile radius of Moscow. The hardening program

already has been accomplished for the strategic forces and is continuing.

The modular technique also is being used in the hardest, presumably manned, command and control facility to date.

By comparison, hardened underground facilities provide local launch control for our MINUTEMAN missiles. These centers are clustered 5 per squadron of 50 missiles.

Redundancy

Redundancy is a major method by which the USSR seeks to assure C^3 survivability. There is not only a redundancy of command centers to assure continuity of control of armed forces, but also a redundancy in communications means and modes.

The basic principles of Soviet Command and Control doctrine for global multiforce strategic and general purpose operations emphasize centralization of control, flexibility, and survivability. Utilizing the General Staff of the Ministry of Defense as agent, the Soviet "National Command Authority" is able to rely on a highly redundant and sophisticated communications network to pass messages to its military commands. A series of airborne and alternate command posts improves both flexibility and survivability of the system under all circumstances.

Airborne Command Posts

Survivability of the command function is enhanced by the airborne command post in its role as an alternate command center because it is mobile and can be dispersed to different locations to serve as an alternate communications means in case of jamming or destruction of ground-based facilities.

Soviet airborne command posts are active during exercises and crisis situations. As the system evolves and as the Soviet Union's communications and computer technology

progresses, the airborne systems management facilities and role probably will increase.

Alternate Command Posts

Redundancy of Soviet command-control-communications facilities also is achieved through the establishment of main and alternate command posts and in some forces, forward and rear command posts. The alternate command post is a duplicate of the main command post and is prepared to assume control should the main command post be neutralized. The rear command post is used to control logistical and administrative functions. The forward command post is established when the command is moving.

The major national telecommunications complex is known as the Unified Communications System. In the event of an emergency, the entire system could be readily converted into a nationwide military communications complex. Modern telecommunications engineering concepts stress flexibility, survivability, and reliability of the system to meet national military command and control requirements for continuous telecommunications operations.

Automation

Automation of Soviet command and control is evolving slowly. The Soviet Air Defense Forces represent the greatest operational usage of automated systems. Command and control of the Moscow ABM system probably represents the highest level of automation in their military forces. It is estimated that the Soviet technological capability in terms of computers and peripheral data processing equipment is adequate to support this limited weapon system.

Communications Satellites

The predominant communications satellite used in support of military command and control has been the Molniya I system in the ICBM forces.

Since the mid-1960s, when the first Molniya I was launched, the Soviet Union has continued to improve its communications satellite program. Satellite communications have the advantages of not being affected by terrain, of giving quick communications from around the world, and of allowing communications with areas that normally are isolated.

Within the last 5 years the Soviet Union has launched the improved Molniya II and Molniya III systems and a stationary Molniya. All 4 systems are capable of being used for military command and control. The Molniya I/II and stationary military ground sites are deployed at many major headquarters throughout the Soviet Union and stations are beginning to be deployed in East Europe.

In addition to the Molniya systems, the Soviet Union has orbited single payload communications satellites, and multiple payload communications satellites.

Strategic Mobility

The red and blue maps of containment have been shelved, and the multihued charts recognizing new centers of interest and power have been substituted for them. In a polycentered world, the geopolitical differences between the United States and the USSR take on increased importance. Simultaneously a European and Asian nation, the USSR consists of a massive heartland contiguous to most of the world's major powers. On the other hand, the United States is separated geographically by vast ocean space. Unless we continue to develop and maintain the capability to rapidly move forces and supplies, we will be required to preposition sufficient

resources to deter aggression. It will be necessary at every point where our vital interests intersect with another's ability to exploit militarily social, economic, or political turbulence.

In each of the regional analyses previously presented, I emphasized the requirement to reinforce and resupply. A principal element in the deterrent capability of our forces is our ability to augment our forward-deployed forces in a timely fashion.

Airlift

The Soviet Union continues to place less emphasis than the United States on the development of heavy military transport, undoubtedly as a result of the geographical factors noted earlier. Nonetheless, its capability is significant. It operates AN-22s (COCK) in regimental service. This aircraft, powered by 4 turboprop engines, provides the USSR with the capability to transport bulky heavy equipment. Twelve large wheels on the main landing gear permit operations from semi-prepared surfaces. Production of this aircraft is believed to have ended in 1974. The IL-76 (CANDID) entered the Soviet operational inventory for the first time this year. Series production began in 1973. This is a long-range cargo transport with 4 turbofan engines. At present, only the COCK is assessed as being capable of transporting the T-62 tank. Complementing the strategic lift are AN-12 (CUB) aircraft, which are used for both strategic and tactical airlift. Follow-on replacements for the CUB and the COCK are postulated with an IOC of 1980-81.

The US active airlift force is composed of 70 C-5s, 234 C-141s, and approximately 272 C-130s. The 4 squadrons of C-5s and the 13 squadrons of C-141s have an equal number of C-5 and C-141 reserve associated units which do not have any

aircraft of their own. These associated units are colocated with the active force squadrons and assist in the operation and maintenance of the active force aircraft on a part-time basis. When mobilized, these units make possible a rapid increase in the rate of utilization of the active aircraft.

Any comparison of Soviet Union and US airlift forces must not only consider the total airlift force, but the nature of their missions. The number of aircraft for the United States is 793, including Reserve and Guard C-130s, as compared to 730 for the Soviet Union.

The United States has substantially more airlift capability than the Soviet Union. Movement conditions, however, offset the US edge. For example, in a NATO contingency the distance from the Central Region to bases in the Soviet Union would be about 1500 nm, whereas the United States would have to airlift a distance of about 3500 nm.

The USSR has 7 airborne divisions. The US has only one comparable division.

The airlift capability with regard to passengers and bulk cargo -- but not outsized cargo -- can be augmented by the US Civil Reserve Air Fleet (CRAF) aircraft and Soviet Aeroflot aircraft.

The long-range commercial aircraft in CRAF include 74 cargo, 82 convertible, and 90 passenger aircraft. The actual number allocated would depend on the extent and nature of the defense needs, the total number of civil aircraft then available, and the urgency of non-defense needs. The Soviet Aeroflot aircraft available to supplement the military airlift include 1200 aircraft which will provide the inter-theater support required, thereby freeing military aircraft to fulfill tactical missions. About 25 percent of these can be used in a crisis situation without disrupting

essential civil service. The US commercial fleet is composed of about 2300 aircraft with an unrefueled radius of 2500 nm.

We are seeking to enhance the CRAF by adding cargo nose doors to the 747 and DC-10 aircraft. This could require reinforcement of certain portions of the plane, mainly in the cargo compartment floor area. We would have to compensate the airlines not only for the cost of these modifications and the time the aircraft is lost to service, but also for the cost of carrying the additional weight. Nonetheless, it is a cost-effective way to expand the airlift mobility force. The cost per 747 modification would be $7-12 million.

The critical importance of immediately available strategic airlift forces of sufficient capacity was demonstrated convincingly during the Middle East War of October 1973. During that operation, it became quite clear that the most serious weakness in our strategic mobility capability was in the area of transit overflight and base rights. The denial of these rights by Portugal, coupled with our lack of capability to aerial refuel our C-141s, could have been disastrous to Israel.

Our C-5s are physically capable of aerial refueling, and we now have fully trained crews. However, the C-141, which comprises approximately 75 percent of the strategic force and which flew over 80 percent of our sorties to Israel, currently does not have an aerial refueling capability.

The C-141 is dependent on overseas landing authorization and transit services for typical missions in excess of 3300 nm. The amount of transit time saved through an aerial refueling capability is negligible, but in terms of freedom of movement, it is considerable, particularly if base, overflight, or transit rights were denied us. Furthermore, it is economical. For instance, in the October 1973 Middle

East War, if aerial refueling capability had existed, the same material could have been moved with 44 fewer C-141 sorties. Even by adding the fuel consumed by the tanker sorties, aerial refueling would have permitted a savings of 7 1/2 million gallons of JP4 fuel or approximately $2 1/2 million. Of course, a greater net cargo capability is provided by topping off cargo aircraft at altitude so that the airplane does not have to leave the ground carrying the fuel it must consume in flight.

Another limiting factor demonstrated during the Israeli airlift was that our C-141s were "cube limited." That is to say, in most cases, the cargo compartment was full even though the maximum weight had not been reached. These factors confirmed our prior independent analysis that an enhancement program for our strategic airlift fleet was imperative.

We seek funds to continue work on a prototype program to include stretching of the C-141 to increase the volumetric capacity by 30 percent and by adding an aerial refueling capability to the aircraft.

Finally, we also are exploring a cargo/tanker convertible based on an existing commercial wide-body aircraft such as the 747, DC-10, or the L-1011. Tankers are the key to strategic mobility. Tankers are used to aerially refuel our strategic bombers, to refuel our tactical fighters, and to refuel our strategic airlift logistical flights. The tanker is the "Achilles Heel" of the strategic air mobility concept. The current fleet of aerial tankers is not programmed for a replacement by any follow-on tanker. The existing fleet is aging and must eventually be retired. In the interim, we will invest in overhaul to extend the force life.

Sealift

Strategic mobility is not confined solely to airlift. The airlift capability is supplemented in both countries by sealift capability. While the movement of military personnel and their initial support requirements can be accomplished most expeditiously by airlift, the movement of the great volume of military resupply and the continuing support that would be required during the course of a war must be accomplished by sealift.

Overall, the Soviet merchant fleet of 1500 vessels of approximately 1000 gross registered tons is the world's fifth largest merchant marine fleet in number of ships and ninth in total tonnage. In contrast, the US fleet of 971 ships ranks ninth in total number, but the tonnage capability of these ships is the seventh largest in the world since US ships normally are larger than the Soviets'. The USSR has some 370 cargo ships and 112 tankers which are believed to be equipped and suitable for long-range military sealift. All are less than 20 years old, are capable of speed in excess of 14 knots, and have the needed heavy lift booms and hatch size. The United States operates 239 comparable ships and 162 tankers which could be utilized for similar military requirements. Unfortunately, these assets fail to meet total requirements in the event of a major contingency. To alleviate this problem in the event of a NATO reinforcement, provisions have been made for the early commitment of NATO flag ships to support US deployment and resupply to Europe. This combined fleet should prove adequate to accomplish the task.

The combined US commercial, Navy, and NATO tanker fleet ships are capable of meeting all wartime POL movement requirements. However, due to slow ship speeds and the relatively long distances involved as measured from POL contingency sources,

early bulk POL product deliveries required for the support of tactical units cannot be ensured without a period of strategic warning. For this reason, we maintain prepositioned war reserve stocks at strategic locations to ensure a continuous supply.

In the initial phases of a NATO war, the function of general purpose naval forces will be to control the threat of a total Soviet submarine force composed of nuclear and conventional submarines, whose principal mission would be to intercept, detect, and destroy allied Naval forces and shipping. The Navy estimates that allied convoys to Europe would suffer high initial losses until the submarine threat could be reduced or attrited sufficiently so that surface sealift resupply could be accomplished within acceptable losses. This is a limitation on the concept of sea mobility. Tankers must move and be on the high seas at the peak of the greatest threat to surface shipping -- the initial phase of conflict when the enemy submarines are plying the seas.

Soviet amphibious lift in modern 18-knot ships is available to transport troops of the Soviet naval infantry. This capability is expected to increase 25 percent by 1979. Presently, the US amphibious lift force has sufficient capacity to lift just over 1 of our 3 active Marine Corps Division/Wing teams (MAF), which includes about 39,000 troops. By 1978, the overall capability of US amphibious lift capacity will be increased to approximately 44,000 troops.

As we enter the last quarter of the 20th Century, the legal and political restrictions placed on freedom of mobility are changing the world and impacting on our strategic mobility capability. Our position in international negotiations, such as the Law of the Sea, stresses, among other things,

unimpeded transit through and over international straits. This principle or concept applies to surface movements as well as to overflight. Without this freedom, our mobility and logistic resupply in future contingencies could be impeded. Consequently, it is encumbent upon us to develop and maintain a balanced cost-effective strategic mobility capability.

To obtain ships to support our requirements, we currently must turn to the National Defense Reserve Fleet (NDRF), the Sealift Readiness Program and to the Military Sealift Command. Unfortunately, these sources do not appear capable of meeting possible requirements, particularly those of a minor contingency.

The NDRF is made up of a large number of World War II type vessels which are in a poor state of readiness. Due to their age, components and repair parts are no longer available. The situation is further aggravated by the shortage of trained personnel to crew the vessel once it is returned to serviceable condition.

The required vessels could be obtained through commitments made by US operators under the Sealift Readiness Program (SRP). There is considerable concern that these operators would lose some portion of their business to other domestic or foreign lines if their ships were taken off their routes for any substantial period. We are reluctant to utilize this program.

Of course, we also have the assets of the Military Sealift Command (MSC) available to us. The MSC fleet is in serious need of modernization since it contains a nucleus of vessels which are 30 years old. It is heavily utilized in its peacetime operations.

We are currently examining all possible alternatives which might provide this essential capability. Revitalization of the MSC fleet and the NDRF are distinct possibilities.

In this regard, we are looking at the possibility of obtaining some 7 to 15 year old non-competitive breakbulk ships from US owners. In addition, we are looking at the SRP to see if it can be strengthened. We hope that our current study will permit us to move forward with an effective program in the near future. Mobility is a key element of deterrence.

Research and Industrial Preparedness

The US defense posture and its capability to deter aggression must obviously include research and industrial resources which represent the military forces of the future.

Research and Development

In the late 1960s, the Soviet Union adopted national policies to emphasize and encourage scientific creativity and to speed the incorporation of research accomplishment into industrial production. The demand for greater scientific and technological progress to foster economic growth and military development has caused the acceptance of a limited degree of ideological compromise.

World preeminence in all important areas of science has become one of the principal objectives of the Soviet hierarchy and scientific community over the past decade. Science and technology are viewed as essential elements in the achievement of Soviet domestic and international goals.

The Soviet reforms, however, have not as yet succeeded totally. Measures to tighten the interface between science, technology, and production continue to meet bureaucratic resistance. Political expediency versus economic efficiency impedes the fundamental systemic change essential to economic exploitation of R&D achievement.

Nonetheless, the Soviet Union has mounted a technological offensive and has begun sweeping R&D management change that may, in the near future, assume major importance. The USSR's recent attempts to increase scientific and technical intercourse with the world's highly developed nations, as well as contractual relations with high-performance multinational corporations, are prima facie evidence of increased ideological risk.

In the 1971 USSR Academy of Sciences Yearbook, the Soviet Union sets the tone when it expressed this theme: "Scientific and technological progress will not slow down but conversely will be more accelerated. . .Technological supremacy has become one of the more important platforms of competition of the two opposing systems (i.e., Capitalism versus Socialism)." The growing Soviet effort to achieve military technological superiority is a challenge to the United States.

Between 1962 and 1972, Soviet aircraft design facilities grew while missile design facilities also increased. Missiles research facilities grew as did propulsion research facilities. Test facilities expanded for missiles/space activities, propulsion, and aircraft.

Along with the "brick and mortar" aspects of the facilities growth, the Soviet Union has not ignored the "people" side of the problem. Training of engineers to support national R&D continues to receive high priority. Although the actual number employed in military R&D is unknown, the national engineering manpower base is more than adequate to support future military programs.

The Soviet Union's stated goal is to have, by 1975, 3.4 million technical specialists (roughly equivalent to US undergraduate degrees). By 1971, that goal was approximately 20 percent complete. The number of engineers graduated

annually in the Soviet Union was over a quarter million by 1971.

The continuous roll-out of new aircraft systems illustrates the magnitude and continuity of the aviation industry R&D effort.

Over the past ten years, the number of aircraft engines reaching production status has averaged about 2 every 3 years, not including the variants which are direct fallouts of each design. The growth of these facilities has enabled the Soviet Union to exploit effectively all types of air-breathing engines -- turbojets, turboprops, turbofans, and turboshaft engines.

Steady investment, emphasis on proven technology, and simplicity of design dominate the Soviet technology process. During the five-year period from 1970 to 1974, the number of ballistic missile launches in the Soviet Union exceeded those in the United States by at least 2 to 1. The trend reflects the growing difference in the relative size of the programs. The Soviet Union is exceeding the United States in numbers of launches in the ABM test program as well.

In the Soviet Union nuclear development program, both the civil and weapons-related efforts are characterized by sustained and significant growth.

The vigorous and extersive development program in nuclear marine propulsion and nuclear power systems has resulted in narrowing the technological gap. Many of the USSR's recent developments have significant military applications.

The final measure in security terms of the overall effectiveness of the Soviet R&D establishment is the impressive output of advanced military products. The deployment of major strategic and general purpose weapons systems, along with sophisticated munitions, radar systems, and

electronic systems, vividly illustrate the progress the Soviet Union has made during the past decade. Projections of Soviet capabilities, based on its current research capacity and national determination to "overtake and surpass" the United States in scientific and military capabilities, give cause for great concern.

The R&D portion of the President's request will be presented in detail by Dr. Currie and the Military Departments. I would like to make only three points:

- The strength of the US Armed Forces, present and future, is based in large measure on the wise use of our rapidly developing technology. If we cannot compete quantitatively, then we must remain a qualitative counterbalance.

- From technology evolve the ideas and capacity for innovation without which we cannot face the future with confidence.

- In the past, the oceans provided the protection which gave us the "time" to prepare our defense. They no longer serve that purpose effectively. Research, development, testing, and engineering are the oceans of the future; and if adequately funded, will ensure that we will have the "time" to meet and defeat any foreseeable future threat.

Industrial Preparedness

Industrial power and preparedness are also integral and significant parts of our deterrence. They demonstrate to potential adversaries the ability of the United States to respond rapidly and effectively to mobilization requirements.

Industrial capacity and preparedness promote a balanced defense posture, permitting a wide range of military responses appropriate to various threats. Modern wars do not have to be nuclear wars. In fact, nuclear war remains the least

likely course of action for our potential enemies. The capability of industry is critical to the United States' successfully developing a stalwart conventional deterrent. It is for this reason that incipient industrial weaknesses bearing directly on the materiel readiness of US forces are of concern. We are experiencing a creeping erosion of the US industrial base that promises to grow progressively more severe in the foreseeable future. A brief look at the industrial trends in the USSR appears warranted to place the issue in perspective.

Our main concern is to be able to conduct an immediate defense against the Warsaw Pact at any time. Nonetheless, the industrial base must be capable of sustaining all mobilized US forces (Active and Reserve) in a long war against either the Warsaw Pact or the Peoples Republic of China. For this reason, Industrial Preparedness Planning must be projected in multiyear increments.

USSR

In the Soviet Union, there has been a significant expansion of the production base for the Soviet general purpose forces. A new ammunition loading plant and the expansion of an existing loading plant and an explosive production plant have increased ammunition production capacity.

Between 1968 and 1973, the production floor space for manufacture of new major assemblies and subassemblies for tanks increased as did floor space for armored personnel carriers.

In addition to the construction of new plants and expansion of others, there is a substantial program to modernize older facilities.

It is estimated that floor space devoted to home defense and tactical fighter aircraft production increased.

Soviet tank production declined as a result of the major retooling required to introduce the T-1970 main battle tank. It is expected to rise to the prior level in the near future. Present maximum US production is running about 40 tanks per month. The Army has failed to reach its objective of 83 tanks per month due to a national lack of foundry capacity to produce tank hulls and turret castings.

The Soviet Union easily can produce within the USSR all the military equipment it requires. Nevertheless, it purchases limited quantities of auxiliary and amphibious ships, jet trainer aircraft, small piston transports, and small helicopters from the other Warsaw Pact countries. Some amphibious armored infantry combat vehicles possibly are being purchased from Czechoslovakia. It is believed that the Soviet Union purchases these items from the Eastern European countries to help them develop a military production base and to enable these countries to obtain money to pay for imports from the USSR.

Mobilization capacity relative to the production of military materiel varies by segment of industry and is impossible to estimate precisely, but it is believed that the Soviet Union has the resources to increase its already significant output very substantially. This capability is vulnerable to attack, but the Soviet Union demonstrated in World War II a tremendous resilience and ability to move workers and equipment from the western part of the country to the Urals and beyond, while it increased its output of all types of equipment very significantly in a fairly short period of time.

As the USSR moves into the mid-1970s, Soviet hard currency earnings should rise rapidly because of higher

export prices received for its oil, natural gas, gold, chemicals, wood products, and coal. With the expenditures for Western grain in 1974 about half of the 1973 outlays, these potential hard currency earnings easily could support expansion of Soviet imports of plants, equipment, and technology, especially high-technology products. These imports, ostensibly intended for civilian usage, nevertheless increase the military industrial base of the USSR.

United States

While the military industrial base of the USSR is growing, the capacity and willingness of US industry to support military requirements is eroding. The reasons for the decline in the traditional arsenal of democracy are multiple and interrelated. Our reduced capacity is best described under captions reflecting cause.

Environmental Requirements - Health and Safety

I appreciate the propriety of environmental and occupational safety and health requlations. But, when their application has a substantial adverse impact on Defense programs, that fact cannot pass unnoticed. The application of environmental and occupational laws has had significant impact on industries, processes, and equipment, which generally has resulted in increased lead times, higher costs, and inability to acquire essential items.

In certain instances, producers, either unable or unwilling to comply with new standards, have gone out of business. For example, in the past 3 years, approximately 1000 foundries, representing about 20 percent of the industry, have ceased operation. This has contributed to current casting capacity difficulties associated with production of the M-60 tank.

Equally important to Defense is the domestic production of ferrochromium, essential for the production of alloys, stainless steel, and carbon steel. It, too, has been affected substantially by application of environmental standards. From 1968 to 1972, US production dropped from 274,000 tons to 238,000 tons, while consumption rose to 310,000 tons.

Restrictions on the chemical industry and the handling and processing of toxic chemicals have had similar impact on vital military programs. Production of UDMH (unsymmetrical dimethyl hydrazine), an essential element in missile fuel, has ceased due to environmental considerations. As an interim measure, surplus BULL PUP missiles are being defueled to collect the UDMH element for incorporation in other missile propellant programs. An environmentally acceptable production process for UDMH is being sought. UDMH produced under the environmentally acceptable process is expected to cost $5 to $7.50, compared to the prior cost of $.57 per lb.

Unresolved environmental problems continue to impact adversely on other commodities as well. Discovery of the carcinogenic qualities of asbestos has caused critical shortages, not only in asbestos products, but in acceptable substitute materials. The SSBN 625-class submarine conversion to POSEIDON has been retarded by difficulties in obtaining fiberglass cloth as abestos substitutes. The fiberglass shortage, in turn, has been aggravated by reduced production attributable to environmental requirements.

The Department of Defense in recent years has had particular difficulty in obtaining an adequate supply of coal to meet its total requirements. There are many reasons for this problem, among which are new local, state, and federal laws requiring environmental, health, and safety

considerations. The Federal Coal Mine Health and Safety Act of 1969 has had a dramatic effect on the coal industry and has been the major reason for loss of anthracite coal production due to mine closures.

The Department of Defense is currently facing a shortage of 190,000 tons of coal for use in the United States and 126,800 tons for use in Europe. The supply problem is aggravated by inflationary cost increases. The coal used by the military and other federal office buildings in the District of Columbia, to cite one example of price increases, cost approximately $5 to $6 per ton in 1968. The current price is around $32.75 per ton and is subject to further escalation during the 12-month contract period. There are indications that it will rise to a level of $43 to $60 per ton, and perhaps as high as $80 per ton before the contract expires.

Energy

Perhaps the most important materiel-associated problem is the provision of an assured supply of petroleum, a problem which, in the past year, has been subjected to the most intensive scrutiny. Yet, in most respects, the problem defies firm definition as well as adequate solution. The assurance of sufficient energy-producing materials to fill essential national requirements during periods of defense emergencies is of concern.

The 1973 petroleum embargo, though relieved partially by leakages and supplies from other sources, was lifted before the situation became acute. Nevertheless, it demonstrated several weaknesses which could be disastrous in time of war. Principal among these is the concern for the national petroleum distribution system, which is geared to existing supply sources. An immediate, total, and long-lasting

stoppage or a large reduction of imports could not be accommodated readily, and supply would be denied many military and essential civilian activities. From a national security viewpoint, planning for alternative means to ensure adequate energy supplies to all sections of the Nation is a matter of utmost importance.

Inflationary Pricing Trends

As a result of continuing market uncertainties and raw material shortages, we are placing more reliance on the use of contract price escalation provisions to insure contract coverage for our requirements. We have had to raise the allowable escalation ceilings for many commodities, but in some product areas, producers and vendors will not accept contract escalation provisions, and insist that they be paid whatever price is in effect at time of delivery. Some contractors are so apprehensive of escalation provisions that they will not even agree to provisions allowing unlimited escalation. Some examples of price increases are illustrated by the differences in the average prices paid during Fiscal Year 1973 and prices paid during the past few months. Steel angle increased from $.23 per lb to $.36 per lb. Manila rope increased from $.45 per lb to $1.08 per lb. An electron tube more than doubled in price from $32.00 each to $65.50 each, and prices for JP4 jet fuel originating in the Caribbean area increased approximately 400 percent since Fiscal Year 1973. Other prime examples of dramatic cost increases between Fiscal Year 1973 and Fiscal Year 1974 in routine, yet essential, items are the 40 mm cartridge case, which increased from $.22 to $.31 or 40.9 percent, and the 105 mm projectile, which rose from $10.98 to $17.75 or 61.6 percent.

As a result of production and economic uncertainties, some facilities normally producing essential Defense products

are closing down, production lead times are increasing, and an unhealthy reliance on foreign suppliers is being forced upon us.

Increasing Production Lead Time

Serious problems are arising due to increased production lead times. This is an important factor in determining levels of supply and procurement cycles. The times required to make deliveries have increased sharply for many items which the Services require. For example, the procurement lead time for sheet steel increased from 90 days to 300 days and wool cloth, from 135 days to 360 days. Between 1 April 1972 and 1 May 1974, the procurement lead time for aluminum plates went from 9 weeks to 52 weeks; titanium forgings, from 20 weeks to 44 weeks; bearings, from 18 weeks to 60 weeks; resistors, from 20 weeks to 50 weeks. These examples are typical of the lengthened procurement lead time required.

These dramatically lengthened lead times for both components and raw materials have necessitated extraordinary measures to sustain a minimal flow for Defense production. Defense-sponsored special priority assistance cases increased 320 percent in Fiscal Year 1974. The priorities and allocation authority provided by the Defense Production Act has become essential to keeping Defense programs on schedule in a time of tight supply and shortage environment. Longer lead times also require a larger, more costly inventory.

General Scarcity of Wide Spectrum of Raw Materials

Scarcity of a wide spectrum of raw materials generated by unprecedented worldwide demand has seriously impacted on procurements for support of military requirements. Shortages of petroleum have created shortages of petrochemicals,

which, in turn, are causing cutbacks in production of synthetic textiles and are restricting severely production of plastics.

Steel, the most basic of industrial materials for weapons systems, is in critical supply. Mills are operating at full capacity, but rising demand continues to exceed capability. Shortages and increased acquisition lead times of specialty steel products are affecting adversely the SS-N-688-class submarine, the LHA, and DD-963-class destroyer construction programs. There are also critical shortages of steel bars and tubing, copper wires and bars, aluminum ingots, and zinc.

Wood pulp suitable for use in the production of map and photographic paper is a continuing problem. Similarly, the national stockpile of abaca fiber, the principal raw material for manila rope, has been depleted.

Actions have been initiated to minimize this impact. The assistance of industrial associations has been solicited. Continuing emphasis is being placed on the use of the Defense Priorities and Materials Systems to alleviate bottlenecks which are delaying contractor deliveries. All of this represents, as a minimum, increased cost of operation to the Defense Department.

Grossly inflated prices and acute shortages have inspired an unprecedented number of demands for utilizing the national stockpile of strategic and critical materials, some of which have been successful. Some Defense programs have been assisted by the availability of materials from the stockpile. Nevertheless, there is cause for concern that during a peacetime period of increasing reliance on nonsecure foreign supplies of basic materials, we are disposing of stocks which may be critical to national survival in a more crucial future time.

The USSR is the most self-sufficient major world power in strategic minerals, domestically producing most of its needs from extensive mineral deposits. The United States is a distant second, with rapidly diminishing domestic reserves. During peactime, neither country is entirely self-sufficient, but US shortfalls are much larger.

A comparison of US and Soviet self-sufficiency on Chart 15 in 15 critical strategic minerals shows that the USSR is far less dependent on foreign sources than the United States.

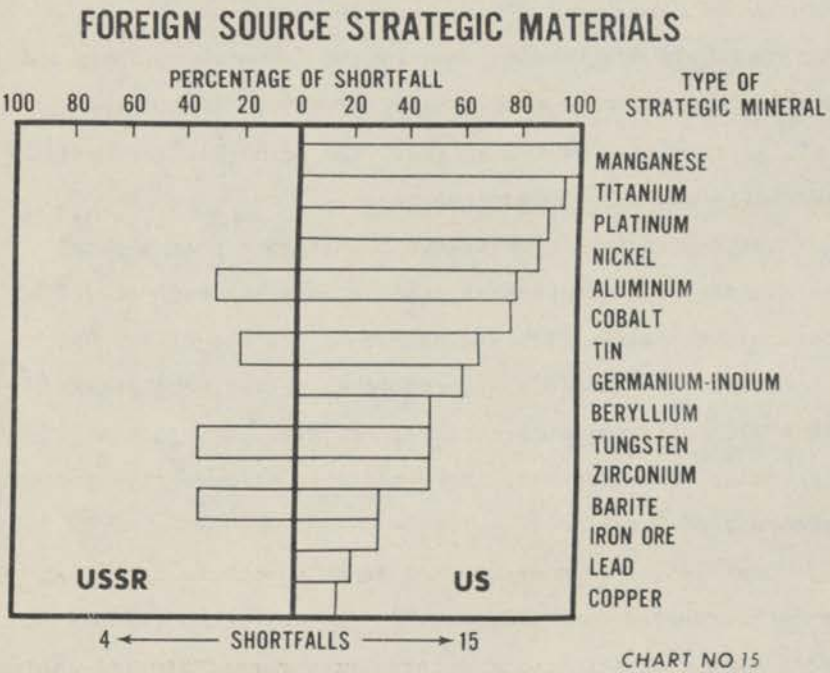


CHART NO 15

As demonstrated by the recent Arab oil embargo, countries possessing critical natural resources can be expected to pressure consumer nations for changes in political alignments, economic positions, and national decisions. The Soviet Union, as a result of a deliberate national policy to attain self-sufficiency, escapes most of this pressure, thus gaining an advantage and a future weapon in international affairs.

Facilities Close Downs

Environmental requirements, rising costs, and material shortages are resulting in planned and actual closures of facilities considered essential to the operational needs of the Department of Defense. Facilities are in danger of being closed because compliance with the more stringent environmental requirements is often not feasible due to the age and condition of the facilities and the prohibitive cost of upgrading or repairs.

The Military Departments are experiencing increasing difficulty in maintaining reserve industrial plants. For example, US Steel's Christy Parks Works has produced ordnance items for several decades, most recently, the MK-82 bomb body. Current production was completed in February 1974 at which time the Navy had planned to place this plant in layaway. The company has refused a standby contract, and the Navy is now in the process of a costly removal of government-owned equipment and restoration of the facility. In the interim, reserve capacity for the production of 60,000 bomb bodies per month has been lost.

The dwindling domestic capability to support the Department of Defense is represented graphically by the production of ether. Large quantities of ether are used by the Services primarily for the manufacture of single base propellants. When one of two large producers (EXXON) ceased production in July 1974 because of the "lack of growth potential," the second producer (U.S.I.) would not increase production to satisfy Service requirements for the very same reason. Sixteen of the largest potential ether producers in the United States and Canada were contacted, but with no success.

Reductions in mobilization capacity have caused the Military Departments to examine more closely the relative efficiency of increasing levels of war reserve stocks of critical commodities as the only other apparent means of ensuring supplies. This approach is not without problems, not the least of which is cost.

Increased Reliance on Foreign Production

US firms are relying to a greater degree on production imports from foreign sources for a variety of reasons. Short-term solutions for problems in the areas of balance of payments, tax incentives, economy, labor costs, and governmental regulations cumulatively have created a situation where the national security posture of the United States has been diminished.

During the years of worldwide excess capacity in the 1960s, domestic production of steel wire and bars decreased under the pressure of imports. Now, with world demand exceeding supply, US fabricators, including Defense contractors, are experiencing extreme difficulty in obtaining supplies.

There has been a virtual disappearance of the domestic mechanical watch manufacturing industry. Historically, this industry has been the primary source of vital military precision components such as mechanical fuses. A minimally adequate domestic capability has been maintained through a series of expensive initiatives by the Navy which require contractors to agree that plants for the manufacture of pinions and gears will retain production equipment in the United States for a period of at least 5 years and that employees engaged in the tool-making setup and production will be only US or Canadian citizens.

In order to broaden further this industrial base, individual contractors have been limited to single-shift

production. All such contracts have been negotiated as being in the interest of national defense.

Obviously, the Defense Department cannot support such extreme measures for all domestic industries faced with strong foreign competition. As long as this country and the world continue to experience critical shortages of various basic materials and raw commodities, there will be no end to economic uncertainty within industry.

The Department of Defense, for its part, is doing everything in its power to (1) reduce requirements wherever possible, (2) forego nonessentials, (3) reduce lengthy contract delivery schedules to more manageable terms, and (4) design escalation clauses to fit the individual needs of individual industries.

CONCLUSION

The key judgments derived from the preceding analysis already have been presented. I would like, however, to conclude with two brief observations.

The incentives for arms control as a means for fulfilling national interests have been growing in both the Soviet Union and the United States over the last 5 or 6 years. Their scope is broad; their impact, manifest. Soviet purpose is not necessarily always benign. A US strategic force, stable in shape and limited in size, is, of necessity, in the Soviet Union's best interests. Each step we take in this direction, therefore, must be carefully examined to ensure an equal US interest is served. The political systems of our society ensure open compliance with such agreements. We, of course, must take risks for peace, but these risks must be prudent. Arms control is a means, not an objective. The objective is peace.

The analysis of the elements of military power contained in this statement is designed to permit a comparison of the basically asymmetrical forces of the US and the USSR and to facilitate the diagnosis of potential problems and the identification of future opportunities for ourselves and others. The Armed Forces of the United States are capable today of fulfilling their Constitutional obligation to provide for the common defense. They will perform as the Nation directs them and with tools the Nation provides. These tools must continue to be equal to the task.

Schemes for arms control are useful in reducing the fears and tensions caused by the destructive power and magnitude of modern weapons. They cannot, however, reasonably be substituted for dealing directly with the political, social, and economic causes of conflict. We must solve the more fundamental international political and economic problems which lead to a Pearl Harbor, a Czechoslovakia, or a Gulf of Tonkin prior to completely committing the security of the United States to the hope of peace and the goodwill of others.

Until these problems are solved, power -- military power -- must be maintained to preserve the peace.

This presentation is a part of the Congressional consideration of the FY 1976 Budget. The Defense portion of this Budget for the bicentennial year is large. The cost of the Revolutionary War, year-by-year, including domestic and foreign expenditures, federal and state, cash and indebtedness, amounted to about $135 million, roughly the cost of operating the General Accounting Office in FY 1976. This year's Defense outlays are estimated at $92.8 billion, considerably

more than 700 times the entire cost of our War for Independence. Some may consider this a fatiguing sum.

The Joint Chiefs of Staff believe it is an austere and essential request and urge your full support of the President's Budget. As we contemplate the demands that liberty makes upon us, it is well to remember the words of Tom Paine 200 years ago: "Those who expect to reap the blessings of freedom must. . .undergo the fatigue of supporting it."

Thank you, Mr. Chairman.

PREPARED STATEMENT

Chairman McClellan. Without objection, I think that Assistant Secretary Terence McClary's statement should also be inserted in the record at this point.

[The statement follows:]

Mr. Chairman and members of the committee, I welcome this opportunity to appear before this committee to outline the fiscal aspects of the fiscal year 1976 Defense budget estimates.

As in the past, Mr. Chairman, we have prepared a number of tables which present the details of our fiscal year 1976 estimates. These we offer for the record. With your permission, I would like at this point to highlight the major points in connection with our budget estimates.

DEPARTMENT OF DEFENSE BUDGET—DEFENSE BUDGET TOTALS

[In billions of dollars]

	Fiscal year—				Transition period July 1, 1976–Sept. 30, 1976	Increase, fiscal year 1975–76
	FT 1973 actual	1974 actual	1975 estimate	1976 estimate		
Total obligational authority (TOA)	80.2	85.0	89.0	104.7	24.6	15.7
Budget authority (BA)	80.4	88.9	90.8	106.3	24.9	15.5
Outlays	73.8	78.4	84.8	92.8	25.4	8.0
Constant fiscal year 1976 dollars:						
Total obligational authority (TOA)	109.4	104.4	96.5	104.7	23.7	8.2
Budget authority (BA)	109.6	110.0	98.6	106.3	23.9	7.7
Outlays	101.7	98.7	93.2	92.8	24.5	−.4

PROGRAM TOTALS

Our program totals are shown on this chart. TOA rises from $89 billion in fiscal year 1975 to $104.7 billion in fiscal year 1976, a rise of $15.7 billion. Budget authority is up by $15.5 billion, and outlays by $8 billion.

These totals are complete—they reflect amounts under all 4 appropriation acts, proposed supplementals and rescissions for fiscal year 1975 and contingent items not yet submitted for fiscal year 1976. I will break the estimates down later, but, for the moment, it is important that we address the comprehensive totals.

This chart shows the trend since fiscal year 1964, in current prices. The increase from 1964 to 1968 reflects the war buildup. From 1968 to 1972–73, the trends are relatively flat—pay raises and price increases almost exactly matched the sharp program cutbacks that were underway. Since 1972–73 the trend is upward, as inflation has intensified and we can no longer match it by program cutbacks.

This shows the trend in constant fiscal year 1976 prices. Programs in all years are expressed in the pay rates and price levels of fiscal year 1976. There is a sharp cutback—some 40 percent—from the 1968 wartime peak, and our fiscal year 1976 outlays are about 20% below the prewar level.

Note that outlays continue to drop slightly from fiscal year 1975 to fiscal year 1976 while TOA, in real terms, grows from fiscal year 1975 to fiscal year 1976. There is real growth in the estimates now before the Congress. I will cover this point in more detail later.

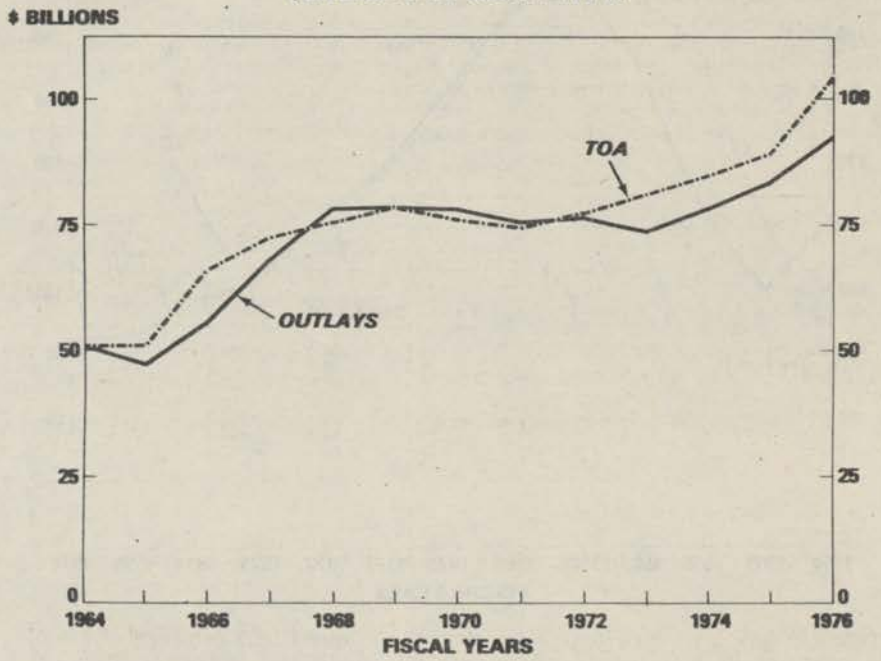
IMPACT OF INFLATION

Next, Mr. Chairman, I will discuss the impact of inflation in our budget estimates and the related matter of constant-price expressions. I realize, Mr. Chair-

man, that this is not one of your favorite subjects. Nor is it a favorite of mine. I suspect that we'd all be happier, in this respect at least, if we could be like our counterparts in the Soviet Union. They enjoy stable prices, and they don't have to concern themselves with the subject I'm about to address.

In our case, though, inflation has had an overwhelming impact upon the defense budget—and all budgets—over recent years. We simply must take it into account.

DEPARTMENT OF DEFENSE BUDGET TRENDS
(BILLIONS OF CURRENT $)

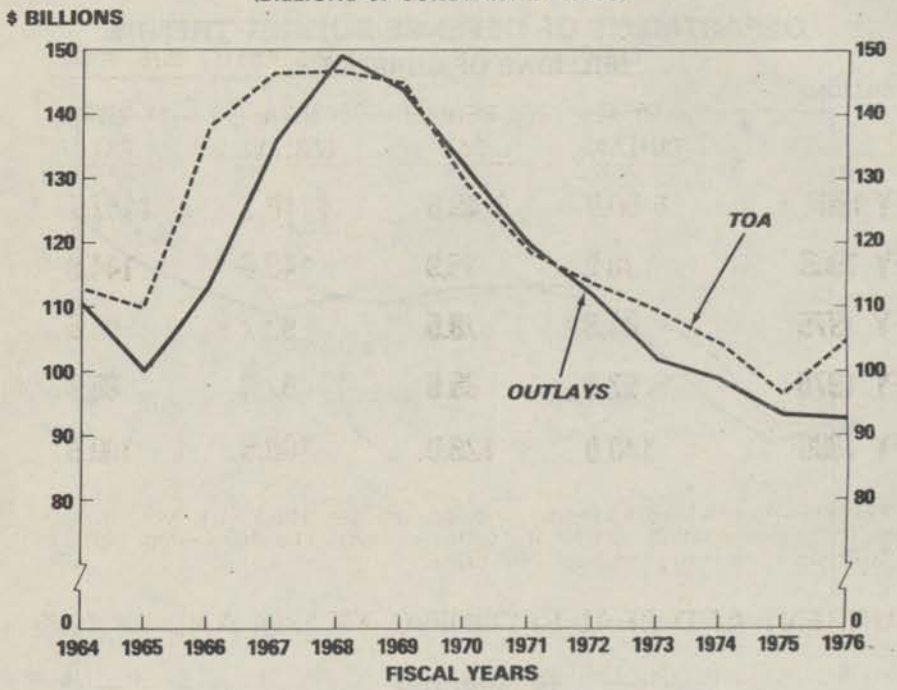


For example, here are outlays in current prices and constant prices for selected years, starting with prewar 1964. We have shown the figures with and without retired pay.

Outlays in 1964 were $50.8 billion, and they rise to $92.8 billion in fiscal year 1976. That's a rise of $42 billion, nearly doubling. But in constant prices (excluding retired pay), we see a $22-billion drop, about 20 percent.

DEPARTMENT OF DEFENSE BUDGET TRENDS

(BILLIONS OF CONSTANT FY 1976 $)



Inflation has been such that, even though our spending has nearly doubled. our program in real terms—manpower and purchasing power—is down 20 percent.

From 1968 to 1976, note that our program in real terms fell by $59 billion—41 percent. In spite of this, our spending in current prices doesn't drop at all—in fact it rises substantially, by $14.8 billion or 19 percent. This reflects inflation plus the growth in the retired population.

Spending in current prices is forecast to rise to $140 billion in 1980. That's nearly 3 times the 1964 level, a growth of some $89 billion. But that extra $89 billion, under our forecasts, will buy us nothing in real terms—manpower and purchasing power. In fact, the 1980 program will be about 7 percent below the 1964 program in terms of real buying power.

Even in a single year—from fiscal year 1975 to fiscal year 1976—we shall see that inflation adds over $10 billion to our requirements. And, over a span of years, as this chart shows, the impact is immense.

DEFENSE OUTLAYS IN CURRENT AND CONSTANT PRICES

($ Billions)

	CURRENT PRICES		CONSTANT FY 1976 PRICES	
	TOTAL OUTLAYS	EX RETIRED PAY	TOTAL OUTLAYS	EX RETIRED PAY
FY 1964	$ 50.8	$ 49.6	$110.3	$107.7
FY 1968	78.0	75.9	148.8	144.9
FY 1975	84.8	78.5	93.2	86.6
FY 1976	92.8	85.9	92.8	85.9
FY 1980	140.0	129.0	108.5	100.5

This phenomenon is by no means limited to defense. This chart shows the pattern for public spending, and for the entire economy. The chart shows 1964 and 1976 spending, in current and constant prices.

CURRENT AND REAL SPENDING, FY 1964 AND FY 1976

($ Billions)

	CURRENT PRICES			CONSTANT (FY 1976) PRICES		
	1964	1976	CHANGE	1964	1976	CHANGE
NATIONAL DEFENSE	$ 53	$ 94	$ +41	$ 116	$ 94	$ -22
OTHER FEDERAL, NET	66	255	+189	143	255	+ 112
TOTAL FEDERAL OUTLAYS	119	349	+230	259	349	+ 90
STATE & LOCAL, NET OF GRANTS	59	209	+150	125	209	+ 84
NET PUBLIC SPENDING	$178	$ 558	$+380	$ 384	$ 558	$+174
GNP	$612	$1,596	$+984	$1,111	$1,596	$+485

All spending in current prices increases dramatically over this period—defense least of all. While defense spending rises $41 billion—78 percent—other Federal spending nearly quadruples (up 286 percent), as does state and local government spending (up 284 percent). Total spending in the entire economy—measured by GNP—is up 161 percent, or $984 billion.

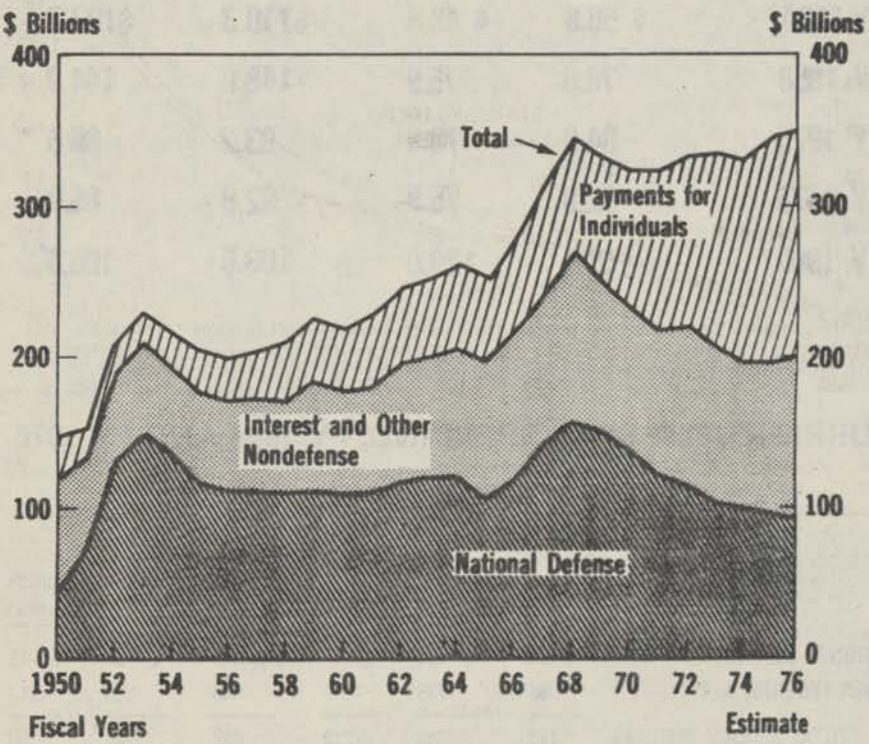
These do not represent real increases in buying power. They are all heavily eroded by inflation. For example, nondefense Federal spending nearly quadruples in current prices, rising from $66 billion to $255 billion. Inflation takes a $77-billion bite out of that, however. So the real growth is $112 billion, or 78 percent. A healthy growth, to be sure, but far from quadrupling.

The same is true of state and local government spending—again, inflation adds $77 billion to costs. Again, outlays in current prices nearly quadruple, but real growth is just 82 percent.

For the entire economy, the GNP rises by 161 percent in dollars. In real terms, the growth is 44 percent. Inflation, about $500 billion of it, consumes the remainder of the dollar growth.

Inflation also has had a sharp impact on defense, but no greater than for other sectors of public spending. The difference is that spending in other sectors rose more than enough to cover inflation—$189 billion for other Federal programs, and $196 billion for state and local governments, versus $41 billion for defense. Defense spending didn't rise by enough to cover inflation. In real terms, there is thus an increase in the other sectors and a decline in defense.

FEDERAL OUTLAYS—CONSTANT 1976 DOLLARS



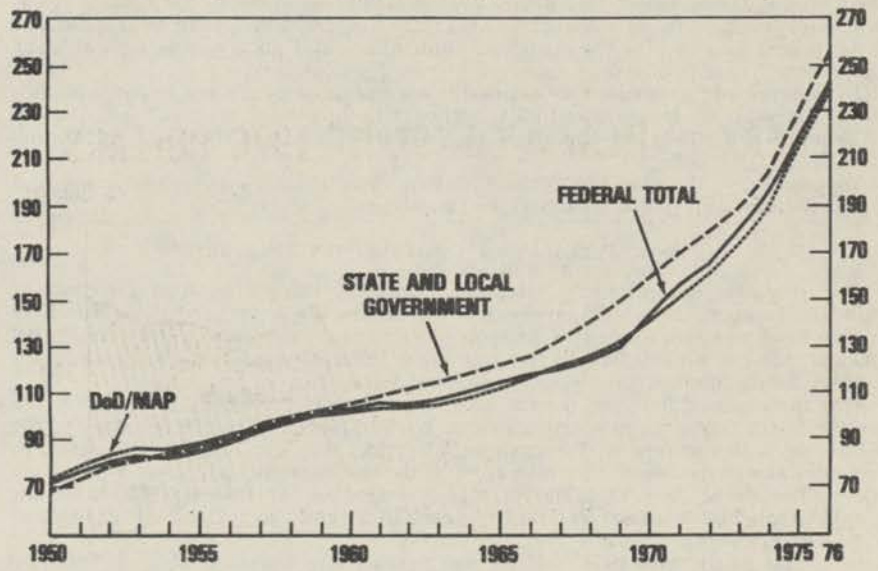
This chart shows the Federal budget trend in fiscal year 1976 prices. These are OMB figures. One of the striking things is that the fiscal year 1976 Federal budget, in total, is not much higher than the 1968 level, in real terms. There is an increase of about $10 billion. There is a rise of $171 billion in current prices (95 percent) but inflation consumes almost all of that. Within this relatively-fixed total, there is a drop of $60 billion for defense and a rise of $70 billion for other programs.

The point of all this is that we must make some allowances for inflation before we can make a sensible assessment of spending trends. Current dollar spending throughout the economy has been increasing at a fantastic rate. We know that these increases don't measure changes in real income. All housewives, and most economists, are well aware that the dollar won't buy what it did before. Allowances are made for this throughout the economy: in pension payments, welfare payments, wage agreements and other forms of contracts. The question is not whether inflation exists, and has an effect on our spending. We know it does. It is pointless to spend any time in debating that point. The question, it seems

to me, is whether we have made reasonable adjustments for inflation—whether we have used reasonable factors in expressing our estimates in constant prices.

DEFLATORS

COMPENSATION AND PURCHASED GOODS AND SERVICES
(CY 1958 = 100)



This chart shows a comparison of the factors we use with those used by the Department of Commerce for the Federal Government as a whole, and for state and local governments. The Commerce figures on this chart extend through fiscal year 1974, and I direct your attention only to the figures through fiscal year 1974.

These figures are on a base of 1958. Note that we calculate less inflation for the DoD than Commerce calculates for the Federal Government as a whole, and considerably less than Commerce calculates for state and local governments.

ANNUAL INFLATION RATES

	CONSUMER PRICE INDEX	WHOLESALE PRICE INDEX*	GNP DEFLATOR	INFLATION ON DEFENSE BUDGET OUTLAYS	INFLATION ON DEFENSE BUDGET TOA
FY 1973 TO FY 1974	9.0%	16.1%	8.1%	9.4%	11.0%
FY 1974 TO FY 1975	11.9%	18.3%	11.3%	14.4%	13.3%
FY 1975 TO FY 1976	9.5%	4.7%	9.0%	9.9%	8.4%
COMPOUND TOTAL, FY 1973-76	33.5%	43.8%	31.2%	37.7%	36.3%
DEFENSE FORECAST, FEBRUARY 1974				23.0%	23.3%

*Based on unofficial forecast after January 1975

This chart shows the inflation rates we have used for the fiscal year 1976 budget, compared to the most common measures for the economy as a whole. The timing is quite different among the various series. The wholesale price index grew rapidly for two years and now, we hope, will level off. The consumer price index and the GNP deflator rose more gradually and will continue to rise from fiscal year 1975 to fiscal year 1976, as wholesale price increases work their way through other sectors of the economy.

The defense inflation rates are shown to the right. There are different rates for TOA and outlays. The TOA for any year actually spends out over several years, a portion each year. In measuring TOA inflation from one year to the next, it is necessary to consider the spendout percentages and outlay inflation rates for the several years involved.

In general, our inflation rate estimates for the three years are in the middle—lower than the wholesale price index, higher than the others.

From 1975 to 1976, our inflation rate estimate is about the same as for the CPI or the GNP deflator.

In summary, Mr. Chairman, the inflation rates that we have used, past and projected, are well in line with accepted measures.

Budget Preparation and Inflation Forecasts

For the past several years, Mr. Chairman, we have developed forecasts of inflation in connection with our budget estimates. We have used these forecasts in the fund requests for major weapon systems and construction projects. On an overall summary basis, we have used these inflation forecasts to translate the budget totals into constant prices, to reflect trends in real buying power.

Our forecasts of inflation for the past several years have been far too low. We simply never foresaw the surge in prices. We had plenty of company—none of the economic policymakers or forecasters saw what was coming. It's necessary to consider the environment in which each of the last several budgets was prepared.

The fiscal year 1973 budget was prepared in the fall of 1971. Economic controls had just been imposed (August 1971) and the outlook, of course, was for very stable prices.

The fiscal year 1974 budget was prepared in the fall of 1972. Inflation over the past 12 months had been 3 percent, and once again, the forcast was highly optimistic.

The fiscal year 1975 budget was prepared in the fall of 1973. Wholesale prices had risen some 18 percent over the past 12 months but the forecasters assured us this was due to some one-time shocks and the future would be better. The concensus forecast, governmental and private, was for inflation in the 4 to 5 percent range. We believed it. Recall that this was what we were thinking in developing the fiscal year 1975 budget, which you are using as a basis of comparison today. At that time, none of us had yet waited in a line for gasoline. In economic terms, the fall of 1973—when we developed the fiscal year 1975 estimates—was a very long time ago.

This chart suggests the impact. Note that we now forecast TOA inflation at 36.3 percent from fiscal year 1973 to fiscal year 1976. In February 1974, we were projecting 23.3 percent. We missed by 13 points. This means that the fiscal year 1975 program we were contemplating a year ago would cost more than $10 billion above what we planned, due to unforeseen inflation.

This cumulative forecasting error is a compound total, pay rates and purchase prices combined. As to pay rates, our current forecasts for 1973–76 combined are very nearly the same as our forecasts of a year ago. The entire error is in the purchase area. Fiscal year 1976 purchase prices are about 22 percent higher than we expected a year ago.

EXAMPLES OF UNIT COST INCREASES
($ IN MILLIONS)

ITEM	UNIT COST IN FY 1975 BUDGET	UNIT COST IN FY 1976 BUDGET	% INCREASE
A-6E INTRUDER	$ 10.78	$ 13.17	22
UH-IN IROQUOIS	.80	1.22	52
SSN-688 NUCLEAR SUBMARINE	193.50	245.50	27
PF PATROL FRIGATE	62.36	95.55	53
M60 TANK	.35	.59	69
F-15 EAGLE	10.09	13.25	31
E-3A	41.83	72.97	74
MINUTEMAN III	4.79	5.51	15
SLBM PHASED ARRAY RADAR	37.90	42.90	13
HAWK	.08	.10	25
M113 ARMORED PERSONNEL CARRIER	.05	.08	60

This chart provides some concrete examples of what this means, in terms of unit prices for individual weapons. These systems are in production over a period of years. The unit costs in the fiscal year 1975 budget were developed before we had ever stood in a gas line, and when we expected inflation at 4 to 5 percent per year, and then tapering down. The unit costs for the fiscal year 1976 budget were developed a year later. To begin with, our price level in the fall of 1974 was about 20 percent higher than in the fall of 1973. Add to that the fact that our expectations for the years ahead—the production period—are much more pessimistic. The result is that the unit costs have risen dramatically, as shown.

EXAMPLES OF UNIT COST INCREASES FOR FY 1975 PROGRAM

ITEM	UNIT COST IN FY 1975 BUDGET	CURRENT UNIT COST	% INCREASE
M60 MACHINE GUN	$ 833	$ 1,000	20
LASER RANGE FINDER FOR M551	40,124	45,110	12
ROCKET, 66MM, HEAT	49	68	39
CARTRIDGE, 105MM, SMOKE, WP, F/HOW	37	54	46
CARTRIDGE, 105MM, HEP-T, W/FUZE, F/TANK	73	109	49
PROJECTILE, 155MM HE	38	45	18
TRUCK, STAKE	6,995	7,774	11
TRUCK, UTILITY	3,688	4,560	24
TRUCK, PICKUP	2,743	3,167	15
SHELTER, EXPANDABLE	37,000	43,746	18
TRACTOR, CRAWLER	71,800	120,000	67

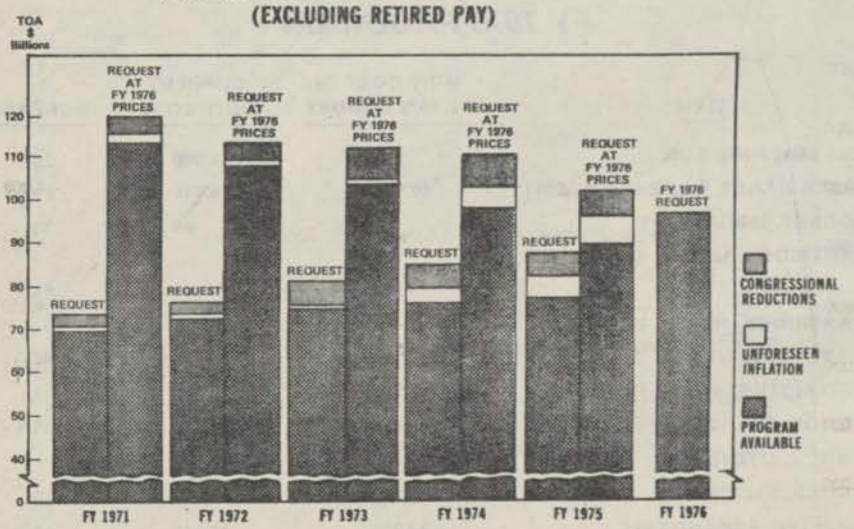
This chart shows a different perspective. It shows procurement items of lesser value than the major systems in the preceding chart. And it is confined to the fiscal year 1975 program. It shows what we budgeted, and what we're paying. This shows how the program for a single year was eroded by inflation which we didn't foresee and, under last year's guidelines, weren't allowed to reflect in our budget estimates anyway.

OPERATION AND MAINTENANCE INFLATION

	FY 1974	FY 1975	% INCREASE
CONUS TRANSPORTATION (PER TON MILE)	$ .040	$ .047	18
MAC PASSENGER (PER MILE)	$ .02042	$ .02848	39
MAC CARGO (PER TON MILE)	$ .1852	$ .2706	46
COAL - EUROPE (PER METRIC TON)	$41.87	$80.05	91
COAL - CONUS (PER SHORT TON)	$10.50	$48.00	357
PURCHASE ELETRICITY (PER KWHOUR)	$.0177 - 0185	$.0243 - 0285	31 - 60
OVERHAUL DDG	$ 7.0 M	$ 8.5 M.	21
AIRCRAFT OPERATION (PER HOUR)			
F-4	$545.00	$713.00	31
A-6	$429.00	$587.00	37
FOREIGN CURRENCY - DEUTSCHEMARK (TO U.S. $)	2.67 TO 1	2.41 TO 1	10

This chart shows a third measure of inflationary impact, presenting data for operation and maintenance. The costs for certain goods and services financed in O&M are shown for fiscal year 1974 and for fiscal year 1975. We are not permitted to reflect future inflation in our budget estimates in this area. The figures shown in the fiscal year 1974 column are those current as of the fall of 1973, when we were preparing our fiscal year 1975 estimates. The fiscal year 1975 column shows the rates we are actually paying in fiscal year 1975. It is obvious that unbudgeted inflation has had a tremendous impact in this area. The last line shows a 10 percent growth in the cost of Deutsche marks per dollar. This, of course, is additive to inflation rates in the FRG, in terms of impact upon the defense budget.

FACTORS ERODING THE DEFENSE PROGRAM
(EXCLUDING RETIRED PAY)



Our experience in recent years has been that of steady erosion, due to two factors: congressional reductions and unforeseen inflation. This chart tells the story. (These figures do not include retired pay.) The lower bars, to the left, show our requests in current prices. Obviously, our requests in these terms are constantly rising—a fact which has not escaped notice. The shadings show what happened to those requests—the congressional reductions and the unforeseen inflation. For 1971–73, the major factor was congressional action. Beginning in fiscal year 1974, though, unforeseen inflation had a sharp impact and, in fiscal year 1975, this factor reduced our program just about as much as the Congress did.

But that is only a part of the picture, and not the most important part. The higher bars show what has been happening to our program in terms of real buying power, with all data expressed in constant fiscal year 1976 prices. In these terms, our requests themselves have been steadily declining. Our fiscal year 1976 request (excluding retired pay) is $97.7 billion. We see a steady trend down in our requests: $120 billion in fiscal year 1971; $114 billion in fiscal year 1972; $112 billion in fiscal year 1973; $110 billion in fiscal year 1974; and $102 billion in fiscal year 1975.

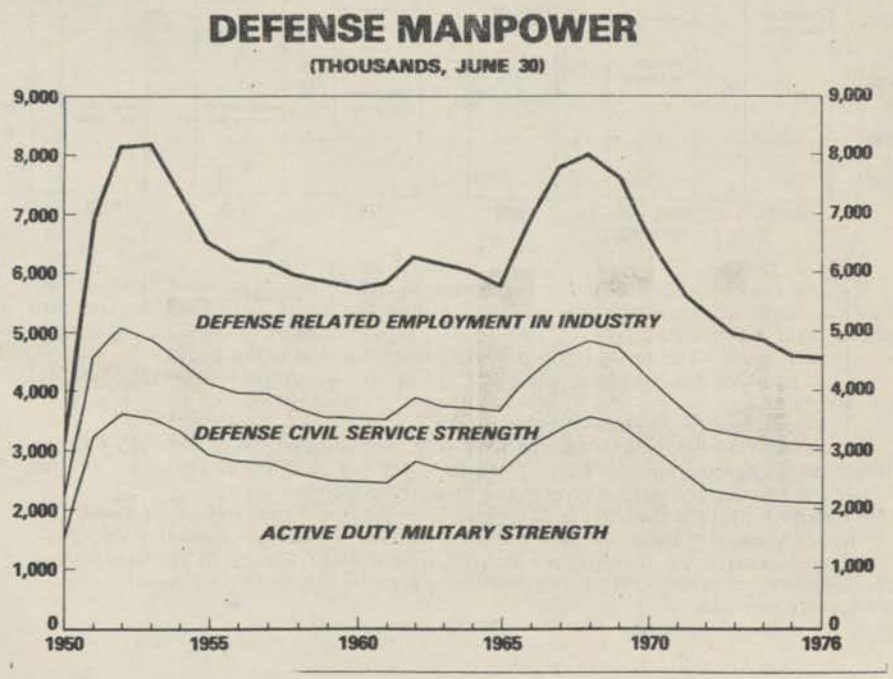
The Congress reduced our fiscal year 1975 program by $6.1 billion (in fiscal year 1976 prices). If that was all that had happened to us, our fiscal year 1975 program would be here—at $96 billion—very nearly equal to our fiscal year 1976 request. And this fiscal year 1976 request includes prior-year shipbuilding funds. Adjusting for that, our fiscal year 1976 request is slightly below the *program* that the Congress approved for fiscal year 1975.

But the process didn't stop there. In addition to the congressional cut, unforeseen inflation took a huge bite—$6.2 billion. Thus, our fiscal year 1975 program winds up at $90 billion in buying power and—from that doubly-depressed level—we are indeed requesting an increase for fiscal year 1976.

We are asking for more real buying power than we wound up with for fiscal year 1975. But we are asking for less buying power than the Congress approved for fiscal year 1975.

Defense Program Trend

A relatively clear-cut way to assess the defense program trend in real terms is to measure trends in manpower and industry. Setting aside military retired-pay, the entire defense budget goes for just two things: payroll and purchases from industry.



As to payroll, this chart shows the trend in military and civil service manpower. Our total direct employment will be 3,085,000 at June 30, 1976. That represents:

A reduction of 1,749,000 (36 percent) for the 1968 war peak.

A reduction of 635,000 (17 percent) from the prewar 1964 level.

The lowest level of manpower since the fall of 1950.

Now that accounts for half of our budget, and I don't think anyone could deny that large cutbacks have been made there. We're at a quarter-century low.

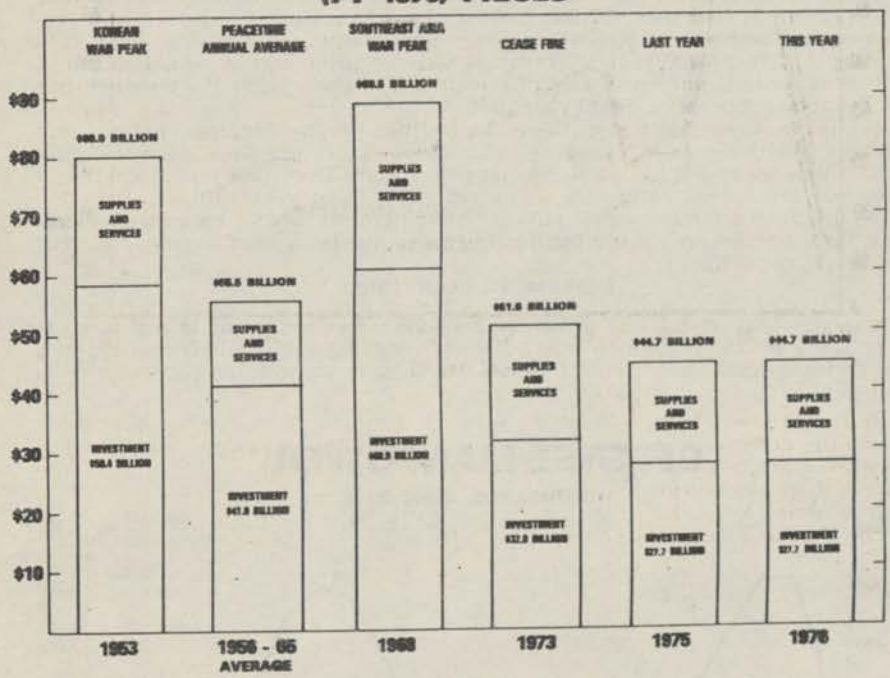
Purchases from industry account for the other half of our budget. This chart shows our estimates of industry employment deriving from defense purchases. The 1976 estimate is 1,469,000. That represents:

A drop of 1,704,000 (54 percent) from the 1968 war peak.

A drop of 811,000 (36 percent) from the prewar 1964 level.

The lowest level of industry employment since fiscal year 1951.

DEFENSE PURCHASES FROM INDUSTRY IN CONSTANT (FY 1976) PRICES



We can also consider industry purchases in dollar terms, as in this chart. Industry purchases are estimated at $44.7 billion for fiscal year 1976. In constant prices, that represents:

A drop of $43.8 billion (50 percent) from the 1968 war peak.

A drop of $10.8 billion (19 percent) from the prewar peacetime annual average.

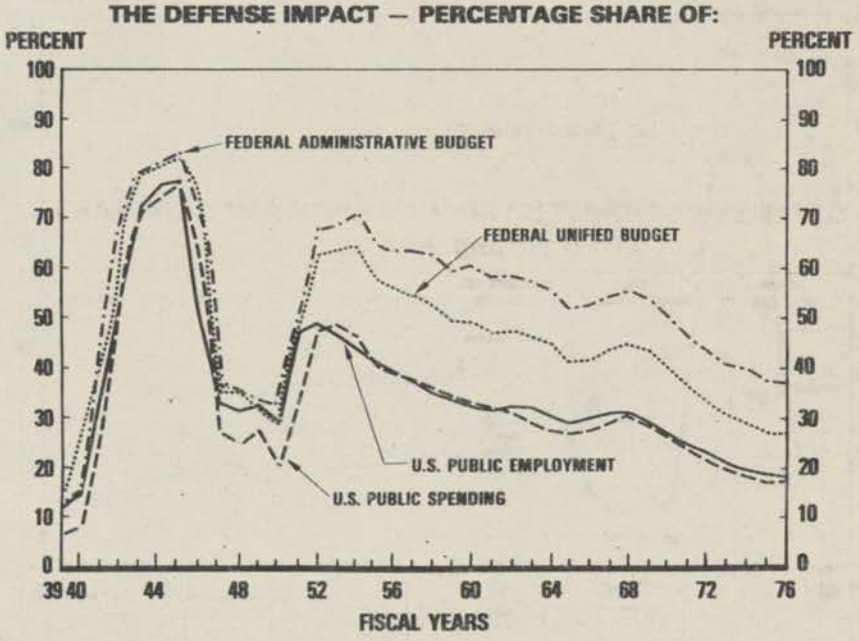
The lowest level since fiscal year 1951.

To summarize—setting aside retired pay, our budget goes for two things: direct employment and purchases from industry. In both these areas, we are far below the prewar peacetime levels, and at quarter-century lows.

We don't maintain that the inflation measures we use are perfect, or absolutely accurate. We don't know of any inflation measures that meet such a standard. But the measures we use are reasonable, and well in line with the established and accepted measures. And any reasonable approach will produce the results we have described.

DEFENSE IMPACT

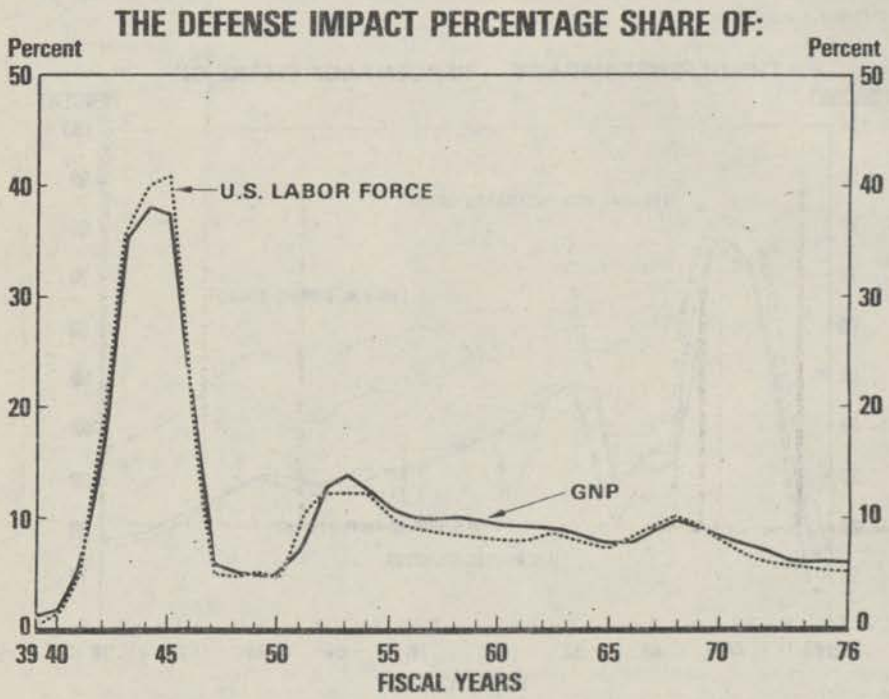
The next point which I should like to address, Mr. Chairman—and I believe this point is an especially important one under the new congressional budget system—involves the defense impact, the defense share of our spending and economic aggregates.



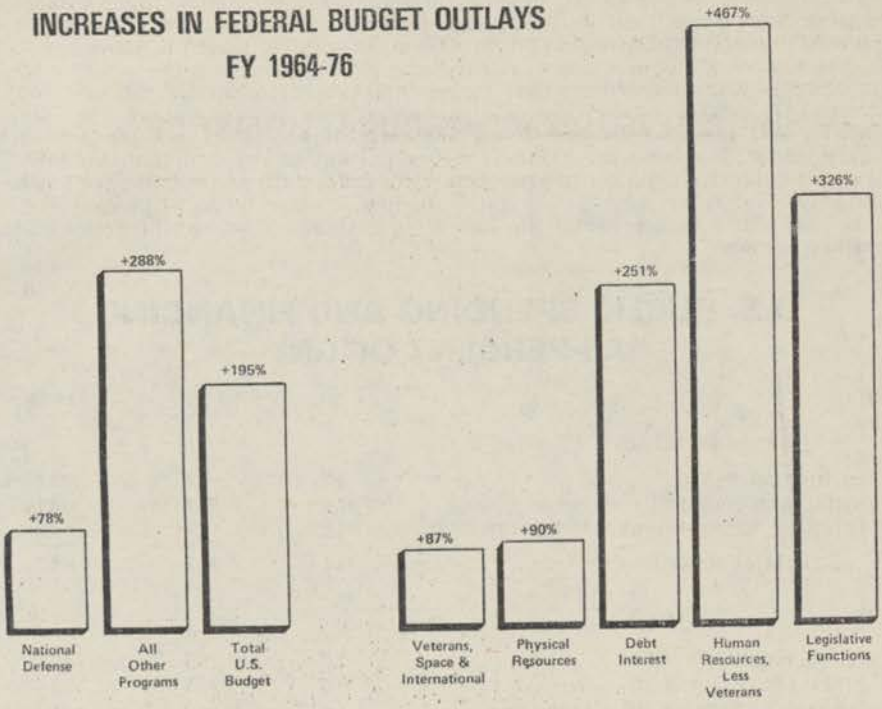
In a word, the defense share is down—no matter how it's measured. This chart shows the defense share under various public spending measures. National Defense will account for 26.9 percent of the Federal unified budget in 1976, the lowest share since 1940.

Considering Federal Funds alone, and ignoring trust funds—a measure similar to the old administrative budget—the defense share is 36.9 percent, the lowest since 1950.

For total U.S. public spending (Federal, state and local), the 1976 National Defense share is 16.8 percent, the lowest since 1940. National Defense employment (military and civil service) is 17.9 percent of total public employment—also the lowest share since 1940.



This chart shows a similar trend for the defense share of the labor force and of GNP. National Defense takes 4.8 percent of the labor force, the lowest share since 1940, and 5.9 percent of GNP—the lowest share since 1950. In terms of economic capacity—full-employment GNP—the defense share is the lowest since 1940.



What all this means is that other things have been rising much more rapidly than defense. This chart shows some of those other things that have been rising. From 1964 to 1976, everything in the Federal budget is up. But look at the differences. Defense spending rises 78 percent, while the rest of the budget rises 288 percent—nearly four times as fast.

Note that the increases for veterans, space and international programs are relatively modest. The other increases are not modest.

In making these comparisons, Mr. Chairman, I am not suggesting that defense is entitled to some fixed share of the GNP or the Federal budget. Obviously, there is no such entitlement. Nor do these comparisons, in and of themselves, suggest that the defense budget is too low. The fact is that our shares of the totals are the lowest since 1950 under any of these measures, and the lowest since before Pearl Harbor under several measures. Another fact: since prewar 1964, other Federal spending has grown 4 times as fast as defense spending. These facts do not, in and of themselves, prove that defense spending is too low.

These comparisons are necessary, Mr. Chairman, to set the record straight, and to give the lie to many statements that are made in connection with the defense budget and overall spending trends. For the past several years, Mr. Chairman, each budget has been greeted with a chorus of charges to the effect that defense spending was continuing to soar while other programs were being cut back. These statements are simply false. We are told that defense consumes the lion's share of the tax dollar. It doesn't—no lion would ever settle for 1 in 6. We are told that the defense burden is rising. It isn't. The defense burden—the share of our productive capacity that goes for defense, the portion of our total income that we must give up to provide for defense—is about half what it was in the peacetime 1950's and 1960's, and about what it was in the Louis Johnson era.

It is alleged that other programs are being starved to provide for defense. This is inaccurate, and that's too mild a term.

Mr. Chairman, the defense program in real terms—manpower and purchasing power—is at the lowest level in 25 years. That statement would stand under any reasonable measure. That's a fact. The defense share, the defense burden, under any measure is the lowest in 25 or 35 years. That, too, is a fact. As a practical matter, in discussing defense program and budget levels, it makes a great deal of practical difference how one handles these facts. Those who

advocate deep slashes in the defense budget almost invariably begin by misstating these facts. And if these misstatements are essential to their conclusions, I'd suggest that they might be wise to re-examine their premises.

The matter of defense shares, particularly GNP shares, is a key relationship in another way, and will become increasingly important under the new congressional budget system. The GNP share reflects the amount of our total income that goes for defense. When 6 percent of our GNP goes for defense, that's about the same as saying that 6 cents out of every dollar one earns goes for defense. If the defense program were cut in half, one would have 3 percent more for other purposes—private spending or other forms of public spending. The GNP share provides the link between public spending programs and the tax burden.

U.S. PUBLIC SPENDING AND FINANCING AS PERCENT OF GNP

	FY 1956	FY 1976	CHANGE
SPENDING			
NATIONAL DEFENSE	9.7	5.9	-3.8
SOCIAL AND ECONOMIC PROGRAMS	12.4	26.5	+14.1
VETERANS, SPACE, INTERNAT'L, NET INTEREST	3.2	2.6	-.6
TOTAL PERCENT OF GNP	25.3	35.0	+9.7
FINANCING			
SOCIAL INSURANCE TAXES	2.3	5.7	+3.4
OTHER FEDERAL TAXING	15.9	12.9	-3.0
FEDERAL BORROWING OR REPAYMENT (-)	-1.0	3.3	+4.3
STATE AND LOCAL	8.1	13.1	+5.0
TOTAL PERCENT OF GNP	25.3	35.0	+9.7

For example, this chart shows the picture for 1956 and 1976. In 1956, public spending took 25.3 percent of GNP, and we financed that by a combination of taxing and debt transactions, as shown.

In 1976, public spending rises to 35 percent of GNP, also financed by a combination of taxing and debt transactions.

One can read either set of figures—the spending side or the financing side—in terms of average income. For example, in 1976, 5.9¢ of every dollar earned will go for defense; 26.5¢ for social and economic programs; and 2.6¢ for veterans, space, international programs, and net interest on the Federal debt.

Or, conversely, 5.7¢ of every dollar earned will go for Federal social insurance taxes, 12.9¢ for other Federal taxes, and so on.

There are two significant points in the 1956–76 trend. Note, first, that public spending rose 9.7 points as a share of GNP. How did we finance that?

4.3 points by borrowing.

5.0 points by increased state and local taxes.

0.4 points by increased Federal taxes, and within this figure:

Social insurance taxes rose by 3.4 points.

All other Federal taxes fell by 3 points.

What emerges is that we haven't faced this surge in spending in the general Federal tax structure at all. In fact, aside from social insurance taxes (largely social security taxes), the Federal tax burden has declined and borrowing has risen.

Second, note that the GNP share for social and economic programs rose by 14.1 points. How did we finance that?

4.4 points by reducing the share for defense and other Federal programs.

4.3 points by Federal borrowing.

5.0 points by state and local taxing.

0.4 points, net, by Federal taxing, with the shift noted earlier.

Once again, this spending surge hasn't been reflected in the general Federal tax structure. We've met the surge by a group of expedients, and they're exhausted. We can't get 3.8 more GNP points out of defense in the years ahead, nor can we increase deficit financing by 4.3 additional GNP points, nor can we get 3.4 additional GNP points by raising social security taxes. Nor can we count on state and local taxing for an additional 5 points of GNP.

U.S. PUBLIC SPENDING AND FINANCING -- PROJECTIONS AS PERCENT OF GNP

	FY 1956	FY 1966	FY 1976	FY 1986
SPENDING				
NATIONAL DEFENSE	9.7	7.8	5.9	5.3
SOCIAL AND ECONOMIC PROGRAMS	12.4	17.1	26.5	35.7
VETERANS, SPACE, INTERNAT'L, NET INTEREST	3.2	3.5	2.6	1.8
TOTAL PERCENT OF GNP	25.3	28.4	35.0	42.8
FINANCING				
SOCIAL INSURANCE TAXES	2.3	3.5	5.7	
OTHER FEDERAL TAXES	15.9	14.7	12.9	
TOTAL FEDERAL TAXES	18.2	18.2	18.6	26.3
FEDERAL BORROWING OR REPAYMENT (-)	-1.0	.5	3.3	–
STATE AND LOCAL	8.1	9.7	13.1	16.5
TOTAL PERCENT OF GNP	25.3	28.4	35.0	42.8

Here's what the picture might look like, in 10-year intervals, with a projection to 1986. We have used the official projections through 1980 for GNP and defense spending. Thereafter, we have assumed that defense spending will continue to grow at the same rate. We have assumed that social and economic spending will continue to grow at the 1956–76 average. We have assumed a balanced Federal budget in 1986. We've assumed that state and local governments can tax an additional 3.4 points of GNP, as they did from 1966 to 1976.

With those assumptions, this is the picture that emerges. Federal taxes would have to take 26.3 percent of GNP, a higher percentage than they've ever taken. At the peak of World War II, Federal taxes took 23.7 percent of GNP in fiscal year 1944 and 23.2 percent in fiscal year 1945. Since then, we haven't approached such figures. As the chart shows, we've been in the 18 percent range for the past 20 years. But under these assumptions, we'll reach 26.3 percent of GNP. If we assume that we can't raise social security taxes much that means that other Federal taxes will have to rise by about ⅔.

We'll be looking, then, for about 8 additional points of GNP. Cutting the defense budget can't provide much of the answer. Aside from retired pay, if we abolish defense completely, we'd save something over 4 percent of GNP—about half the amount required.

It's not foreordained, of course, that social and economic spending need grow at the 1956–76 rate. Some, I take it, believe it should grow much faster. Nor can we be assured that state and local governments can find 3.4 extra points of GNP—a growth of one-quarter in their tax burden.

The upshot of all this is that we do face an immense problem now and in the years ahead, and the size of the defense budget is not a very large part of it. It doesn't serve us well to pretend that we can solve our problems by hacking away at the defense budget—whether we conceive of these problems in terms of

the economy, budgets, taxing, or spending. Reordering our priorities is going to have to mean something different than slashing away at the defense budget.

Over the 1956–76 period, spending for social and economic programs grew by $373 billion. And over these years, we have been assured—not once but many times—that these programs were being starved to provide for defense. Part of the reason that this growth has escaped so many people is that there is a tendency to focus upon a single year. We obviously need a longer view. We aren't going to control or change these programs in a single year.

SPENDING, TAX SPENDING, AND OFF-BUDGET CREDIT

FY 1976, Outlays, $ Billions

	NATIONAL DEFENSE	VETS, SPACE INT'L INTEREST	SOCIAL AND ECONOMIC	GRAND TOTAL
DIRECT SPENDING				
FEDERAL FUNDS	93.8	59.9	100.5	254.2
TRUST FUNDS, NET	.2	- .1	115.3	115.4
UNIFIED TOTAL	94.0	59.8	215.8	369.6
UNIFIED NET TOTAL	94.0	51.1	204.3	349.4
STATE/LOCAL	.1	.1	264.3	264.5
LESS GRANTS-IN-AID	- .1	- .1	- 55.4	- 55.6
STATE/LOCAL TOTAL	–	–	208.9	208.9
TOTAL DIRECT SPENDING	94.0	51.1	413.2	558.3
INDIRECT SPENDING				
TAX SPENDING	.7	2.4	88.7	91.8
OFF-BUDGET CREDIT	.2	7.3	17.8	25.3
TOTAL INDIRECT SPENDING	.9	9.7	106.5	117.1
TOTAL SPENDING	94.9	60.8	519.7	675.4

Another reason why spending trends aren't understood is that the picture has been highly fractionated. This chart suggests what's involved. The defense total is essentially complete on the first line—Federal funds, essentially funds subject to appropriation. On that line, defense looms relatively large—36.9 percent of the total. Defense is insignificant on the remaining lines, though, and the same taxpayers foot the bill for all of this.

Total direct spending is $558.3 billion—35 percent of GNP—and at this point defense is about ⅙ of the total.

Even this is not the end. We allocate another $117 billion through tax spending and off-budget credit.

Incidentally, we prepared a similar chart last fall, with a fiscal year 1975 estimate of $577 billion in the lower right corner. Our current estimate for fiscal year 1976 is $675 billion, as shown—a growth of $98 billion in a short period of time. The equivalent of a complete defense budget has been added.

It ought to be plain that we can't control the $675 billion solely by squeezing the $94 billion.

The fiscal year 1975 budget, released in February 1974, included outlay estimates for fiscal year 1975 and fiscal year 1976. So did the fiscal year 1976 budget, released in February 1975. Here's what happened to spending estimates for February 1974 to February 1975.

FEDERAL OUTLAY FORECASTS

(FISCAL YEARS, $ BILLIONS)

	1975	1976	1977
FEBRUARY 1974			
DEFENSE	85.8	92.0	NA
ALL OTHER, NET	218.5	237.4	
TOTAL OUTLAYS	304.3	329.4	
FEBRUARY 1975			
DEFENSE	84.8	92.8	104.0
ALL OTHER, NET	228.6	256.6	289.1
TOTAL OUTLAYS	313.4	349.4	393.1
CHANGES			
DEFENSE	-1.0	+0.8	NA
ALL OTHER, NET	+10.1	+19.2	
TOTAL OUTLAYS	+9.1	+20.0	

The fiscal year 1975 spending estimates grew by $9.1 billion—the net of a drop of $1 billion for defense and an increase of $10.1 billion for other programs.

The fiscal year 1976 estimates grew by $20 billion, including $800 million for defense and $19.2 billion for other programs.

And, of course, all the returns are not yet in for these two years. There is, I am sure, more to come.

In summary, Mr. Chairman, it is completely unwarranted to approach budgetary matters on the assumption that the defense budget is rising spectacularly, out of all control, while other sectors of public spending are being starved. It's not correct to assume that the size of the defense budget is the central element of our resource allocation problem. Such allegations lead to the conclusion that the defense budget must be slashed. Our budget proposals should be assessed in terms of the realities, and not in terms of this blizzard of allegations. I don't think there's any logic in the notion that any defense budget request must auto-

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matically be reduced. We can afford to do what is necessary for national security; this will require a much smaller real burden than we have borne in the past. I believe our budget requests should be judged in these terms.

COMPOSITION OF DEFENSE ESTIMATES, FY 1975-76
($ in Millions)

FY 1976 REQUEST	DEFENSE APPROPRIATION ACT	CONSTRUCTION, MAP AND CIVIL DEFENSE	FY 1976 CONTINGENCIES AND FY 1975 RESCISSIONS/ SUPPLEMENTALS	TRUST FUNDS, RECEIPTS,ETC.	TOTAL
TOTAL OBLIGATIONAL AUTHORITY	97,214	5,674	1,796	–	104,684
BUDGET AUTHORITY	97,633	5,577	1,796	1,333	106,340
APPROPRIATIONS	97,798	5,933	1,796	–	105,527
OUTLAYS	86,819	5,089	1,491	-599	92,800
FY 1975 ENACTED/PENDING					
TOTAL OBLIGATIONAL AUTHORITY	82,655	4,276	2,061	–	88,993
BUDGET AUTHORITY	82,052	4,240	2,060	2,405	90,758
APPROPRIATIONS	82,096	4,265	2,061	–	88,422
OUTLAYS	79,480	4,085	1,887	-653	84,800

COMPOSITION OF THE FISCAL YEAR 1976 ESTIMATES

Next, Mr. Chairman, I would like to relate our budget totals to the estimates now pending before this Subcommittee. This chart provides the necessary data:

Note that our totals are divided into several pieces:

Estimates are submitted for the Defense Appropriation Act, now pending before this Subcommittee.

Estimates under three other appropriation acts, now pending before other subcommittees.

Fiscal year 1976 contingent items—largely for the October 1975 pay raise—which are included in our totals, but have not yet been submitted to the Congress.

Trust funds, receipts, and other transactions which do not require congressional action, but are incorporated in our estimates.

The chart shows totals for the four major aggregates—TOA, budget authority, appropriations and outlays.

In the fiscal year 1975 portion of the chart, we show the amounts actually projected by the appropriation acts in the first two columns. The third column shows the net for supplementals and rescissions proposed in February.

FY 1975 AND FY 1976 SUMMARY, DEFENSE APPROPRIATION ACT ($Millions)

	FY 1975	FY 1976	CONSTANT-PRICE CHANGE
FY 1975 APPROPRIATION ACT	82,096		
SUPPLEMENTAL REQUESTS	2,125		
PROPOSED RESCISSIONS	-296		
ANNUALIZE FY 1975 PAY RAISES, RETIRED PAY CPI'S, AND SUBSISTENCE INCREASES	1,284		
PURCHASE INFLATION AT 11.5%	4,435		
FY 1975 IN FY 1976 SUBMISSION PRICES	89,644	97,798	+8,154
PRIOR-YEAR SHIPBUILDING PROGRAM ADJUSTMENTS	+909	-2,269	
PROGRAM TOTALS AFTER SHIPBUILDING ADJUSTMENTS	90,553	95,529	+4,976
ADJUSTED TOTALS IN FY 1976 SUBMISSION PRICES:			
MILITARY RETIRED PAY	6,522	6,885	+363
PRIOR BALANCES, SHELF SALES & LAPSES, NET	-738	-58	+680
LIQUIDATION OF PRIOR-YEAR OBLIGATIONS	48	163	+115
ALL OTHER	84,721	88,539	+3,818
PROGRAM TOTALS AFTER SHIPBUILDING ADJUSTMENTS	90,553	95,529	+4,976

Note, for the Defense Appropriation Act, $82,096 million was appropriated in the regular fiscal year 1975 action, and $97,798 million is requested for fiscal year 1976. I would like to address those items in more detail, using this chart. We begin with the fiscal year 1975 appropriation. The items in the fiscal year 1975 supplemental request are included in the fiscal year 1976 estimate on a full-year basis, so it is necessary to add the supplemental amounts. It is also necessary to annualize these amounts, and to include an amount for purchase inflation. For comparability, the totals must be adjusted to take account of the prior-year shipbuilding item. The fiscal year 1976 request includes $2,269 million to finance funding shortages for ships approved for fiscal year 1975 and prior years. This provides no new ships for fiscal year 1976. It is necessary, for comparability, to add $909 million to the fiscal year 1975 column, to reflect full financing of the ships approved for that year. After these adjustments, the ships approved for fiscal year 1975, and those requested for fiscal year 1976—both fully funded—are reflected in the totals on a fully-comparable basis.

There is thus a growth of $4,976 million from fiscal year 1975 to fiscal year 1976, after allowing for pay raises, price increases and the shipbuilding adjustment. Not all of this is program growth. As shown, the figure includes $363 million for retired pay, due to a rise in the retired population.

The 1975 Appropriation Act made specific transfers from prior balances in certain instances; and in other cases, appropriation reductions were made upon the basis that programs could be supported through sales of material not requiring replacement (shelf sales). Moreover, transfers have been reflected in fiscal year 1975, pursuant to authority in 1975 Appropriation Act. The fiscal year 1976 request reflects much smaller adjustments in these areas. These items appear in the financial schedules as negative items—that is, as reductions to the amount of appropriations requested to finance a given level of program. The $680 million increase here does not represent program growth, but a change in the availability of prior-year balances and other financing sources.

Amounts were provided in fiscal year 1975, and are requested in fiscal year 1976, to liquidate obligations incurred in prior years. The fiscal year 1976 amounts are to liquidate obligations incurred in fiscal year 1972. This, obviously, does not represent a program change from fiscal year 1975 to fiscal year 1976.

The remaining increase—$3.8 billion, as shown—does represent real program growth from fiscal year 1975 to fiscal year 1976 in the estimates now before this Subcommittee. The growth is from a depressed fiscal year 1975 level. Unforeseen inflation in fiscal year 1975, as I noted earlier, eroded that fiscal year 1975 program. Allowing for that fact, we are asking for about the same buying power as the Congress actually approved for fiscal year 1975.

TOTAL AND BASELINE PROGRAM TRENDS

($ MILLIONS, CONSTANT FY 1976 PRICES)

TOA	FY 1973	FY 1974	FY 1975	FY 1976	CHANGE, FY 1975-1976
Total Obligational Authority	$109,377	$104,410	$96,468	$104,684	$+8,216
Prior-Year Shipbuilding Programs[a/]	+91	+634	+909	-2,269	
Comparable TOA	109,468	105,044	97,377	102,415	+5,038
Non-Baseline Items:					
Military Retired Pay	5,787	6,174	6,573	6,936	
Military Assistance:					
Southeast Asia Costs	–	–	1,166	1,293	
Other MAP	1,614	4,482	1,449	1,408	
Mil. Functions Southeast Asia Costs	7,938	1,772	306	124	
Production Support, Fgn. Mil. Sales	–	–	–	300	
Total, Non-Baseline Items	15,339	12,428	9,494	10,061	+ 567
Baseline TOA, Constant Prices	94,130	92,617	87,883	92,354	+4,471

[a/] $635 million applies to FY 1972 and prior programs

Baseline Program Trend

In my preceding remarks, Mr. Chairman, I addressed the trend for the Defense Appropriation Bill, which is pending before this Subcommittee. It is important to consider the overall totals, and to distinguish between baseline and other changes. This chart provides the data.

We begin with total obligational authority in constant prices, and make the shipbuilding adjustment that I described earlier. The financing adjustments that I described before need not be made here, since we are dealing with TOA, not budget authority.

Our comparable TOA trend, then, is as shown: $109.5 billion in fiscal year 1973, dropping to $97.4 billion in fiscal year 1975 and rising to $102.4 billion in fiscal year 1976.

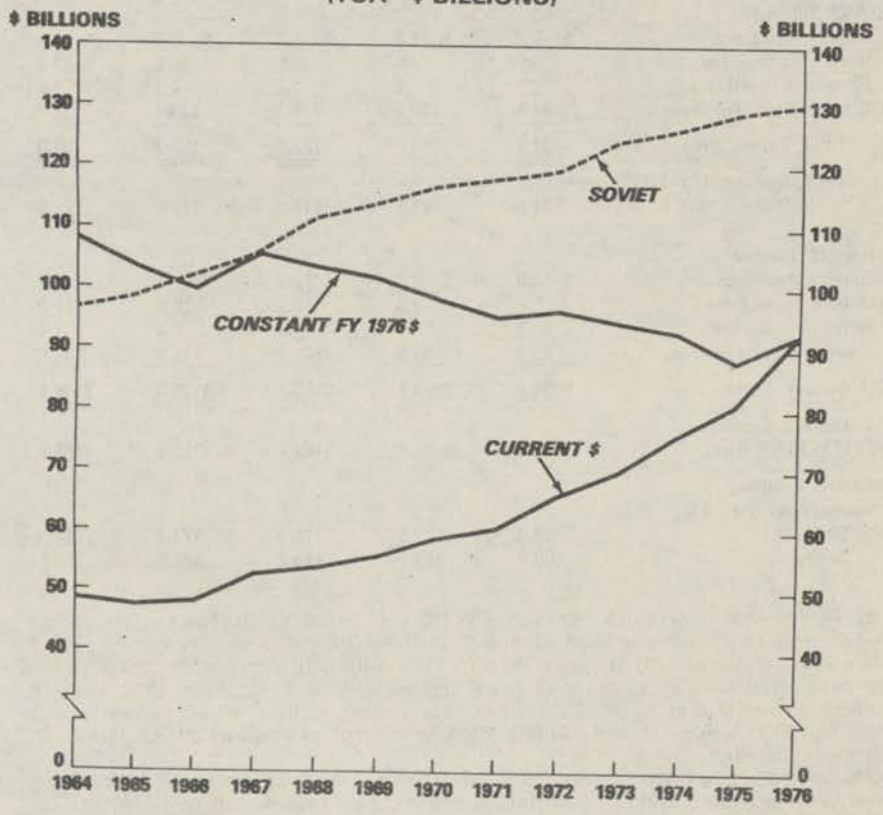
In appraising this trend, though, it is important to set aside certain nonbaseline items, which do not contribute to U.S. military capability. Military retired pay, the first item listed, is obviously in this category. Incremental war costs—whether funded under military functions or the newer military assistance heading—are also set aside. Other military assistance costs are reasonably level, except for a large jump in fiscal year 1974. This reflects the large item for aid to Israel in that year. To get this item out of the picture, we have set aside all MAP costs. The item for production support for foreign military sales is not a real add to our capability, but a means for protecting the capability we would otherwise have.

These nonbaseline items have decreased sharply from the fiscal year 1973 and fiscal year 1974 levels. There is a drop of some $5.3 billion from fiscal year 1973 to fiscal year 1976. This reduction—incorporated within our budget totals—is not a source of concern in appraising U.S. military trends.

It is the baseline trend—the bottom line—which is important. Our baseline total was $94.1 billion for fiscal year 1973 and $92.6 billion for fiscal year 1974. It sagged to $87.9 billion in fiscal year 1975, and we are requesting $92.4 billion for fiscal year 1976.

I think that the fiscal year 1973 reference point is especially important, Mr. Chairman. That was the year of the cease-fire, and our program in that year was not sharply impacted by unforeseen inflation. Setting aside war costs and all other nonbaseline items, we had a program of $94.1 billion for that year. Our fiscal year 1974 program—when unforeseen inflation hit us considerably harder—was $92.6 billion. Our fiscal year 1976 request is lower than the programs for those two years. Our fiscal year 1976 request represents an increase only from the depressed level of fiscal year 1975.

DEPARTMENT OF DEFENSE
BASELINE FORCES BUDGET TRENDS
(TOA - $ BILLIONS)



Here is a longer-term portrayal of the baseline trend. The path in current prices is, of course, upward. In constant prices—in spite of the jog upward from 1975 to 1976—the trend is generally down. Our fiscal year 1976 request is about 15 percent below the prewar fiscal year 1964 level. From 1968 to 1975, our baseline program has been declining by some 2 percent per year. It is this trend which we must arrest.

The overlay shows the Soviet trend, expressed in constant prices. There is a steady growth here of some 3 percent to 5 percent per year. At the present time, the Soviet level of effort exceeds ours by some 25 percent. That's a factor of about 5 to 4. If our fiscal year 1976 program is cut deeply, then our baseline

downtrend will continue. If the next few years continue the erosion—through a combination of congressional reductions and unforeseen inflation—then the outlook is grave. It wouldn't take too many years, at these trends, for the Soviet edge to grow from 5-to-4 to something like 2-to-1. Somewhere along that trend line, there would be a major shift in the international order.

LONG-RANGE FORECASTS AND PAY/PRICE ASSUMPTIONS

	FY 1976	FY 1977	FY 1978	FY 1979	FY 1980
TOA ($ Billions):					
Military Assistance	$ 2.7	$ 2.4	$ 2.3	$ 2.3	$ 2.3
Military Retired Pay	6.9	7.9	8.9	10.0	11.0
Petroleum Reserves	.2	.5	1.8	2.3	2.3
Other Military Functions	94.9	105.8	114.8	123.7	132.3
Total, Current Prices	104.7	116.6	127.8	138.3	147.9
Total, Constant (FY 1976) Prices	104.7	107.4	110.9	113.6	116.0
Outlays ($ Billions)					
Military Assistance	$ 3.0	$ 2.3	$ 2.2	$ 2.1	$ 2.1
Military Retired Pay	6.9	7.9	8.9	10.0	11.0
Petroleum Reserves	-.3	-.1	.7	1.4	1.4
Other Military Functions	83.2	93.9	107.2	116.5	125.5
Outlays, Current Prices	$ 92.8	$104.0	$119.0	$130.0	$140.0
Outlays, Constant (FY 1976) Prices	$ 92.8	$ 95.3	$102.4	$105.8	$108.5
Composite Pay/Price Assumptions (FY 1976 = 100):					
TOA	100.0	108.5	115.3	121.7	127.5
Outlays	100.0	109.2	116.2	122.9	129.0

Here are our projections through FY 1980, as required by the Congressional Budget and Impoundment Control Act. TOA in constant prices is projected to rise from $104.7 billion in fiscal year 1976 to $116 billion in fiscal year 1980. Allowing for inflation—pay raises and price increases—the fiscal year 1980 total in current prices would be $147.9 billion. The outlay figures which would result from the TOA are as shown: $140 billion in current prices and $108.5 billion in constant prices.

These projections provide, as the chart shows, for a rapid rise in military retired pay—a combination of population growth, pay raises, and cost-of-living increases. We have also reflected large increases for the petroleum reserves as part of the President's energy program. This item is not entirely defense-related and, in the actual event, may well be included under some other budget heading.

Setting those two items aside, these projections are based upon two assumptions, both involving TOA: First, real TOA growth of about 2% per year and; second, inflation as shown—a cumulative 27.5% from fiscal year 1976 through fiscal year 1980. That's a rate of about 5.8 percent per year, compounded.

The other figures—the current-price TOA figures, and the outlay figures—are derived from these two assumptions.

In dollar terms, the inflation assumption is by far the most important. We project TOA growth of $43.2 billion from fiscal year 1976 to fiscal year 1980. Real

growth accounts for $11.3 billion of that. The balance, $31.9 billion, is due to inflation.

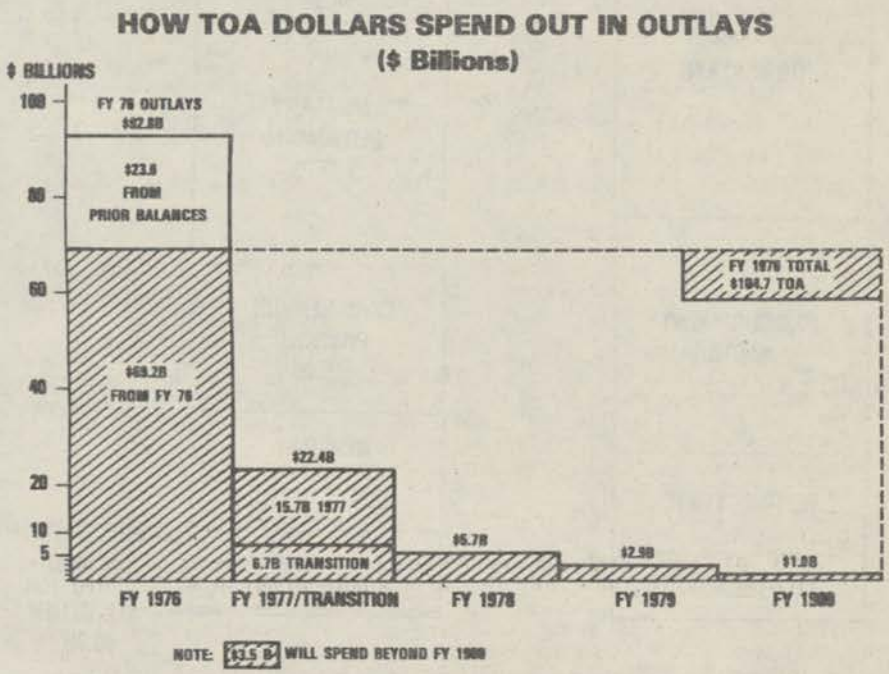
In program terms, it is the real growth which is important. This 2 percent growth per year is necessary because of a growing threat, and because of the increasing complexity of our weapons and systems. The cost of our weapons rises for two reasons: inflation and technological advance. A B–29 would cost more today than it did 30 years ago—just as an automobile does—because of inflation. But a B–1 would cost more than a B–29 at any time, because it is a much more advanced aircraft and it requires many more resources to build it.

We can offset some of the technological cost growth. In part, the technological advances themselves mean that we can do the job with fewer weapons. And, in part, we can offset these increases by general increases in productivity and efficiency. But we cannot offset all the growth in this way, nor can we counterbalance a rising Soviet effort with a U.S. program that is stable or declining in real terms.

Our best judgment, Mr. Chairman, is that we shall have to stay near this real resource trend, growing some 2 percent per year in real terms. We believe that this represents a prudent minimum, all factors considered. If our fiscal year 1976 program is cut, catch-up amounts would be required at a later date.

OBLIGATIONAL AUTHORITY AND OUTLAYS

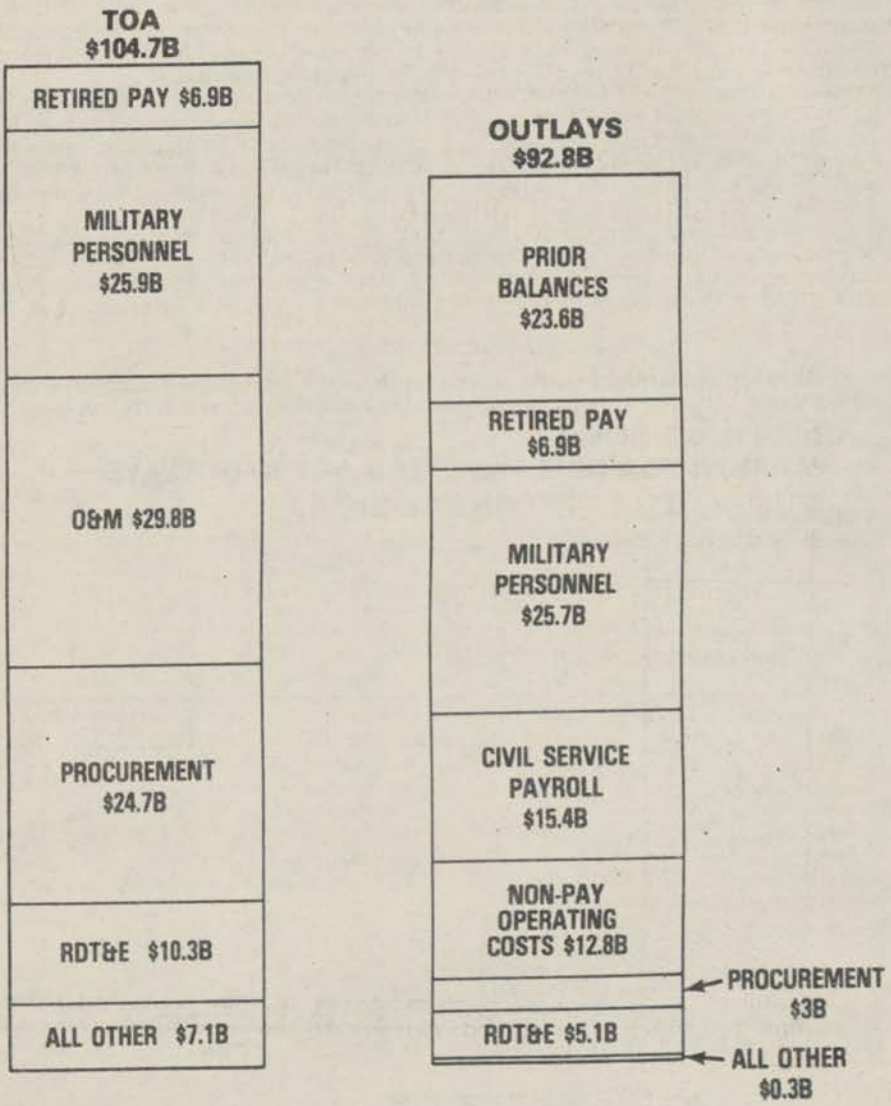
Finally, Mr. Chairman, I would like to touch on the relationship of obligational authority and outlays. This has become a matter of great interest in recent weeks.



As you know, only a part of the obligational authority provided by the Congress for a fiscal year will be spent in that year. For fiscal year 1976, we are requesting $104.7 billion of TOA, as the chart shows. Of that, $69.2 billion (about ⅔) would be spent in fiscal year 1976.

Or, putting it another way, we estimate fiscal year 1976 outlays at $92.8 billion. Of that, $69.2 billion will be from fiscal year 1976 funds and $23.6 billion will be from fiscal year 1975 and prior funds.

DEFENSE TOA AND OUTLAYS
FY 1976
($ BILLIONS)



The implications of this become clearer in the next chart. This shows breakdowns of fiscal year 1976 TOA and outlays. Of the fiscal year 1976 outlays, $23.6 billion are from prior balances and $6.9 billion are from military pay. This leaves $62.3 billion of outlays, of which ⅔ is for payroll. I'll return to that in a moment.

Nonpay operating costs of $12.8 billion are, to a significant extent, tied up in base structure and such items as CHAMPUS and overseas dependent education. Such costs are just about impossible to change in the short run.

That leaves $8.4 billion in investment outlays, matched with $42.1 billion in TOA. In this part of the budget, a $5 change in TOA produces $1 change in outlays.

Obviously, then, if anyone is proposing a deep slash in defense *outlays* for fiscal year 1976, simple arithmetic leads him to the pay area. And in the pay area, we would have to reduce our employment by huge amounts to realize even a $1 billion reduction in fiscal year 1976 outlays, since the fiscal year 1976 is about to begin.

It is important to bear in mind, then, that large outlay reductions are simply not in the cards for fiscal year 1976—even if obligational authority is substantially reduced.

EFFECT ON FY 1976 BUDGET ESTIMATES IF PRESIDENT'S LEGISLATIVE PROPOSALS NOT ENACTED ($ BILLIONS)

	TOA	OUTLAYS
ESTIMATES AS SUBMITTED	$104.7	$92.8
POTENTIAL ADDITIONS:		
PAY RAISES (9% vs 5%)	+1.2	+1.2
CPI INCREASES FOR RETIREES	+ .6	+ .6
PETROLEUM RESERVES	− .1	+ .4
NET POTENTIAL ADDITIONS	+1.7	+2.2
POTENTIAL REQUIREMENT	106.4	95.0

This chart shows the other side of the coin. If the President's legislative proposals are not accepted, outlays will grow by $2.2 billion. This $2.2 billion would be very easy to spend, Mr. Chairman. There is no significant lead-times, no complicated administrative arrangements. We wouldn't have to hire any new people. All we'd have to do is write checks.

The point is a very simple one, Mr. Chairman. It will be much easier to raise defense outlays in fiscal year 1976 than it will be to lower them.

With that, Mr. Chairman, I conclude my prepared remarks. I will try to be responsive to any questions you may have.

QUESTIONS SUBMITTED BY CHAIRMAN M'CLELLAN

Chairman McClellan. At this time, I would like to submit those questions to which I referred earlier, to be answered at your convenience.

[The questions and answers follow:]

CONTRIBUTION TO NATO BY ALLIES

Chairman McClellan. Describe the efforts that have been made by our NATO allies during the past year to strengthen their military contribution to the Alliance.

Answer. Allied efforts in strengthening their military contribution to NATO are best described as increases in defense spending, better utilization of defense resources, and continued modernization of equipment.

We have only preliminary estimates of defense spending figures for 1974 for many of the allies. These are subject to change as information concerning their supplemental appropriations and revised estimates of inflation are received.

In current prices, including inflation, all of the allies have increased their defense spending for 1974 compared with 1973. This amounts to a net increase of around 15 percent for all of the allies combined.

In constant prices, excluding increases due to inflation, indications are that Belgium, Denmark, Greece, the FRG, the Netherlands, Norway and Turkey have increased, by amounts ranging from 2 percent to a high of almost 6 percent [deleted]. The United Kingdom and Italy, the NATO nations that have been hit hardest by economic difficulties, have declined. Portugal also has declined while Canada and France appear to have maintained spending at the 1973 level. The net change for all of the allies combined is a small increase of around 1 percent.

The allies are placing greater emphasis on the efficient use of defense resources. There are indications that there are some inefficiencies in the way the Alliance spends the resources devoted to defense. Thus greater rationalization in the employment of these resources can provide added military capability. Rationalization can enable the Alliance to perform current tasks with lower levels of resources, and the savings can be rechanneled to correct weaknesses and vulnerabilities. This rechanneling of resources to make much needed improvements provides a powerful incentive to rationalization. In the Spring of 1974, we recommended that NATO examine greater rationalization in a number of areas. Based on our initial effort, the NATO Executive Working Group has selected three areas for initial study of rationalization. These are consolidation of training, consolidation of communications and host nation support for wartime lines of communications.

The Allies have continued an aggressive program of force modernization, although during the past year there have been no changes in the size of Allied Armies and Air Force in terms of major equipment and major combat elements. For example, modern fighter aircraft have replaced older aircraft in West Germany, Greece, Italy, and the United Kingdom and about 300 new Leopard tanks have replaced a similar number of M–48 tanks in the FRG. Also, during the year the Federal Republic of Germany announced plans to increase from 33 to 36 the number of brigades in its Field Army by 1978. Accompanying these changes will be some reorganizations with the FRG Territorial Army increasing [deleted] the total number of main battle tanks in its force.

Capability of NATO Conventional Forces

Chairman McClellan. What is your estimate as to the capability of NATO conventional forces to defend against attack from the Warsaw Pact?

Do you feel the introduction of nuclear weapons by the NATO forces to be inevitable in the event of attack?

Answer. NATO has the essential ingredients for a good conventional balance and could give a good account of itself if the NATO countries do not falter in their defense efforts. It is a force of considerable strength. It continues to improve. In many respects it is not the equal of the Warsaw Pact force opposing it—for instance, in maneuver divisions and tanks. NATO's main reinforcements, those from the United States, are not as close as those of the Soviet Union. But NATO has some strengths of its own, such as tactical air forces, and the Warsaw Pact has some weaknesses and vulnerabilities, such as logistics and the uncertain reliability of some Pact members.

The most demanding feature of NATO current planning is the potential threat to the Center Region. Here we cannot say with complete confidence that NATO has the ability to counter the PACT conventional force—it depends on the size and speed of the Soviet reinforcement and on the size and speed of NATO's response.

A recent study conducted jointly by the Army and the Office of the Secretary of Defense has raised our confidence that NATO could counter Pact threats in the 80 to 90 division range. This study has been briefed to the Senate Armed Services Committee Staff, and they were provided with copies of the script and slides from the briefing. The major differences between this study and previous, more pessimistic assessments of the Central European balance are:

Previous studies only considered the forces that were formally committed to NATO. This study counted all forces of NATO countries that could reasonably be expected to fight in Central Europe, regardless of formal political commitments. All NATO countries have forces above and beyond those committed.

Analyses formerly assumed that all Pact divisions had the same capability as the best equipped and manned Soviet divisions now stationed in Central Europe; they also considered divisions at low peacetime manning strength to be as combat capable as the best divisions after only a few days of mobilization. On the other hand, NATO forces were degraded for readiness and equipment quality. The new study used more refined intelligence estimates for the Pact

to degrade the capabilities of most Pact divisions to reflect differences in equipment and manning levels.

Previous work had estimated very short Soviet reinforcement times because they ignored the Pact's need to make logistical preparations. This new study assumed that the Pact buildup would take longer than had previously been estimated so that they could make suitable logistical preparations.

Previous methods for comparing the value of opposing weapons systems of differing quality had used only a rough measure of firepower. This study used a new method that improves estimates of relative firepower, as well as including weapons mobility and the ability of weapons to survive attack. The new system places less value on tanks and artillery, which the Pact holds in large numbers, and more value on the lighter weapons systems, where NATO has some advantages in numbers.

While not inevitable, the potential use of nuclear weapons is a situation that we cannot ignore or wish away. Accordingly, we continue to deploy our own theater nuclear forces in Europe for three basic reasons. First, the maintenance of theater nuclear capabilities in NATO is essential to deterrence as long as the Warsaw Pact deploys theater nuclear forces of its own. They help to deter the use of nuclear weapons by the Pact and, along with our strategic nuclear and conventional forces, provide a general deterrent across the entire spectrum of possible aggression. Second, should deterrence fail, our theater nuclear capabilities provide a source of limited and controlled options other than the early use of U.S. and allied strategic forces. Third, in keeping with NATO's flexible response strategy, we do not rule out the use of nuclear weapons by the United States and its allies if that should prove necessary to contain and repel a major conventional attack by the Warsaw Pact.

Military Personnel Stationed Outside U.S.

Chairman McClellan. How many military personnel does the US currently have stationed outside the United States, and how many are planned for the end of FY 1976?

Answer. As of December 31, 1974, there were 511,000 total military personnel stationed outside the fifty states including 60,000 stationed afloat in foreign waters. The plan for the end of FY 1976 is 501,000 outside the fifty states including 65,000 afloat.

Most Logical Reduction of Overseas Troops

Chairman McClellan. If the Congress were to mandate a reduction of 50,000 in overseas troops, along with demobilization, where would you recommend the forces to be withdrawn from?

Apply the same question to a reduction of 100,000 troops.

Answer. As was stressed in the annual Defense Report, the most fundamental global challenges to our national security today and for the foreseeable future will come from the Soviet Union. For general purpose force planning, this means that we must continue to give priority to Europe since this is the area in which we both have the most at stake and to which the Soviets will always give highest priority. Thus, in addressing hypothetical reductions in US overseas deployments, our first priority goal would have to be to absorb any such reductions with the least adverse impact on the balance in Europe.

Either one of the hypothetical reductions suggested in the question would have significant adverse effects upon both our own security interests and those of our allies. A unilateral United States reduction in Europe would be highly inadvisable. But we are prepared to reduce forces in Europe in the context of a negotiated mutual reduction with the East. Unilateral United States reductions now would destroy the Mutual and Balanced Force Reduction (MBFR) negotiations by eliminating the East's incentive to negotiate. We and our NATO Allies would no longer be in a position to secure reciprocal reductions from the East through MBFR. Unilateral withdrawals would also deal a severe blow to Alliance unity by giving both our Allies and the Warsaw Pact reason to doubt the reality of our commitment to Western European defense.

Therefore, the hypothetical reduction of 50,000 would probably have to be taken primarily in Asia and the Western Pacific. As of 31 December 1974, the

primary United States deployments in Asia, exclusive of troops afloat, were as follows:

Japan	52,000
South Korea	42,000
Phillippines	16,000
Thailand	23,000
Taiwan	5,000

To achieve a 50,000 man reduction in Asia we would have no choice but to significantly reduce our presence in Japan, Korea and the Philippines and virtually eliminate deployments in Thailand and Taiwan. If large-scale reductions in the Philippines and Thailand were not desired, we would have to draw down more heavily in Japan and Korea, probably removing the Army's 2nd Infantry Division from Korea. If this Division were in turn eliminated from the active force structure, the only remaining Army division in the Pacific available for contingencies would be the 25th Division in Hawaii.

A reduction of this dramatic magnitude—over 35 percent of our current, much reduced, forces in Asia—could undermine the balance among the major powers in Asia. It would threaten the stability of the strategically important Korean peninsula and would be an invitation to increasing hostility and possible conflict. Such dramatic reductions in Korea and Japan would be a flat repudiation of the assurances that President Ford gave Japan and the ROK that we would maintain our current level of forces in Northeast Asia as a necessary contribution to the stability and security of our two allies in that area. A precipitous and unplanned reduction of this kind would seriously weaken our leverage with both China and the USSR in Asia, and could set in motion a severe erosion of our security relations with Japan which have been the linchpin of Asian security for over 25 years. It could very well contribute to an already dangerous trend toward proliferation of nuclear weapons. Moreover, the fact that we chose to accept this drastic force reduction exclusively in Asia would be small comfort to our NATO allies since they would see the action as a manifestation of rising isolationism in the US which would probably strike directly at our European commitments next. In that context it would lessen the incentive for the Soviet Union to negotiate seriously on arms control.

If the intent of Congress in such action were to give impetus to overseas troop reductions, a review of the record of our past efforts is important. In calendar year 1974, we reduced US personnel in foreign countries (excluding forces afloat) by 17,000 men. Of this total, 12,000 men have been taken out of Thailand since March 1974. Further reductions in Thailand and elsewhere are planned for 1975 as a part of DOD's efforts to streamline our force structure for greater efficiency, and tailor our force deployments to meet current US security requirements.

While a mandated reduction of 50,000 personnel overseas would have severe negative consequences for US security interests, a mandated reduction of 100,000 would be quite catastrophic. Such a reduction would represent 24 per cent of our troop presence overseas as of 31 December 1974, exclusive of troops afloat. The security problems involved may be illustrated by discussing three possible manners of implementing the withdrawal. The first way might be to withdraw 100,000 troops from Asia and the Western Pacific. Our current force presence in this area, exclusive of troops afloat, is 138,000 (of which 52,000 are in Japan). Thus, to comply with such a mandate would require that we withdraw all our military personnel from Thailand, the Philippines, Taiwan, plus some 25–30,000 from both Japan and Korea. As discussed above, the Japanese would be profoundly shocked by any such cut in our presence. Moreover, the US would have no ground force presence at all left in Northeast Asia and no air bases or Naval facilities in the Philippines or Southeast Asia. It is hard to see what advantage we would reap from such a destruction of our Asian security posture or what contribution it would make to peace and stability in the world.

The second possibility would be to take all 100,000 troops out of Western Europe. Our current strength in Western Europe and related areas, exclusive of troops afloat, is 274,000, the great majority of which are in the FRG. Such a mandate could necessitate, for example, the elimination of our entire force presence in Western Europe outside the Federal Republic of Germany, plus reducing our contingents in the FRG. In so doing, we would, by our own actions, seriously destabilize the balance in Europe between the forces of NATO and the

Warsaw Pact, and we would deal a severe blow to the NATO Alliance by causing both our Allies and the Eastern bloc to believe that we had drastically downgraded our security commitment to Western Europe. Finally, such an action would destroy MBFR even more conclusively than the 50,000 reduction discussed earlier.

The last possibility would be to take part of the 100,000 reduction out of each area. Any major unilateral United States reduction in Western Europe, however, would incur all the penalities discussed above, while producing no discernible benefits to the United States. The consequences of a 50,000 reduction in Asia have already been discussed.

As for demobilization of any withdrawn forces—the only real way to save money—that would merely compound the negative consequences of redeployment. Ordinarily, if commitments are maintained but forward deployments reduced, we would make a corresponding improvement and expansion of our reinforcement capabilities. If the forces returned to the United States are demobilized, as this question presupposes, improvements in reinforcement capability become impossible.

Budgetary Savings From U.S. Troop Reductions in Europe

Chairman McClellan. Last year you provided the Committee with estimates of the budgetary savings that would result from withdrawing and demobilizing a limited number of U.S. troops from Europe. Will you update the information by providing the following data:

Specific cost data, by appropriation account, assuming that there will be a reduction and inactivation of U.S. forces in Europe of 15,000; 25,000; 50,000; or 100,000. The reduction may be accomplished by reducing rotational assignments or actual withdrawals. The precise mix of forces to be reduced should be clearly specified.

Cost data should assume that the reductions and inactivations will begin on September 1, 1975, and be completed by June 30, 1976.

Outyear savings for the budget transition period and fiscal years 1977–1980 should be included.

If there are offsetting cost increases, these should be stated separately from the savings to be realized.

Answer. On last July 30, in response to a July 25 request from Senator McClellan, estimates of savings associated with European strength reductions of 15,000, 25,000 and 50,000 were submitted to the Committee for fiscal years 1975 through 1977.

For the reasons outlined in that response and as reaffirmed in the fiscal year 1976 Defense Posture Statement, the Department of Defense views significant unilateral reductions in our European troop strength as deleterious to our national security interests. Our oft-stated objective of a secure and independent Western Europe requires the maintenance of a conventional force balance between NATO and the Warsaw Pact. Significant unilateral U.S. NATO personnel reductions would adversely affect the conventional balance. Moreover, unilateral reductions in U.S. forces could adversely affect the Mutual and Balanced Force Reduction (MBFR) negotiations by reducing Soviet incentives to negotiate mutually satisfactory terms. Therefore, U.S. and allied forces and deployments should be maintained at current levels.

Reductions sized and timed as suggested in the question would create substantial instabilities in our personnel planning, as well as in the training establishment, making the maintenance of an effective combat capability much more difficult.

The lack of rationale for reducing the combat forces, and the related support structure beyond those reductions directed by the Nunn Amendment (and which we are in the process of implementing), provide no well-defined basis for making an accurate cost estimate. The range of adjustments included in the question is so wide, that a determination of precise force mix is a practical impossibility. This would depend upon the choices made with regard to mission reorganziation as well as unit deployment.

The only way one can respond to the question is in terms of a reduction in the number of individuals. The costs would then of necessity be limited to personnel and direct personnel support items. The fiscal year 1976 budget request is based on personnel and direct personnel support costs of approximately $14,000 per man-year. This is an average figure. Since by law DoD is precluded from arbitrarily releasing most regular officers and career enlisted personnel, manpower savings

would be accomplished by reducing the input of accessions, whose marginal cost is about half the average cost. Since new accessions are acquired throughout the fiscal year, the theoretical average savings would be six months pay, or about $3,000–$4,000 per man. Even this overstates the case, however, since savings lag reductions. For instance, in FY 1968, total military manpower dropped by 88,000, but the payroll increased in constant dollars as *average* strength rose. Historically, cost savings in the implementation year have been minimal to nonexistent. Even with an assumed September 1, 1975 start date, FY 1976 savings stemming from a reduction of 15–25,000 might be zero. Forced separation of military personnel in the 50,000 to 100,000 range would probably require special legislative provisions.

U.S. Negotiating Position in Europe

Chairman McClellan. Last year, the Committee heard Ambassador Resor outline the U.S. negotiating position. Have there been any changes in the proposals of either side? Will you describe the current position of each side.

Answer. The basic position of the NATO Allies is that there should be a first phase of reduction of U.S. and Soviet forces followed by a second phase of reduction which would include forces of other direct participants and would lead to a common ceiling between Western and Eastern ground forces in Central Europe. This approach would help eliminate the present disparities in the military situation in Central Europe and would lead to a more stable balance at lower levels of forces with undiminished security for both sides.

The East continues to want to preserve the existing correlation of forces in their favor by reducing from the outset, on an equal number or equal percentage basis, ground, air, and nuclear forces of all direct participants.

Thus, the key areas of difference between East and West relate to whose forces are to be reduced at the outset, what types of forces are to be reduced, and whether there should be an outcome with symmetry of remaining forces or an outcome that preserves the existing asymmetrical relationship of forces in Central Europe favoring the East.

During the past year, the NATO Allies have advanced important proposals designed to help resolve the areas of difference. The West has advanced proposals which would give the East assurances as to a second phase of negotiations, including an assurance that forces of the other Allied direct participants would be included in Phase II reductions. We have also proposed that during the period between Phase I and Phase II there could be a no-increase limitation on total ground and air forces of both the West and the East in the area of reductions. [Deleted.]

In the past year, the East has presented two proposals. One is for a separate initial agreement that would result in symbolic reductions by all direct participants totalling 20,000 men for the West and 20,000 for the East. The other is for a freeze on all forces during the course of the negotiations. The Allies oppose these two proposals because they do not involve military significant reductions—beginning with U.S. and Soviet forces—and because they give the East, at no cost to them, a freeze on Allied forces which formalizes the existing relationship of forces to the East's advantage.

U.S. Treaty Obligations

Chairman McClellan. You have frequently cited US treaty obligations as a rationale for the bulk of our general purpose forces. These alliances specifically require that US troops be stationed overseas. Comment on each of the major commitments that we have and particularly discuss their relevance with respect to the significantly changed international situation of today as compared to when the alliances were formulated. Which of the alliances do you feel need to be reexaxamined and possibly renegotiated or voided?

Answer. The major collective security obligations of the United States are contained in the following treaties:

The North Atlantic Treaty;

The Southeast Asia Collective Defense Treaty;

The Inter-American Treaty of Reciprocal Assistance;

The Security Treaty between Australia, New Zealand and the United States of America;

The United States-Republic of China Mutual Defense Treaty;

The Mutual Defense Treaty with Japan;

The Bilateral Security Treaty between the Republic of the Philippines and the United States; and

United States declaration to participate with Central Treaty Organization (CENTO) members in some security and defense activities.

Each of these collective defense treaties commits the United States, acting within its Constitutional processes, to assist in th defense of its allies in the event they are attacked. The texts of the treaties do not commit the United States to maintain specific numbers of troops overseas. Without a visible manifestation of the United States' intent and ability to support them, however, these treaties would be verbal declarations without substance. Moreover, each treaty (except the Rio Pact) contains an operative article which pledges the parties to maintain and develop their individual and collective capacity to resist armed attack. This pledge does not specify any particular programs of assistance to be supplied by any of the signatories. Nor does it bind them to maintain any defined force levels either at home or abroad. It does bind them to the principle of mutual aid. In order to fulfill this pledge, therefore, the United States has planned its general purpose forces in keeping with its best judgment as to what would be needed, in conjunction with the forces of its allies, to deter possible aggression and, if deterrence fails, to meet any attack.

As these circumstances have changed over time, so have the general purpose forces that we have developed and deployed forward to cope with them. The proper fulfillment of our treaty obligations, indeed, requires that the Department of Defense continually review the forces available in support of our treaty obligations to ensure that our military posture is properly designed and adjustable to changes in the international situation. In recent years, there have been significant changes in the international situation, including an easing in tensions between East and West. This easing of tensions, however, has been made possible only because of the overall military balance that exists—a balance that, on our side, includes the collective strength of our security arrangements.

With respect to the reexamination of commitments, the mission of the Defense Department is to support existing commitments. The responsibility for modifying these commitments lies chiefly with those agencies of the United States Government whose mission is the conduct of foreign policy; namely, the President, the State Department, and the Senate in its capacity of giving advice and consent to treaties submitted to it for ratification.

Possibility of Congressional Cuts

Chairman McClellan. In your discussion of "Basic Budgetary Choices," you conclude that, if the Congress is to accept the idea that a posture of deterrence is necessary in an uncertain world, such a choice implies approval of the entire administration's budget request as well as the basic strategic concepts on which it is based. This section explicitly rejects the idea that the Congress can review the budget request and make cuts in such a way that the net reduction is no more than 5% of the total. Do you not agree that the Congress has the right and the absolute obligation to examine the budget request and make reductions where there is inadequate justification, clear-cut waste and inefficiency, or a difference of opinion on how policies should be implemented? Are you trying to say that there are absolutely no areas in your budget request—a request that increases by $16,581,864,000 in comparable budget authority between fiscal year 1975 and 1976—where reductions can be made?

Answer. The budget is, alternatively and simultaneously a basic document of public policy, a mechanism for congressional review of the executive branch, a tool for executive management of public resources and a means of governmental communication to the public. There is no doubt, as stated on page 163 of The Budget of the United States Government, fiscal year 1976, that:

> The Congress can change programs, eliminate them, or add programs not requested by the President. It can increase or decrease the amounts recommended by the President to finance existing and proposed new programs. It may also act upon legislations determining taxes and other means of raising revenues.

The Department of Defense accepts the idea that the Congress, through the powers granted that branch of government in our Constitution, can make changes in the Presidential budget request. It is, however, the obligation and responsibility of both the Executive and Legislative branches, through the budgetary

process, to inform our citizens as to what we believe are the critical public choices. We believe the cost trends in government of recent years should be carefully weighed by an informed public, because they do indicate, in terms of our national security requirements, that we must now make some basic budgetary choices. These choices must be made through the cooperation of the Legislative and Executive branches.

ECONOMIC STIMULUS IN DEFENSE BUDGET

Chairman MCCLELLAN. Last year, although there was some confusion, you clearly stated that the administration took into account the "softening" of the economy in preparing its budget request. You explicitly said in our hearings that " . . . the final outlay total allowed by the Office of Management and Budget was about $1 billion higher than it might have been, and the Total Obligational Authority figure related to that $1 billion, about $1½ billion higher . . . It was a matter of not being cut as deeply as we feared. I think we might have been cut further by those amounts if the economy had not softened." (Page 295, Part 5 of the Committee's hearings on the FY 1975 Department of Defense appropriations.)

Mr. Secretary, on the subject of Defense and economic stimulus:

a. To what extent did the deteriorating economic conditions mentioned in the President's budget message influence the Defense Department's totals?

b. If the economy were not in a significant recession, do you believe that the Defense Department's budget would be significantly or even slightly lower? If so, by how much?

c. What is your estimate of the amount of reductions that would have been made in the Services' budget estimates by your office and OMB if the economy were not in a recession? Would you compare this to the reductions in the Service budget submissions that were actually made during the FY 1976 budget review.

d. What is your estimate of the amount that is in the budget that would be considered only marginally required if the economy were not soft (i.e., in a recession)?

Answer. a. The Department of Defense budget totals are based each year on what is felt necessary to meet our national security requirements, and is justified on that basis alone. The fiscal year 1976 Defense budget is not intended nor used as an economic stimulus. In his Economic Report, the President mentions that the economy is in recession and unemployment is too high and will rise higher. He suggests several steps to help solve these problems, such as an immediate 1-year tax cut of $16 billion. These steps are far more effective in combating recession than through additional Defense spending. The amounts requested for Defense are to meet national security requirements alone, not to augment the level of economic activity.

b. During the past year concern about recession has obviously grown, but less attention has been given the changes which have taken place in Federal spending estimates over that period. This is summarized as follows:

FEDERAL OUTLAY FORECASTS

[Fiscal years, in billions of dollars]

	1975	1976
February 1974:		
Defense	85.8	92.0
All other, net	218.5	237.4
Total outlays	304.3	329.4
February 1975:		
Defense	84.8	92.8
All other, net	228.6	256.6
Total outlays	313.4	349.4
Changes:		
Defense	−1.0	+.8
All other, net	+10.1	+19.2
Total outlays	+9.1	+20.0

If there have been upward adjustments in Federal spending as a means of affecting fiscal policy during the past twelve months, it is obvious that they occurred in the non-defense area. Even with the increasing prospect of recession over the past year, Defense spending for FY 1975 will be lower than forecasted a year ago.

c. The actual reductions made by the Office of the Secretary of Defense and the Office of Management and Budget as part of the joint review for fiscal year 1975 and fiscal year 1976 are as follows:

APPROPRIATION REQUESTS DOD MILITARY FUNCTIONS AND MILITARY ASSISTANCE

[In thousands of dollars]

	Total service submissions	OSD/OMB joint budget review	Budget request
Fiscal year 1975 budget, fall 1973	95,280,377	−2,701,791	92,578,586
Fiscal year 1976 budget, fall 1974	108,882,903	−4,198,808	104,684,095

The reductions in fiscal year 1976 are part of the annual review made by OSD/OMB starting in October 1974 and ending with the budget request, which is part of the President's budget. There are, as was mentioned last year when this question came up, several occasions for us to consult with the OMB to get a better idea of how the anticipated Defense budget fits in with the total Federal budget and overall fiscal policy. As noted above, the budget review reductions were $4.2 billion in the fiscal year 1976 budget, a significantly larger amount than made the year before.

d. The amount in the budget as noted previously is based on what we perceive to be the national security requirements and does not include what could be described as marginal requirements included only for economic considerations.

ESTIMATES OF SOVIET & U.S. MILITARY SPENDING

Chairman MCCLELLAN. Your statement indicates that *in our prices* the Soviets now devote more resources than the United States in most of the significant categories of Defense. Considering the fact that the Soviet Union's economy is centrally controlled, that there is no inflation, and that resources are allocated in completely different ways from the system in the U.S., do you think it is appropriate to price out the Soviet effort in terms of U.S. prices? Does this not tend to inflate and exaggerate their efforts because of U.S. price increases resulting from inflation that the U.S.S.R. is not subject to?

Answer. By costing observed Soviet military forces and programs in constant dollars over time we eliminate U.S. inflation. This technique is useful for the purpose of identifying trends in Soviet defense outlays and allows an appreciation of Soviet forces as if we were funding the same force. However, due to differences in missions and force composition the dollar cost comparisons should not be used in isolation to draw conclusions about military effectiveness or capabilities.

Chairman MCCLELLAN. What proportion of the Soviet Gross National Product and total Soviet expenditures does their defense effort represent? Wouldn't that be a better comparison of the relative burden of defense?

Answer. Using this methodology places the portion of Soviet GNP spent for defense at 8–10 percent of ruble GNP. However, since many outlays are not captured in the direct costing method these figures are considered to be too low, as they do not actually represent the full economic burden of Soviet defense expenditures. Other proposed analytical methods might result in a doubling of these figures, yielding a range of 10 to 20 percent. Soviet defense spending cannot be accurately measured against total Soviet budget expenditures for comparison with similar U.S. data. Under a communist system, far more economic activity, including capital investment and social services, is generated by government spending than is the cost in the U.S.

Chairman MCCLELLAN. Since your analysis "prices out" the Soviet effort in U.S. terms, would you provide us with the following data:

the U.S. price of Soviet officers and enlisted personnel by grade.

the U.S. price of the Backfire, an SS–9, SS–11, SS–13, SS–X–16, –S–18, and SS–19. Also the U.S. price of the SS–N–6, N–8, NX–13, a Y class and D class submarine, the price of the major air defense interceptors and surface-

to-air missiles currently in production, the price of a T-62 tank and the M1970 tank, a BMD vehicle, and a SA-6, 8, 9.

U.S. price of a Snapper, Sagger, and Swatter antitank missile.

U.S. price of a Kiev carrier, Hormone helicopter, Kara class guided missile cruiser, Krivak destroyer, Victor submarine and Charlie class submarine, and an Alfa class submarine, a MIG-21, 23, and 25.

U.S. price of AS-7 air-to-surface missile and Fitter fighter.

In each case, provide the U.S. price assumed in your estimate of Soviet 1975 defense expenditures on your chart on page I-5 of the unclassified Posture statement.

Answer. [Deleted.]

STRATEGIC TARGETING DOCTRINE

Chairman MCCLELLAN. Would you summarize what the new targeting doctrine is in a succinct statement? Would you list the specific programs associated with the new doctrine, their FY 76-80 (or completion, whichever is later) costs and their prior year costs.

Answer: The "new" targeting doctrine that you refer to is in fact not new, per se, but rather a result of the realization that massive retaliation against Soviet cities, in response to anything less than an all-out attack on the U.S. and its cities, would be an unreasonable response and that the threat of such a response may not be credible enough to deter the Soviet Union from attacking U.S. military targets in a crisis or as an outgrowth of a nuclear war in Europe.

As far back as 1968 the Senate Preparedness Investigating Subcommittee recognized that "unlikely, but possible, is a limited and controlled Soviet attack on our nuclear offensive force and other military targets which avoids our cities." The committee went on to state the necessity for our nuclear strike forces to have the capability and flexibility to respond to nuclear aggression so that no matter how the war was initiated we would be in a position to assure the termination of hostilities under conditions which would be relatively favorable to the U.S.

The flexible nuclear response targeting doctrine that we are implementing is designed to enhance deterrence by providing a range of limited, preplanned response options to nuclear aggression which would bear some relation to the nature and level of less than all-out attacks and which would have prospects for terminating hostilities before escalation to general nuclear war occurred. Implementation of the doctrine removes us from a situation in which the smallest preplanned strike in our strategic nuclear targeting plan contains over [deleted] weapons.

As I pointed out last year, the flexibility that we are developing can be implemented without any changes in the strategic capability that we now have deployed. Some modifications, however, in command, control and communications are necessary and are underway in the Command Data Buffer program.

A separate and distinct issue from the flexible response targeting doctrine is the degree to which we and the Soviet Union can destroy hard targets, particularly hardened ICBM silos. In this respect, the Soviet Union's new MIRVed ICBMs will significantly increase Soviet capability to destroy hard targets, and if the new ICBMs are deployed in substantial numbers, and their accuracy is improved the Soviet Union could have the capability to destroy most of the U.S. Minuteman force.

In order to deter limited Soviet attacks on hard U.S. targets, and to discourage Soviet deployment of a capability to successfully attack U.S. ICBM silos, I believe we should continue to develop options to enhance our credibility and to improve our confidence in our ability to destroy hard targets.

We should continue to develop the option to take advantage of the capability inherent in the existing Minuteman III guidance system by improving the software in the missile computer and thereby reducing the CEP by roughly [deleted] Improved Minuteman accuracy would help reduce collateral damage resulting from limited attacks by reducing the number of missiles required to achieve a high confidence that a given target or set of targets was destroyed.

Because missile systems are never flight tested on operational trajectories, many uncertainties surround the accuracies of all-inertial guidance systems. Consequently, accuracies achieved through operational testing may be uncertain by as much as [deleted] or more. In order to compensate for these uncertainties in accuracy and increase our confidence that we could effectively carry out limited attack options against hard targets, I believe we should continue to develop the option to increase the range of yields available in our nuclear war-

heads. The MK–12A warhead with a nominal yield or [deleted] would help overcome the uncertainty in Minuteman III accuracy and thereby increase the deterrent value of the Minuteman force.

We are not interested in, nor are we or the Soviet Union capable of, developing a disarming first-strike capability against each other and these potential improvements in the Minuteman III force should in no way be construed as such. This is so because:

The U.S. could not count on destroying in a timely manner a large enough portion of the Soviet hardened ICBM force to avoid severe damage to U.S. population and industry in retaliation (even if the Soviet ICBMs are kept in their silos rather than launched out from under the attack).

The U.S. has no realistic prospect of being able to destroy in a sudden attack all of the Soviet deployed SSBN force.

Deployment of a heavy ballistic missile defense, an important ingredient in a disarming first strike strategy, is precluded by the ABM Treaty.

Table 1 depicts, in then year dollars, the costs associated with the programs discussed above.

TABLE I

[In millions of dollars]

	Fiscal year—		
	1975 and prior	1976–80	Additional to completion
Command data buffer:			
R.D.T. & E.	82.8	0	0
Procurement funds	143.7	24.9	.0
Improved MM guidance:			
R.D.T. & E.	32.0	99.2	0
Procurement funds	0	17.0	0
MK–12A:			
R.D.T. & E.	25.0	82.1	0
Procurement Funds [1]	0	240.2	94.3

[1] Maximum cost if we deployed MK–12A on all 550 MM–III.

Strategic Arms Limitations Agreements

Chairman McClellan. Would you summarize the limitations in the Vladivostok understandings and provide a chart for the record showing both the limitations, what the US and the USSR have now, and what is projected through the years of the agreement in each area of limitation.

Answer. The SALT accord reached in Vladivostok in November 1974 has committed the US and the Soviet Union to negotiate a strategic offensive arms agreement within the following framework:

(1) The aggregate number of ICBM launchers, SLBM launchers and heavy bombers will not exceed 2400.

(2) The number of MIRVed missile launchers will not exceed 1320.

(3) Mobile strategic ballistic missile launchers will be included in the aggregate.

(4) Air-to-surface missiles with a range less than 600 km will not be included in the aggregate.

(5) Construction of additional ICBM silos will not be permitted.

(6) Freedom to change the mix of strategic delivery vehicles is allowed within the above constraints.

The table below shows fiscal year 1975 US and Soviet strategic force levels and projections for fiscal year 1980 and fiscal year 1985. There are outstanding issues, however, which remain to be negotiated with the Soviets. Depending on how these differences are resolved, the current and projected force levels provided in the tables may change.

Chairman McClellan. In preparing the fiscal year 1976 budget, what assumptions were made, programs added or adjusted as a result of the Vladivostok accords?

Answer. The Vladivostok accords had no major direct effect on DOD's preparation of the fiscal year 1976 budget. It has increased our confidence, however, that large increases will not be needed in future years. The direct effect of any final agreement will be felt in our planning and preparations for strategic force modernization in the future.

Chairman McCLELLAN. What do you estimate the impact of the Vladivostok accords will be on U.S. force levels, R&D, and actual deployment plans (assuming a valid treaty along Vladivostok lines is signed)? Will it require more or less in the way of strategic force expenditures?

Answer. It should be pointed out at the outset that this agreement, limiting the Soviet Union to specific numbers of strategic delivery vehicles, eliminates a great deal of uncertainty about future Soviet forces, and thereby precludes the need to hedge against those uncertainties in our force planning. Without such limits, we would almost certainly have been forced to ask the Congress for the authority—and funding—for larger strategic forces over the next few years than will now be the case.

Within this framework, however, the impact of a SALT Agreement arising from the Vladivostok Accords upon the U.S. strategic force posture depends to an important extent upon:

The details of that agreement, yet to be negotiated,

Soviet programs and activities within the constraints of that Agreement, and

Prospects, over the next few years, for further negotiations and additional limits upon strategic forces.

Our major modernization and replacement programs, such as Trident and B–1, are necessary to replace aging and obsolescent forces, if we intend to maintain effective strategic submarine and bomber forces in the 1980s and 1990s.

The pace of these deployments, and the rate of retirement of the older systems can be varied in response to the detailed considerations mentioned above.

A strong and diversified R&D program remains important as an incentive to the Soviets to continue to negotiate further limits, and as a hedge against technological surprise within the agreed limits or abrogation. In addition it provides important collateral benefits in verification of Soviet compliance with the agreed limits. Whether or not systems in research proceed into engineering development, or ultimately into deployment, requiring increased funding, will also depend upon the specific prognosis in each of the detailed areas specified above.

Military Commissaries and Exchanges

Chairman McCLELLAN. Explain the proposed change in commissary policy in detail?

Answer. The fiscal year 1976 President's Budget request proposes a change in the method of financing some of the costs of operating commissary stores. In an effort to reduce Defense expenditures and to increase the share of the Defense budget allocated to combat forces, we propose to require reimbursement for the personnel costs of commissary store operations. These additional costs will be borne by commissary store customers beginning on October 1, 1975. On that date reimbursement of fifty percent of these costs will be required. Further, our plan is that on October 1, 1976, and thereafter, one hundred percent of the personnel costs would be reimbursable by the commissary store customer. At that time almost all of the direct costs would be reimbursable by the customer, with the major exception being the cost of transporting merchandise to overseas stores. A major consideration in arriving at this decision is our belief that active duty military compensation is now generally competitive with other public as well as private sector compensation.

Since we do not propose to implement this plan until October 1, 1975, and since this proposal requires a change to the Department of Defense Appropriation Act increasing the limitation on the use of appropriated funds for commissaries, it is clear we cannot implement this proposal without Congressional approval.

Chairman McCLELLAN. Will the commissaries still offer savings below chain store prices? How much below? How can they do this?

Answer. We are uncertain at this time about the extent of future savings for commissary store patrons. The savings will depend upon the prices of the patrons must ultimately pay. Prices in turn depend upon the amount of sales generated in relation to operating costs. We believe some customers will shop less, or may even discontinue shopping in commissary stores, because of diminished savings coupled with other factors such as relative inconvenience and poor physical facilities. The extent to which this will happen and the resulting impact on prices can only be determined after we develop some experience in this regard.

Chairman McCLELLAN. What will be the effect of this change upon commissary prices? How much will this cost each commissary patron annually?

Answer. As discussed earlier, prices depend upon the amount of sales generated in relation to operating costs. Until we develop some experience, after

our proposal has been implemented, we cannot accurately forecast the effects. It is also difficult to determine how much more each commissary patron will have to pay as a result of the commissary store proposal. These data would be dependent upon the size of the family, their particular expenditures in commissary stores and the percent of their total food purchases that are made in commissary stores. At the present time, commissary patrons may save 20–25 percent on their food purchases. After our proposal is implemented they will obviously save less. How much less we cannot say at this time.

Chairman McCLELLAN. Will this change require that any commissary be closed?

Answer. While we are not planning to eliminate commissary stores, there may be closures necessitated by this decision based on uneconomical operation at certain locations.

Chairman McCLELLAN. Why is the change applicable only to commissaries and not to exchanges? Is there any reason why the two systems should operate under different policies?

Answer. Military exchanges have been generally self-supporting for some time, particularly in the areas of employee salaries and other direct costs. Commissary stores operate within statutory authority whereas exchanges are established under an administrative determination by the Secretaries of the Military Departments. Our proposal will bring commissary stores and exchanges more in line as to the source of funds for financing their operations.

Chairman McCLELLAN. What is the impact of this change on this and future budgets?

Answer. Savings of approximately $110 million in approporiated funds will be accomplished in fiscal year 1976. Future budget savings of over $200 million per year can be anticipated.

Chairman McCLELLAN. What is the trend in commissary employees between 1970 and 1975? Please explain any increase?

Answer. The number of military and civilian personnel employed in DoD commissary stores during the period requested is as follows:

Fiscal year:	
1970	20,646
1971	22,631
1972	24,595
1973	27,507
1974	27,292
1975 (estimated)	27,379

The general upward trend in the number of employees has been associated with increased sales and an attempt to improve the quality of service.

Chairman McCLELLAN. Is the Department of Defense taking special action to improve the efficiency of commissaries and reduce their operating costs? What would be the impact of your actions upon commissary prices?

Answer. A Department of Defense Committee, under the direction of the Assistant Secretary of Defense for Manpower and Reserve Affairs, has been established to determine what changes, if any, should be made to the military commissary store system in its organization and operating structure to achieve improved efficiency, reduced costs, and better service to the patrons. Since the review is scheduled for completion in mid-year, it would be premature to speculate as to what recommendations may be developed.

Chairman McCLELLAN. What is the purpose of the military commissary? Has this changed over time? What Congressional guidance on commissaries has been given?

Answer. Commissary stores have been established on military installations to provide food and other merchandise to military personnel at a convenient location and at a reasonable price. This basic purpose has remained the same for some time and has been confirmed by Hearings before a Subcommittee of the House Armed Services Committee in 1970 and 1972. Additionally, statutory authority for the operation of these facilities is contained in Title 10 of the United States Code and the General Provisions of the Annual Department of Defense Appropriations Act.

Chairman McCLELLAN. Who are the commissary customers that will be affected by this change? What portion of the active military actually use the commissaries? What portion of the retired military?

Answer. The major groups that comprise authorized patrons of commissary stores are active and retired military personnel, veterans with a service-connected

disability rated at one hundred precent, and the surviving spouses of these persons. Commissary stores, while not limited to married personnel, are primarily patronized by Service members with dependents. The commissary store benefit is not equally shared by all Service members, particularly among those without dependents who comprise a large percentage of our junior grade officers and enlisted personnel. Many of our retired military personnel tend to locate near a military installation in order to avail themselves of the military facilities such as commissary stores, exchanges and hospitals. While we do not know exactly what portion of the retired military personnel actually use commissary stores, some estimates have indicated that at certain locations 50 percent of the patrons are retired military personnel.

Chairman McClellan. Do you consider the present availability of the commissary privilege to be an appropriate element of military compensation?

Answer. It is the Department of Defense's position that the commissary privilege, while not an element of direct wages paid to military personnel, is nonetheless currently an element of total compensation.

The 1967 Quadrennial Review of Military Compensation (QRMC) determined that an item is considered to be compensation if it costs the government money (either now or in the future, and is of value to the recipient in or more of three ways, it adds net cash to his current income, it permits him to realize a current net cash savings, or it creates a present value to him based on the prospect of future receipt.

Commissary privileges are classified as supplemental benefits and are considered to be an element of total military compensation because they: (1) are a cost to the government, and (2) allow, when exercised, the realization of net cash savings.

It must be recognized, however, that benefits derived from commissary use are not uniformly experienced by all service members since married personnel, and in particular married personnel with families, will be the major users of the commissary. Therefore, the extent to which the commissary privilege is considered part of a particular service member's total military compensation is proportional to the availability of the facility and the frequency of its use.

Chairman McClellan. Indicate what increases to the military pay structure have been authorized over the past twelve years. Of those, which were independent of raises to civilian government employees and which were in tandem with such raises? Compare the increases with the increase in the Consumer Price Index.

Answer. The following table provides the information requested:

DEPARTMENT OF DEFENSE PAY INCREASES AND CONSUMER PRICE INDEX SINCE 1964

	Military and civilian pay increase		Pay and CPI (fiscal year 1964=100)			
Effective date	Regular military compensation [1] (percent)	Classified civilian salaries (percent)	Fiscal year	Regular military compensation [1]	Classified civilian salaries	Consumer price index [2]
Oct. 1, 1965		3.6	1964	100.0	100.0	100.0
Jul. 1, 1966	2.8	2.9	1965	102.1	106.3	101.3
Oct. 1, 1967	4.5	4.5	1966	107.8	109.2	103.5
July 1, 1968	4.9	4.9	1967	112.0	113.2	106.7
July 1, 1969	9.1	9.1	1968	116.7	117.1	110.2
Jan. 1, 1970	6.0	6.0	1969	124.2	124.2	115.6
Jan. 1, 1971	6.0	6.0	1970	140.1	139.6	122.4
Nov. 14, 1971	13.1		1971	148.5	148.0	128.7
Jan. 1, 1972	5.5	5.5	1972	173.3	156.5	133.4
Jan. 1, 1973	5.1	5.1	1973	193.2	164.8	138.7
Oct. 1, 1973	4.8	4.8	1974	208.4	174.9	151.2
Oct. 1, 1974	5.5	5.5	1975	222.6	184.3	169.2
Oct. 1, 1975	5.0	5.0	1976	234.1	193.7	185.3

[1] Regular military compensation is the sum of basic pay, quarters allowance, subsistence allowance, and the tax advantage on these allowances (which are not subject to income tax).
[2] CPI for fiscal years 1975 and 1976 based on estimates published in President's fiscal year 1976 budget.

From fiscal year 1964 to fiscal year 1976 (12 years) Regular Military Compensation increases at a compound annual rate of 7.3%, classified civilian pay at 5.7 percent, and the CPI at 5.3 percent.

Chairman McClellan. Why initiate this proposed change at this time?

Answer. We decided to submit our proposal at this time in an effort to reduce the fiscal year 1976 budget estimate and to increase the share of the Defense budget allocated to combat forces.

Chairman McCLELLAN. Is this action a breach of contract with active and retired military personnel?

Answer. No, there is no breach of contract nor breach of any implied contract involved.

Certainly, we would all agree that the military compensation system must undergo changes and restructuring from time to time to keep pace with the evolution of compensation packages in private industry. Without such changes the Department of Defense could not remain competitive with industry for the number and quality of personnel which are required for the armed forces. Equally apparent is the fact that we cannot simply add new compensation items without reducing or eliminating the less effective items. For these reasons, certain items of compensation and benefits have been revised and restructured as part of maintaining a dynamic compensation and benefits system.

The Department believes that even with the change in the status of commissaries, military compensation, including the supplemental benefits area, is still highly competitive with the wages and benefits of private industry. Further, Defense believes that the frequent and substantive increases in retirement pay under the CPI adjustment formula have acted to minimize the impact of the reduced commissary savings on retired personnel.

Chairman McCLELLAN. Could this subsidy for commissary labor be completely eliminated on October 1, 1975?

Answer. Yes, it could. However, the impact on the patrons and the commissary system is lessened if phased over a 2-year period.

Chairman McCLELLAN. Provide the military and civilian personnel end strength for commissaries, by service, fiscal year 1974, 1975 and 1976. For the same years provide the appropriated funds support, by appropriation. How much was the fiscal year 1976 budget reduced, by appropriation, as a result of the change in policy on commissaries?

Answer. The information follows:

COMMISSARY STORE OPERATIONS, APPROPRIATED FUND SUPPORT

	Personnel end strengths					
	Fiscal year 1974		Fiscal year 1975		Fiscal year 1976	
	Military	Civilian	Military	Civilian	Military	Civilian
Army	283	10,401	283	10,392	283	10,392
Navy	1,136	3,978	1,300	4,018	1,300	4,019
Marine Corps	20	821	9	775	9	775
Air Force	640	10,013	628	9,974	629	9,961
Total	2,079	25,213	2,220	25,159	2,221	25,147

[In millions of dollars]

	Fiscal year—		
	1974	1975	1976 [1]
Military personnel funds:			
Army	2.7	2.8	3.2
Navy	10.9	11.7	12.4
Marine Corps	.2	.2	.1
Air Force	6.6	6.6	6.9
Total	20.4	21.3	22.6
Operation and maintenance funds:			
Army	83.9	87.3	59.7
Navy	40.8	46.0	23.6
Marine Corps	8.1	8.0	5.7
Air Force	86.1	92.6	59.3
Total	218.9	233.9	148.3

[In millions of dollars]

	Fiscal year—		
	1974	1975	1976 [1]
Military construction funds:			
Army			
Navy	1.8	1.3	
Marine Corps			
Air Force	7.4		
Total	9.2	1.3	
Research, development, test, and evaluation funds:			
Army	2.2	2.2	1.5
Navy			
Marine Corps			
Air Force	5.1	5.4	3.3
Total	7.3	7.6	4.8
Reserve funds:			
Army	.2	.2	.1
Navy			
Marine Corps			
Air Force	1.0	1.0	.6
Total	1.2	1.2	.7
Total Army	89.0	92.5	64.5
Total Navy	53.5	59.0	36.0
Total Marine Corps	8.3	8.2	5.8
Total Air Force	106.2	105.6	70.1
Total all appropriations [2]	257.0	265.3	176.4

[1] Indicates change in policy effective Oct. 1, 1975, a portion of personnel costs will be supported through surcharge by commissary customers.
[2] Excludes the cost of transporting merchandise to overseas stores.

The fiscal year 1976 budget was reduced $110 million as a result of the change in policy on commissaries. The total amount of savings was taken in the O&M Appropriation.

Chairman McClellan. If you can justify this new policy, why are you proposing it be implemented over a 2-year period instead of a 1-year period? If this is the right thing to do, why not do it immediately?

Answer. As mentioned earlier, our proposed change in commissary store funding has been spread over a 2-year period to lessen the financial impact on the patrons of commissary stores. Further, we need to provide the necessary administrative leadtime in order to affect changes in pricing, accounting and operational procedures.

Headquarters Reductions

Chairman McClellan. The Department has been pursuing a policy of reducing headquarters and translating the savings into increased combat power. For each Service, would you indicate what reductions have taken place in headquarters staffing since fiscal year 1974 through what is contemplated in the fiscal year 1976 budget. Be specific by year and actual numbers of military and civilian positions.

Answer. As you know, the Headquarters Review is one step in an effort to improve efficiency in the Department of Defense through reduction in the number and size of DoD management headquarters and the conversion of the resulting savings into the improvement of the effectiveness of our combat units. It has been a DoD-wide program since October 1973 and utilizes the fiscal year 1974 President's Budget as its base line for measuring savings.

The following table reflects the estimated headquarters reductions from this base line for each Service through fiscal year 1976. As can be seen, we have been able to achieve a total reduction in headquaters of about 19,200. Further reductions in the field activities of defense agencies boost this total to about 25,600 military and civilian spaces. Note that these figures, particularly the mix of mili-

tary and civilian spaces, are estimates because in many cases plans have not been completed for the actual implementation of the reductions.

HEADQUARTERS REVIEW SAVINGS— FISCAL YEARS 1974–76

	Savings								
	Fiscal year 1974PB to fiscal year 1975PB			Fiscal year 1975FB to fiscal year 1976PB			Fiscal year 1974PB to fiscal year 1976PB		
	Military	Civilian	Total	Military	Civilian	Total	Military	Civilian	Total
OSD/OJCS	325	75	400	0	0	0	325	75	400
Unified	720	280	1,000	0	0	0	720	280	1,000
Army	3,760	3,340	7,100	0	0	0	3,760	3,340	7,100
Navy	150	1,450	1,600	0	0	0	150	1,450	1,600
Marine Corps	460	40	500	0	0	0	460	40	500
Air Force	4,400	1,900	6,300	1,100	900	2,000	5,500	2,800	8,300
Defense agency headquarters	60	240	300	0	0	0	60	240	300
Headquarters savings	9,875	7,325	17,200	1,100	900	2,000	10,975	8,225	19,200
Defense agency field activities	2,900	2,200	5,100	500	800	1,300	3,400	3,000	6,400
Total savings	12,775	9,525	22,300	1,600	1,700	3,300	14,375	11,225	25,500

[1] All figures are estimates (particularly the military and civilian mix) and are rounded estimates.

Fuel Consumption

Chairman McClellan. Would you provide an overall estimate of the Department of Defense's fuel consumption and costs for fiscal years 1974, 1975, and 1976?

[The estimate is as follows:]

[In thousands]

	Barrels	Cost
Fiscal year:		
1974	193,401	$1,826,355
1975 [1]	198,079	2,991,621
1976 [1]	199,409	3,424,104

[1] Estimated.

Chairman McClellan. Would you explain the various programs being initiated with Defense Department funding for the Naval Petroleum Reserves, as well as the proposal to establish a national strategic petroleum reserve?

Answer. The Navy for many years has been responsible for the care and maintenance of the Naval Petroleum Reserves. Prior to the 1973 oil crisis, the cost of this activity amounted to approximately $5 million per year. In November, 1973, the Armed Services Investigating Subcommittee of the House Armed Services Committee recommended that "immediate action should be taken . . . to bring NPRs #1 and #4 to a suitable condition of readiness so that they can be held in a standby condition capable of meeting our national defense requirements in times of national emergency." In FY 1974, therefore, an exploration and development program was initiated with $59 million appropriated for that purpose by the Congress.

There are a total of four Naval Petroleum Reserves, two in California (Elk Hills and Buena Vista), one in Wyoming (Teapot Dome) and one in Alaska (North Slope). NPR #1, at Elk Hills, has a proven reserve of more than one billion barrels of oil, of which about 3,400 barrels per day is produced solely for maintenance and to offset adjacent commercial production and thus prevent drainage losses. Currently, the Elk Hills Reserve is approximately 50% developed, with over 1,000 wells already completed and ready for production. The total cost of full exploration and development, which includes the drilling of approximately 900 additional wells, is estimated at $467.5 million. When completely developed, Elk Hills may be able to produce 400,000 barrels of oil per day. DoD is requesting $64.3 million in FY 1976 for development and continued exploration of the Elk Hills Reserve.

NPR #2 at Buena Vista has proven reserves of 15.6 million barrels and is the only reserve currently in production at nearly full capacity producing about 5,800 barrels per day. Production is required to avoid loss of Government oil through drainage to adjacent producing commercial wells.

NPR #3, at Teapot Dome, contains a proven reserve of 43 million barrels. Only 410 barrels per day are being produced, for offset to prevent drainage and for test and maintenance. To continue exploration of NPR #3, DoD is requesting $400,000 for FY 1976. Full development to maximum capacity of 12,000 barrels per day will require the drilling of 562 additional wells and installation of facilities to bring the field production rate to 12,000 barrels per day, at a cost of $70 million.

By far the largest and potentially most valuable of the Reserves is NPR #4, on the North Slope of Alaska. While its *proven* reserves are as yet unimpressive, NPR #4 is estimated to contain up to 33 billion barrels of oil. Examinations of the basic geological and geophysical structure shows great similiarity to other productive areas of the world, such as, the Persian Gulf, Algerian North Africa, and Alberta, Canada. NPR #4 encompasses approximately 23 million acres which represents 55 percent of the total Alaskan North Slope, and more important, 62 percent of the coastal plains considered to be the most likely prospects for oil exploration. While a large number of specific areas in NPR #4 have been identified as having oil-bearing potential, realization of the Reserve's full potential will require many years of work and very large capital investments. Should large reserves be discovered, development costs will include the construction of a pipeline to, and an ocean terminal on, the southern coast of Alaska. If the anticipated reserves are found, production from NPR #4 could reach 1 million barrels of oil per day in the early 1980s and perhaps 3 million per day by 1985. To proceed with the exploration of NPR #4, DoD is requesting $44 million in FY 1976.

National Stategic Petroleum Reserve

In furtherance of the President's program to reduce the nation's vulnerability to interruption of foreign oil sources, legislation has been proposed which would authorize production from the Naval Petroleum Reserves, and the establishment of a National Strategic Petroleum Reserve of up to 1.3 billion barrels of both unrefined and refined petroleum products to be stored at such locations as would provide for rapid deliverability to meet emergency, civil and military needs. Of the 1.3 billion barrels, 300 million barrels would be reserved for military requirements. This Strategic Reserve would be available for allocation in a future emergency if the President found that the existing supply was inadequate to meet national security needs. Production from the Naval Petroleum Reserves would be sold to develop funding for the further exploration and development of the Reserves, and the establishment of facilities for the Strategic Petroleum Reserves. Later NPR production could be stored in the Strategic Petroleum Reserve facilities or proceeds from its sale could be employed to buy other oil for that purpose.

War Reserves

Chairman McClellan. There are a number of areas where the Department is proposing to increase war reserves—this includes appropriations for the stock funds, a new item called "inventory replenishment/production support," foreign military sales costs, and increases in the authorized acquisition objective. Could you describe the reasons behind each of the increases, and give the specific dollar value in the request for each one?

Answer. The buildup of war reserve stocks is an incremental process that goes on from year to year. The DoD has been adding to its war reserve stocks for several years and expects to continue to do so in the future. War reserve buildup is normally stretched over several years in order to extend the period we can maintain "war" (active) production lines. Specifically contained in the fiscal year 1976/197T budget submission are requests for $477 million for increasing stock funded war reserves and $300 million for procurement of equipment in anticipation of Foreign Military Sales (FMS) in future years. The funds requested for stock fund war reserves are for critical items, whose needs have long been recognized as valid wihin DoD. However, the "revolving fund" nature of the stock funds does not generate the funds necessary to procure war reserve inventories which would not be expected to "sell" in peacetime. Hence

the request for new appropriation for this purpose. The funds for procurement of equipment and other material in anticipation of FMS are intended to help us alleviate situations where U.S. force inventories have to be drawn down to satisfy urgent foreign military sales requests.

The Army is continually reviewing its planning assumptions about equipment combat attrition rates. As a result of a recent review, which considered (among other things) Israeli experience in the last Mid-East war, assumed wartime attrition rates for tanks and armored personnel carriers (APCs) have been increased. This increase has raised the authorized acquisition objective (AAO) for each of these items. There are no funds in the current budget request which should be associated with these increased AAOs however since: (a) the tank inventory which will result with the FY 76 procurement budget request is below the old AAO, and (b) the APC, which is required to meet the APC AAO, is being used as a substitute against approved armored reconnaissance vehicle requirements and. on an interim basis, mechanized infantry combat vehicle (MICV) requirements, and thus the total armored personnel carrier inventory will not exceed these total requirements.

Research and Development

Chairman McClellan. The increase in budget authority requested for research and development is $1.6 billion, about 20% over last year's appropriation. Why is there such a large increase? Is there any indication that R&D funds are being managed any better than they were over the past two years?

Answer. The following factors contribute to the FY 1976 request of $10.3 billion for RDT&E:

Approximately $200 million is comprised of items appearing in other accounts in fiscal year 1975 which have been moved to RDT&E during the budget review.

Inflation accounts for something between $700 and $1 billion depending upon the inflation factors used.

The remainder of the differences between the fiscal year 1975 appropriation and the fiscal year 1976 request represents peaking of some particularly large development programs such as Trident and B–1 and the initiation of full-scale development of the Air Combat Fighter.

The fiscal year 1976 program is designed to reverse the trend of the last decade and establish an overall RDT&E program for the future.

There is no question that our R&D funds are better managed than they were in past years. In order to better understand this, below are described briefly the concepts which underlie our planning and management of Defense RDT&E. Defense R&D programs fall essentially into two groups having different objectives:

Group One: Creation and demonstration of options which may be useful for future military capabilities

Group One includes the thousands of projects in the "technology base" plus projects aimed at creation and demonstration of subsystem and system options. In this group we fund work in the sciences that relate directly to our needs, and we fund the development of new techniques and devices which could form the basis for future weapons.

Group Two: Full-scale system development for potential deployment

Group Two programs are generally characterized by the terms "full-scale system development," "operational system development," "engineering development." In Group Two we build full-scale engineering models suitable for the combat environment and for test and evaluation by the military men who will use them.

Obviously it is at the point of transition of a program from Group One to Group Two that a crucial commitment begins. The recommendation for a decision to put a program into Group Two is made by the highest officials in the Department of Defense, meeting as the Defense Systems Acquisition Review Council. This is the so-called DSARC II milestone decision. Seventy-nine major programs are under this DSARC management review process, and 66 lesser programs are similarly approved through Program Memoranda which rigorously record the need, technical cost and schedule objectives of these programs.

The DSARC process has evolved into an increasingly powerful management tool in DOD. The programs in Group One need to be reviewed in a broad sense, assessing the general level of funding, the over-all quality and adequacy of the technology efforts and competitive approaches—rather than in an element-by-element sense.

The programs in Group Two—few in numbers, high-priced and with a potentially large follow-on commitment—merit detailed consideration, especially at that crucial decision point when the commitment of a program to Group Two is made. This approach to R&D—creating many options and then selecting only a few for full development—will provide the continued technological leadership that we seek.

SHIP COST OVERRUN

Chairman MCCLELLAN. You are requesting $2.3 billion to pay for cost overruns on naval ships that were authorized and theoretically "fully funded" by previous appropriation acts. Can the Congress expect additional "one-time" requests in the future for naval ships whose costs are now being underestimated? What about costs of other large systems like the B–1—are you confident that any procurement request will truly "fully fund" the item and not require coming back to the Congress after construction on the system has begun? Would you describe any improvements in management that have occurred in the shipbuilding program during the past two years that should eliminate this problem in the future. Would you describe what actions you will take if none of the "one-time" $2.3 billion is appropriated.

Answer. The primary cause of the fiscal year 1976 budget for $2.3 billion to complete ships authorized and appropriated in prior years is the impact of unexpectedly fast paced inflation on these programs, although a portion of the cost increase is represented by some underestimation of basic costs and necessary design changes to meet evolving threat factors. Obligational authority for ships is expended more slowly than that for any other major DoD procurement item, i.e., the funds approved by Congress in a given year are spent over the 5–8 years required to contract for, construct, and outfit the average naval vessel. Thus, we are now paying for the completion of ships approved by the Congress in the late 1960s, e.g., the CVAN–68 and 69. Allowance for inflation in funds requested for these ships was calculated at about 3% per year. As you know, the inflation rate actually experienced by the shipbuilding industry far exceeded that level, particularly since about the middle of calendar 1973. For some months in fiscal year 1975, shipbuilding costs rose at an annual rate of 20 percent per year and we presently believe the average increase for the year will be 16%. Present projections do not show this rate of increase dropping below 10 percent till fiscal year 1978. Moreover, inflationary cost increases in the shipbuilding industry translate directly into increased costs to the government since all major shipbuilding contracts, although nominally "fixed price," normally contain a labor and material escalation clause under which we are obligated to reimburse the contractor for increase in those costs during the life of the contract. Thus, the need to request $2.3 billion for prior year programs is not primarily attributable to management failure on the part of DoD; instead it is largely due to the inability of economists within or outside of the government to have predicted anything close to the price inflation we have suffered over the last 2½ years and that which we now foresee for several years in the future.

DoD now includes considerably higher estimates of inflation in its requests for obligational authority for ships and all other major procurement items than we did in the late sixties and early seventies. We think they are reasonable projections. They reflect the views of professional economists who are not DoD employees. However, to the extent that they may again be incorrect on the low side the ships and aircraft we are requesting in fiscal year 1976 may be inadequately funded and additional money will be required to procure these weapon systems.

Recent efforts to improve management of the shipbuilding program include: merging of the Ships and Ordnance Systems Commands into a single organization to improve total weapon system integration; requiring contractors to implement cost and schedule control systems which will enable better monitoring of government programs; establishing of tighter control over changes to specifications and designs; and strengthening of project managers and their staffs.

If Congress does not provide the $2.3 billion requested in the fiscal year 1976 budget to complete ships authorized by the Congress for construction in the

fiscal year 1975 and earlier budgets, DoD will have to request authority (particularly for the fiscal year 1975 appropriation where legal subdivisions exist) so that funds from cancelled ships can be transferred to those which are (a) under contract or (b) can be fully funded with remaining fiscal year 1975 SCN funds. The pricing of ships in our fiscal year 1976 program would also be affected since in some cases these prices are dependent on the exercising of earlier year options. Such action would be highly detrimental to our overall maritime posture vis-a-vis the Soviet Union. It is very important that the Navy be provided the requisite funding to at least arrest the recent serious decline in force levels.

Baseline Forces

Chairman McClellan. You refer to "baseline force requirements" not being fully met (page I–9, unclassified Posture statement). For each of the major force levels, would you compare the baseline force requirements with what is proposed in the fiscal year 1976 budget?

Answer. The major force levels provided for in the fiscal year 1976 Budget are our baseline requirements. However, in many cases the forces are not fully structured, fully manned nor as ready as we would like. For these reasons we will continue to seek efficiencies and management improvements.

Strategic Triad

Chairman McClellan. What are the "gaps" in each of the three components of the US "triad"—the bombers, SSBN force, and the ICBM force—standing alone (Page I–20 of the classified statement).

Answer. There are two separate triad concepts commonly referenced in discussions of defense posture.

The strategic TRIAD—the basis of the US strategic deterrent posture—consists of ICBMs, SLBMs and heavy bombers.

The second, and separate, triad (the one discussed on page I–20 of the classified posture statement) consists of conventional forces, theater nuclear forces and strategic (nuclear) forces. The presence of theater nuclear forces such as nuclear artillery and Pershing in Europe, provides the US and its Allies with a theater deterrent force and with a nuclear option (short of the use of CONUS-based strategic weapons) with which to respond to limited nuclear attack or, if needed, to massive conventional aggression in Europe. This capability is an important element of our overall deterrence to any aggression in Europe. The removal of conventional, theater, or strategic forces could leave a "gap" in our ability to respond to certain types or levels of aggression. Hence our deterrent to any aggression could be weakened.

Chairman McClellan. Provide a comparison of 1974–1985 U.S. and Soviet accuracy, yield to weight ratios and reliability in strategic weapons. (I–21, classified).

Answer. [Deleted].

Chairman McClellan. Do you not consider number of individually targetable warheads to be a "basic factor" in the strategic balance? (I–21 classified) Why has number of warheads, which was considered during the 1960s to be the most significant single measure of the strategic balance, given way to number of delivery vehicles and throw-weight? What has changed since the 1960s? (I–21, classified).

Answer. Throw-weight is a measure of the inherent capability of a missile. The number of warheads associated with a missile or with a force is only one indication of how force planners have chosen to subdivide the inherent capability of the missile or force. Other indicators are the system accuracy and deployment capability (footprint), for example. Accordingly, we do not consider the number of warheads to be one of the most "basic factors", although a significant one. For example, the throw-weight of the Poseidon missile is used to deliver many small warheads while the throw-weight of the Minuteman II missile is used to deliver one larger warhead.

In the 1960s, before MIRVs and very accurate ICBMs, we were not concerned about ICBMs destroying other ICBMs. As technology progresses, ICBM accuracies will reach levels such that they can be used effectively against other ICBMs. If ICBM throw-weight is large and accuracy good, then one ICBM could destroy several ICBMs, and, therefore, the number of delivery vehicles and throw-weight will both be basic factors.

Targeting Options

Chairman McClellan. Would you describe the various strategic targeting options that are presently available to this country in case of a nuclear attack on us? What are our options in the Single Integrated Operational Plan today, and what will they be within the next 5–10 years?

Answer. Generally speaking, the U.S. currently has a limited number of large-scale preplanned options in the SIOP to attack a wide range of targets ranging from urban-industrial complexes to specific categories of military installations. The options would involve the potential expenditure of several thousand weapons. In addition to the general war options, we are currently introducing into our planning a wider set of much more selective, smaller-scale targeting options. By possessing a capability such as this, we expect to reinforce deterrence by removing the temptation for an adversary to consider any kind of nuclear attack. The provision of additional options in our strategic planning is designed to strengthen deterrence across a broad spectrum of risk. Nevertheless, if deterrence shall fail, we want to have the planning flexibility to be able to respond selectively to the attack in such a way as to (1) limit the chances of uncontrolled escalation, and (2) hit meaningful targets with a sufficient accuracy-yield combination to destroy only the intended target and to avoid widespread collateral damage.

Chairman McClellan. What specific hard targets do you want to be able to attack in the USSR that we cannot now attack? Explain why we presently cannot.

Answer. Presently we can attack any hard targets we choose in the USSR. However, one must distinguish between attacking a target and destroying it. At present our capability for destroying hard targets is modest, because our missiles lack the proper combination of warhead yield and accuracy. In some circumstances, we might want to attack non-collocated, small soft military targets, or facilities near large population centers. High accuracy and low yield airburst weapons would be the most appropriate configuration for those targets. In other cases, we might want to attack a limited number of hard targets such as ICBM's, IRBM's and MRBM's. The desired weapons configuration for this class of targets for the foreseeable is high accuracy and a higher yield warhead than we presently deploy on our missiles. Recognizing this present limitation, we should improve our hard target attack capability so as to have higher confidence of executing attacks against such targets. Otherwise, we allow the Soviets an option to which we have no similar response. In addition, our targeting options would be enhanced by increased accuracy and a great flexibility in the yields of the nuclear weapons available to us.

Assured Destruction

Chairman McClellan. At the present time and through the five-year program period, provide us with the estimates of the percentage of Soviet population and percentage of Soviet industry that could be destroyed in a second strike by:

ICBM force alone.

Bomber force alone.

SSBN force alone.

Answer. As you are well aware, any assessment of the retaliatory capability of U.S. strategic forces is highly sensitive to a number of key assumptions such as those made with regard to the threat, weapon system characteristics, and alert rates. While the intelligence community is highly confident of the numbers and kinds of strategic offensive and defensive weapons the Soviets will have during the next two years, projections beyond this time frame become increasingly uncertain. Additionally, operational uncertainties such as fratricide constraints, weapon system performance in a nuclear environment, and unexpected command, control and communication degradations can adversely impact expected retaliatory capability. [Deleted.]

While each component of the triad is projected to retain a capability to inflict, in a second strike, significant levels of damage against both the Soviet industrial base and population, we feel we must plan our forces to be capable of destroying a military target structure in the Soviet Union in addition to being able to destroy a substantial portion of the urban/industrial targets. We cannot put ourselves in a position where, in the case of a Soviet strike restricted to U.S. military targets, the U.S. can only retaliate against Soviet cities. The mutually supporting capability of our ICBM's, SLBM's, and bombers provides us with a high-confi-

dence capability to destroy not only an enemy's political and economic targets, but his military targets as well, and thereby deter nuclear war.

Chairman McCLELLAN. What evidence do we have that the USSR can trail or destroy our SSBNs? What is projected during the next five years?

Answer. [Deleted.] Although the Soviets are expending considerable effort to improve their ASW capabilities, we believe our SSBN force at sea will remain highly survivable during the time period in question. Nevertheless, the possibility of an ASW breakthrough cannot be discounted. Accordingly, our new programs are designed to provide a hedge against such a breakthrough by improving the survivability of our present and future SSBNs. This will be accomplished by greatly increasing the available ocean operating area for the SSBNs, through deployment of longer range SLBMs and reducing the detectability of future SSBNs, through quieting [deleted].

ICBM ACCURACY

Chairman McCLELLAN. What are our current ICBM accuracies? How much could the uncertainties surrounding inertial guidance systems affect these accuracies? What would be the impact of accuracy degradation in our second strike retaliatory capability?

Answer. Table I depicts current estimates of U.S. ICBM accuracies.

System:	
Titan II	[Deleted]
MM–II	[Deleted]
MM–III	[Deleted]

NOTE.—ICBM accuracy is defined in terms of Circular Error Probable (CEP)—the radius of a circle, in nautical miles, within which 50 percent of the reentry vehicles will impact.

Since missile systems are never flight tested on operational trajectories, many uncertainties surround the accuracies of all inertial guidance systems. These uncertainties are the result of gravitational anomalies, weather conditions, and unknown biases which cannot be exactly predetermined for operational trajectories. Consequently, accuracies achieved through extensive operational testing may be uncertain by as much as [deleted] or more.

Accuracy degradations would have little impact on our retaliatory capability following a massive first strike by the Soviet Union. This is because the massive response we would unlease in response to such action would be directed toward destroying those political, economic and military targets critical to the Soviet Union's post war power and recovery, the majority of which are soft and relatively insensitive to moderate weapon system inaccuracies.

In terms of limited nuclear options, however, accuracy degradations could significantly reduce our confidence that we could effectively carry retaliatory strikes against hard targets with the expenditure of the fewest number of missiles. For this reason we believe we must proceed with the modest accuracy and yield improvements we have been advocating for the Minuteman III force.

BOMBER DEFENSES

Chairman McCLELLAN. Are any specific further reductions planned in our bomber defenses for fiscal year 1976?

Answer. The fiscal year 1976 program continues the air defense force adjustments which began last year. Three F–101 ANG Units and the last F–102 ANG unit are scheduled for conversion in fiscal year 1976 to other aircraft (one to KC–135s and three to RF–4s). In addition, the last remaining active force EC–121 airborne radars are scheduled for phase out in fiscal year 1976.

POTENTIAL U.S. FIRST STRIKE CAPABILITY

Chairman McCLELLAN. Would you have prepared an analysis that could be made by a Soviet planner in estimating what the U.S. capability is now and in 1980 to attack Soviet ICBMs, bombers and SLBMs. The analysis should consider only the unclassified information available: make the same kind of assumptions our military does (capabilities, not intentions, assume the worst, not the best case), and provide an estimate of what proportion of the Soviet forces

would be destroyed and how much remain after a U.S. first strike. (I–26, Classified)

Answer. DIA is confident that the Soviet Union accurately assesses the current number of U.S. ICBM's (1054) : Bombers (about 500), and SLBM's (656).

Most of this data was agreed to during SALT I and has been further refined since 1972. The data has been most recently provided at the unclassified level, in the U.S. Military Posture for fiscal year 1976 by the CJCS, General Brown. There is little doubt that the Soviets have copies of this document and can derive U.S. data and U.S. concepts from such documents. The data can be extrapolated for the early 1980 period. The U.S. publishes such data frequently in various unclassified publications; the Soviets can easily cross-check for accuracy; however, there would be less certainty on the part of the Soviets concerning qualitative aspects of the forces, i.e., missile accuracy and warhead yields.

Turning to Soviet perceptions of U.S. attack options, we feel that the Soviets are on much shakier ground. They are clearly aware that the U.S. targeting policy is under review and are aware of official statement's regarding flexibility; however, they probably do not know any of the specifics of that review. Their concept of current U.S. options might be limited to five:

a. All U.S. strategic forces generated—U.S. preempts.

b. All U.S. strategic forces generated—U.S. retaliates to a Soviet massive attack.

c. Day-to-day posture—U.S. forces attempt a surprise attack.

d. Day-to-day posture—U.S. forces retaliates massively to a Soviet surprise attack. First with weapons available and then using additional forces as generated.

e. Possible theater war in Europe—U.S. uses a few strategic nuclear weapons to show resolve or to obtain a concession.

An estimate of the damage to Soviet forces and the residual threat cannot be made at the unclassified level. The JCS dynamically simulates various options for such analysis, but these results are done at the top secret level. Exact characteristic and performance data, etc are classified. A few generalizations, however, can be made. The Soviets probably feel that an attempted disarming first-strike attack on their strategic systems, and other significant targets, would not be successful and that they could unleash a retaliatory attack of sufficient magnitude to assure the destruction of the U.S. power base for years to come. They have around 1600 ICBMs, 740 SLBMs, and less than 200 bombers. While even the ICBMs are relatively secure (particularly if they choose to launch-on-warning), the submarines at sea carrying the SLBMs are almost invulnerable. The bombers are capable of being launched from under an attack and, because of their mobility, have the capability to fly to alternate bases during any period of tension prior to hostilities. In summary, assuming the worst case (option a above) the Soviets would still likely assess that they would have the capability to reply to a U.S. strike with a high degree of effectiveness—both now and particularly in the 1980s when they will have greater capabilities than they now possess.

NATO Allies Ships

Chairman McClellan. Describe the specific ship types and numbers of our NATO allies that would be used in a war. Compare with Warsaw Pact?

Answer. Our NATO Allies could contribute a significant number of ships to the NATO naval force. Together they can deploy more major surface combatants, more submarines, more mine warfare vessels and more sea-going patrol vessels than the U.S. However, compared to the U.S. our allies have fewer amphibious assault and logistical support ships.

On the other hand, the Soviet's Warsaw Pact allies could provide only a few major naval vessels to a Warsaw Pact maritime effort. These countries maintain mostly smaller ships to provide for the defense of coastal or inshore areas.

The following table displays the ships maintained by NATO allies and by the Warsaw Pact. Of the non-U.S. NATO ships, typically [deleted] percent are operationally active at any one time. The major ships category consists of aircraft carriers, cruisers, destroyers, and destroyer escorts. The submarine figures contain both large ocean going submarines and smaller coastal defense types. Contained in the "other ships" category are seagoing vessels; therefore, riverine and inshore craft are excluded.

NATO AND WARSAW PACT NAVAL FORCES

Country	Major ships	General purpose submarines	Other ships		
			Patrol	Mine warfare	Amphibious
NATO:					
Belgium	0	0	0	18	0
Canada	21	3	3	9	0
Denmark	2	6	28	15	0
West Germany	17	18	46	45	0
France	49	19	14	88	7
Greece	15	6	19	22	12
Italy	23	10	28	39	4
Netherlands	18	6	11	31	0
Norway	5	15	48	15	0
Portugal	8	4	31	8	0
Turkey	14	16	41	23	1
United Kingdom	75	29	11	37	9
Non-United States NATO subtotal	247	132	280	350	33
Warsaw Pact:					
Bulgaria	[Deleted]				
East Germany					
Poland					
Romania					
Non-USSR Warsaw Pact Subtotal					
USSR					
Warsaw Pact Total					

Chairman McClellan. Provide comparisons of Soviet ship-ton days in various theaters in 1972–3–4 with comparable U.S. ship-ton days.

Answer. The deployment of naval vessels to distant areas can be an important indicator of naval posture and capability. Such deployments are considered indicative of both national interest in various geographic areas and of the potential ability to sustain such forces under crisis conditions. Unfortunately, there is no single measure that fully describes naval deployments. This is particularly true in areas where peacetime naval presence has been tailored to meet a specific situation.

It is customary to consider "ship-days" as a useful way of aggregating deployment data, and combatant ships are generally considered the most significant types of units to report. Table 1 below provides such data for the United States for CY 1973 and CY 1974 and the USSR for CY 1972–CY 1974. As discussed with the Committee staff, extraction of data into these detailed deployment categories for the United States for CY 1972 would involve a significant expenditure of manhours. On this basis, only the CY 1973 and CY 1974 data are provided for the United States. These data indicate the number of days various types of combatant ships were deployed during each indicated year without distinction between the sizes of the ships deployed.

In response to the Committee's request, Table 2 provides this same deployment data in terms of ton-days. The ton-day format highlights the generally larger nature of deployed U.S. ships compared to those of the Soviet Union.

Table 3 is an unclassified version of the upper portions of Tables 1 and 2.

TABLE 3.—COMPARISONS OF UNITED STATES AND U.S.S.R. OUT-OF-AREA DEPLOYMENTS

[Summary by area]

	United States		U.S.S.R.		
	1973	1974	1972	1973	1974
Shipdays:					
Atlantic Ocean	4,000	3,000	4,000	4,000	4,000
Pacific Ocean	22,000	18,000	1,000	1,000	1,000
Mediterranean Sea	12,000	11,000	11,000	11,000	11,000
Indian Ocean	1,000	1,000	3,000	4,000	5,000
Total	39,000	33,000	19,000	20,000	21,000

TABLE 3.—COMPARSIONS OF UNITED STATES AND U.S.S.R. OUT-OF-AREA DEPLOYMENTS—Continued

[Summary by area]

	United States		U.S.S.R.		
	1973	1974	1972	1973	1974
Tondays:					
Atlantic Ocean	39,000	25,000	15,000	16,000	15,000
Pacific Ocean	205,000	177,000	5,000	7,000	4,000
Mediterranean Sea	127,000	113,000	31,000	36,000	36,000
Indian Ocean	12,000	14,000	8,000	8,000	13,000
Total	383,000	329,000	59,000	67,000	68,000

Congressional Reductions

Chairman McClellan. You indicate that "there is an actual decrease from the amount projected last year in our rolling five year defense plan". (I–40, classified). This seems to imply that Congressional adjustments made in last year's budget review are of no consequence in the Department's planning. What programs that were reduced or eliminated by Congress are currently being re-requested by DoD in this year's budget? Should we interpret your statement to mean that, although the Congress may make programmatic adjustments and changes, these have no impact whatsoever on DoD's five year defense plans?

Answer. On page I–23 of the Annual Defense Department Report, fiscal year 1976 and fiscal year 197T, it is noted that total obligational authority (TOA) for the Defense Department increases from $89.0 billion in fiscal year 1975 to $104.7 billion in fiscal year 1976, a change of $15.7 billion. In fiscal year 1976 constant prices, TOA increases $8.2 billion from fiscal year 1975 to fiscal year 1976. Yet, as noted on page I–23 ". . . there is an actual decrease from the amount projected last year in our rolling 5-year defense plan." In February 1974 the fiscal year 1975 TOA estimate was $108.8 billion (in fiscal year 1976 prices) as noted on page A–2 of the Defense Report. In February 1975 the fiscal year 1976 TOA estimate (in fiscal year 1976 prices) is $104.7 billion. The Defense plan for TOA in fiscal year 1975 has been significantly affected by two events during the period of February 1974 to February 1975. This is illustrated by the drop in the fiscal year 1975 (expressed in fiscal year 1976 prices) program from the February 1974 estimate of $108.8 billion to $96.5 billion, which is the February 1975 estimate. These estimates are summarized below:

TOA

[In billions of dollars]

	February 1974		February 1975	
	Current	Constant 1976	Current	Constant 1976
Fiscal year:				
1973	80.5	109.7	80.2	109.4
1974	87.1	109.3	85.0	104.4
1975	92.6	108.8	89.0	96.5
1976	98.0	109.3	104.7	104.7

The drop in the fiscal year 1975 program (in fiscal year 1976 prices) of $12.3 billion ($108.8 billion—$96.5 billion) is explained by unforeseen inflation and Congressional reductions. Unforeseen inflation explains about $8.1 billion of this reduction; Congressional cuts account for $6.1 billion, offset by increases of about $1.9 billion. Thus it is reasonable to conclude that Congressional adjustments made in last year's budget review do have significant consequences especially when combined with the unforeseen effects of inflation.

Each year we propose a defense program which is intended to provide an acceptable degree of security within a prudent degree of risk. This process requires us to analyze and possibly resubmit to Congress alternatives that include programs reduced by Congress in prior years. Also it is often the case that

reductions by Congress in one fiscal year are initiated by events or conditions which do not exist in subsequent fiscal years. Some examples are included below:

Item	*Millions of dollars*
E–3A (AWACS):	
Cut by Congress in fiscal year 1975	6/144.7
Included in fiscal year 1976 budget	6/430.0

Rationale for Reduction.—Reduced because the Congress felt that there has been little or no demonstration of the capability of AWACS to properly manage the tactical air situation in a high density combat environment, such as is expected to be encountered in Europe.

Defense Position.—Inclusion in the fiscal year 1976 budget follows Sec Def certification of AWACS and continues the planned procurement.

Item	*Millions*
AFSATCOM:	
Cut by Congress in fiscal year 1975	$15.4
Included in fiscal year 1976 budget	27.8

Rationale for Reduction.—Congress deleted because development of the system had slipped and terminals could not be brought until fiscal year 1976.

Defense Position.—System was included in fiscal year 1976 budget because terminals will be ready for procurement with fiscal year 1976 funds.

Item	*Millions*
SPACETRACK:	
Cut by Congress in fiscal year 1975	$22.0
Included in fiscal year 1976 budget	20.3

Rationale for Reduction.—Congress deleted funds as a premature request because site surveys to determine a suitable location had not been completed.

Defense Position.—Funds for this program are included in the fiscal year 1976 budget because the location has been determined and the requirement remains valid.

Constant Dollar Comparison

Chairman McClellan. The Defense Department frequently utilizes current and constant dollar comparisons. The Committee staff has been informed by the Office of Management and Budget that the Defense Department utilizes a completely different index in computing constant dollars from the index used by OMB in its defense constant dollar comparisons. (See page 58 of The U.S. Budget in Brief, Fiscal Year 1976, for OMB constant dollar tables showing Defense.) Would you provide a comparison of the indexes used by OMB and Defense, on a year-by-year basis, showing what inflation rates/deflators are used in each of the indices. Why doesn't Defense use the same index as OMB? (I–40 classified)

Answer. The table on the following page provides a comparison of the implied deflators used by OMB and DOD in converting national Defense outlays to constant fiscal year 1969 dollars:

IMPLIED NATIONAL DEFENSE OUTLAY DEFLATORS

[Fiscal year 1969=100.0]

	OMB	DOD		OMB	DOD
Fiscal year:			Fiscal year—Continued		
1950	55.9	54.4	1966	90.6	89.4
1951	59.1	60.7	1967	92.8	92.6
1952	62.5	63.5	1968	95.6	95.7
1953	63.6	65.6	1969	100.0	100.0
1954	63.2	64.8	1970	109.7	108.0
1955	65.7	66.6	1971	120.4	115.1
1956	68.7	69.3	1972	126.5	124.0
1957	72.8	72.3	1973	136.8	132.7
1958	75.5	75.4	1974	149.2	145.6
1959	78.6	78.2	1975	167.6	166.3
1960	79.4	78.5	1976	184.3	182.5
1961	81.5	80.2	Compound annual rates:		
1962	81.3	80.2	1950–63	3.0	3.1
1963	82.1	81.1	1963–76	6.4	6.4
1964	84.9	83.5	1950–76	4.7	4.8
1965	87.9	85.7			

Sources: "The United States Budget in Brief," fiscal year 1976, p. 58; "Federal Government Finances," tables 6 and 8 published by OMB, budget review division, December 1974; and special tables provided by OASD (C) based on fiscal year 1976 budget presentation.

In general, as noted at the bottom of the table the average annual compound inflation rates over the 26 year period covered are not significantly different when comparing the OMB deflators to the DoD Deflators. There are differences in the inflation rates for specific years, because different indices are used in computing constant dollars, but the overall trends are much the same.

The OMB provides the following description of how they convert National Defense outlays to constant dollars:

> It was deflated in three components: military retired pay was deflated by the consumer price index (CPI); grants to State and local governments (mainly National Guard shelters and grants for civil defense) were deflated by the national income accounts (NIA) implicit price deflator for State and local government purchases; the remainder (which was 94% of the total in 1973 and higher percentages in earlier years) was deflated by the NIA implicit price deflator for Federal purchases of goods and services.

The Defense Department uses more detailed deflators, which relate specifically to: military pay, other military personnel costs, retired pay (using man-year costs rather than the CPI), civilian pay, and the non-compensation component of the NIA implicit price deflator for Federal purchases of goods and services (excludes compensation and Commodity Credit Corporation purchases). The DoD approach employs more series of deflators as they relate to specific portions of the Defense budget. We believe this approach is more accurate in the compensation area, which represents about 50 percent of the Defense budget. In the non-compensation area the OMB and the DoD approach are essentially the same deflators.

The OMB further notes in their description of constant dollars:

> There is no single "correct" or perfect way to produce constant estimates of Federal outlays. Given the inherent imprecision in deflating outlays, the above data present a reasonable perspective—not precision. The deflators and the categories that are deflated are as comparable over time as is feasible. . . . However, the comparison in constant prices is far better than the use of non-deflated data and is the best indicator we have of "real" changes over time.

The reason DoD does not use the same indices as OMB for all categories of the National Defense budget is that further breakdowns in the compensation portion of the Defense budget do improve on the accuracy of constant dollar computations. Also they allow for more detailed study of the real program trend in the compensation area.

Chairman McClellan. Would you provide the table shown on Page I–44 for DoD total obligational authority in deflated prices if the OMB deflators are used as opposed to the DoD deflators?

Answer. The TOA estimates covering the period fiscal year 1976 to fiscal year 1980, which appear on page I–44 of the Defense Report, are based on price deflators derived by the Office of the Secretary of Defense, which are consistent with price assumptions developed by the Office of Management and Budget and the Council of Economic Advisers. It is important to note that these are TOA figures and thus incorporate a different series of deflators than those discussed in question 81, which dealt with outlays.

Peripheral Attack Force

Chairman McClellan. You indicate that Soviet peripheral attack forces can take under attack every significant target in Western Europe. How many significant targets are there in the Warsaw Pact, and how many of them can our 7000 nuclear weapons, and nuclear-capable systems located in Europe take under attack?

Answer. NATO forces in Europe face a formidable and highly mobile potential enemy. Depending on the enemy plan of attack, organization for combat, and scheme of maneuver, there are an infinite number of significant mobile force targets. There are also approximately [deleted] high-value fixed targets in non-Soviet Warsaw Pact countries, together with approximately [deleted] similar targets in the Western USSR. A large portion of our weapons systems in Europe are ADM's and SAM's not suitable for attack. The nature of the initial enemy attack and the amount of warning time preceding the attack determine, in large measure, how many of the fixed and mobile significant targets we will be able to engage.

Strategic Force Levels

Chairman McClellan. Your statement indicates that you shall plan for deployment of approximately 2400 strategic delivery vehicles and 1320 MIRVed missiles. What is the composition of this force? The tables at the end of the statement do not indicate that you will have 2400 delivery vehicles. Can you tell what systems would make up the 2400 and 1320 respectively?

Answer. The table below presents our current 1985 U.S. strategic force plan, which falls within the 2400/1320 limits agreed to in Vladivostok. The exact composition of our forces in the 1980s will, of course, depend upon a number of factors, including: future SALT agreements on force reductions, operations and maintenance costs of our older systems as they approach 20 years of age (Polaris and B–52s), and future Soviet force deployments. Clearly, many tradeoffs are possible among the forces listed below and our plans will change periodically in order to reflect the strategic situation as it develops in the late 1970s and early 1980s.

[Deleted.]

MIRV's on SSBN's

Chairman McClellan. When does the intelligence community estimate that the Soviets will begin testing and deploying MIRV's on the Soviet submarine launched ballistic missiles?

Answer. [Deleted.]

ABM Launchers

Chairman McClellan. Why is there a discrepancy between the number of U.S. ABM defense launchers in mid-1975 shown on page II–19 of the unclassified and II–49 of the classified posture statements. Which is correct?

Answer. Details pertaining to the completion status of the SAFEGUARD site are considered classified. Therefore, the number of U.S. ABM defense launchers operational as of mid-1975 was deleted in the unclassified version of the posture statement. The number of launchers shown in the classified posture statement, i.e., [deleted] launchers, is correct.

Missile Silo Comparison

Chairman McClellan. Your statement dwells at length on Soviet silo hardness and differentiates between silo structural hardness and survivability of missiles mounted inside them. Would you provide an estimate of the hardness of each type of Soviet silo/missile deployment. Further, would you compare this with U.S. missile silos. [Deleted.] Is this a function of technology or simply that we don't know what the real hardness of their silos/missiles actually is?

Answer. [Deleted.]

Minuteman Procurement

Chairman McClellan. Over what period of time will the 50 Minuteman fulfill our requirements for follow-on flight testing? What is the normal annual procurement for Minuteman II follow-on-flight testing? (II–54)

Answer. The 50 Minuteman III missiles we have requested in the fiscal year 1976 budget would provide the requisite test assets to ensure a viable follow-on flight test program through fiscal year 1988.

No Minuteman II missiles have been procured subsequent to terminating the production line in fiscal year 1968. Test assets for this weapon system have been and will continue to be provided through fiscal year 1982 from non-operational missiles procured between fiscal year 1964 and fiscal year 1968 and from the 50 Minuteman II missiles at Malmstrom AFB, Montana that are being replaced with Minuteman III missiles.

Shelter Based ICBMs

Chairman McClellan. You indicated that the costs and operating problems of the shelter based ICBMs are "immediately apparent". Would you describe the cost of representative numbers of shelter/shelter based ICBMs—development and procurement. Further, would you explain the types of operating problems you are referring to? (II–63, classified)

Answer. The shelter-based mobile ICBM system under consideration in the Advanced ICBM program is still in the study phase. The cost estimates which follow are representative of the rough order of magnitude we would expect should we ever decide to deploy such a system.

	Billions of fiscal year 1975 dollars
R.D.T. & E	1 to 2
Investment [1]	
Missiles	5
Shelters	4
Roads	1
10-year O. & M	5
	16 to 17

[1] Assumes procurement of 500 missiles and (deleted) shelters per missile.

The operating costs associated with this type of system depend, in large part, on whether the system is operated in a continuous manner or on a dash-on-warning philosophy. In the former, the missiles would be moved between shelters on a continuous, but random, basis to deny the enemy knowledge of which shelters contain missiles at any given point in time. Under this scenario, one can expect considerable wear and tear on the missiles, transporters, and roads, as well as a substantial use of fuel. In addition, accommodations for the crew members in the various shelters must also be considered.

The dash-on-warning concept assumes that sufficient warning time will exist to enable the missile, which would normally be contained in the central shelter, to be moved to any other shelter in the complex. The O&M costs for this system would be considerably less.

For either system, the cost of maintaining the missiles in a high state of readiness; providing the necessary security, command and control, and support personnel; and maintaining the complex in operating condition in all types of weather comprise the major cost elements referred to in the Annual Defense Report.

M–X

Chairman McClellan. Compare the costs of an air-mobile M–X (development and procurement) with the costs of other M–X concept candidates. Would you explain the type of accuracy you consider feasible for an air-mobile M–X without the use of the Global Positioning System, and with the Global Positioning System.

Answer. A program to develop refined cost estimates for various M–X options is in process. We can, however, make some general statements about cost at this time. First, the cost of a missile should be approximately the same for all systems. The cost-effectiveness of basing options depends upon the severity of the threat. The silo-based M–X is least expensive but is adequate only at low threat levels. Land-mobile basing is the least expensive at moderate threat levels and air-mobile basing becomes least cost at very intense threat levels. We have low confidence in our current cost estimates and improving them is a principal objective of our planned program.

Our goal for M–X is to achieve accuracy comparable to the [deleted]. In an air-mobile system this requires precise knowledge of position and velocity of the missile at launch, or an update of the missile guidance system in flight. The Global Positioning System (GPS) will permit the latter and should result in the desired CEP. If the GPS is not available for in-flight corrections then a stellar-inertial system would be used, but this would result in a considerably poorer CEP. Several conceptual schemes have been proposed to restore the CEP, but none have been examined completely enough to give us confidence in their performance.

Chairman McClellan. Your proposal to develop an M–X that is deployable in four different modes seems to be the all-hedging proposal. Based on the Vladivostok agreement, isn't it possible to determine now what the potential threat to Minuteman might be so we could pursue only one M–X option and thereby save some funds?

Answer. We are simply developing the technology for various M–X basing modes. We cannot determine which M–X basing mode is most cost-effective until

we have done enough work to assess technical risks and get more reliable costing data—the objectives of the program we are pursuing.

What M–X basing mode, if any, is eventually selected for engineering development is also a sensitive function of the threat. Our examination of M–X options seeks to find those options which are most threat-insensitive. We should not make a deployment decision until we see how fast the threat is evolving and what its level of intensity is likely to be.

Chairman McCLELLAN. Under the Vladivostok ceilings, what force mix and Russian accuracy would be required before you would decide to move M–X missiles from silos to some mobile configuration.

Answer. Under the terms of the Vladivostok Accord, the Soviets could improve their counterforce capability by a combination of developments: extensive deployment of large numbers of MIRVs on individual ICBMs, improved ICBM accuracies, and increased yield-to-weight ratios for their MIRV warheads. When the Soviets actually achieve a counterforce capability sufficient to threaten the survivability of our fixed land-based ICBM force will depend on the pace and extent of these developments. We will continue to monitor developments in each of these areas and if it becomes clear that the Soviets are attempting to exploit their throw-weight advantage, we will be forced to take appropriate action which could include deployment of M–X missiles in a mobile mode.

ALERT BOMBER FORCE

Chairman McCLELLAN. How many personnel associated with the bomber and tanker force are being reduced in connection with the reduction of the alert rate? What is the cost of these personnel?

Answer. A total of 6,251 personnel are being reduced in connection with the reduction in the day-to-day alert rate for the bomber force. The annual pay and allowances for these personnel is approximately $70 million.

Chairman McCLELLAN. Please provide the reductions that would be possible if only 25 percent and only 20 percent of the bomber force were maintained on alert (manpower and dollar savings, by appropriation).

Answer. No significant savings would be possible from a reduction in the bomber force alert rate below 30 percent provided that we are to maintain the ability to rapidly and fully generate the force in times of crisis.

Chairman McCLELLAN. What were the reasons behind selecting 30 percent as opposed to a lower figure? (H–78, classified)

Answer. Crews for the strategic bomber and tanker force have been reduced to the minimum number consistent with being able to fully generate the force on short notice. The 30 percent alert rate is an inherent capability for the number of crews provided to fully generate the force. We can have a zero alert rate, but we must still have one crew per aircraft. With the current program of slightly more than one crew per aircraft and an alert rotation of each crew on "alert" about one-third of the time, we can maintain a 30 percent alert rate at about the same cost as any smaller alert rate.

TANKER SQUADRON

Chairman McCLELLAN. What is the UE of the active KC–135 squadrons, compared with the eight UE per squadron planned for the Reserves. Why is the Reserve UE only about half the active force squadron UE?

Answer. Existing active force KC–135 squadrons are either 15 or 20 UE. In the past, the UE of active force KC–135 squadrons has varied depending on the number of bombers being supported and the physical location of the takeoff bases. Since tanker squadrons are normally collocated on the same bases with the bombers they are intended to support, and since there are currently more KC–135 tankers than there are bombers, the UE of some tanker squadrons is larger than others to allow for more efficient solutions to the bomber/tanker join-up problem.

Determination of the UE size for the Air Reserve Component KC–135 squadrons is based on several considerations. Maintaining a larger number of squadrons of 8 UE KC–135 tankers provides an opportunity to utilize more of the manpower pool which is so critical to Reserve Component manning since available manpower at some Reserve locations will not support a larger UE squadron. In addition, the eight UE squadrons size coincides with the UE size of the KC–97 squadrons which some of the KC–135 units are replacing. Lastly, Air Reserve Component basing facilities are all capable of supporting an 8 UE squadron whereas several cannot support squadrons of larger UE size.

Chairman McClellan. If only eight squadrons of 16 UE aircraft were formed in the Reserves, what would be the associated personnel and other cost savings in fiscal year 1976, by appropriations?

Answer. Forming squadrons of 16 UE is not considered a feasible alternative. Determination of the UE size for the Air Reserve Component KC–135 squadrons is based on several factors. Available manpower at some Reserve Component locations will not support squadrons of greater than 8 UE size. Thus, maintaining a larger number of squadrons of 8 UE tankers spreads out the manpower requirement over more of the available manpower pool. A similar problem exists with Reserve Component basing facilities. All proposed KC–135 bases are capable of supporting an 8 UE squadron whereas several cannot support squadrons of larger UE size. The eight UE tanker squadron size was selected to overcome these problems, and because it coincided with the UE size of the KC–97 squadrons which some of the KC–135 units are replacing.

Short Range Attack Missile

Chairman McClellan. Explain why the missile was designed for a ten year life while the motor for only five years. Isn't five years a totally unacceptable life, considering the life of various other strategic systems and the Defense planning that SRAMs would be a key part of our bomber weapons suite through the 1980s?

Answer. The expected service life of the present SRAM solid propellant motors is five years. We are not able to predict with precision the actual service life of a solid propellant motor. Actual service life is determined through a surveillance program involving the firing of aged motors. Our concern at this time is that the SRAM motor will begin to age out at five years. Programs conducted by the Air Force Rocket Propulsion Laboratory have demonstrated a number of techniques which are expected to lengthen the service life of solid propellant motors. We expect to draw upon this experience in developing a longer life SRAM motor. Those techniques were not demonstrated at the time the original SRAM motor was developed.

Chairman McClellan. What is the current status of the production line for SRAM? When will the last missile procured in prior years come off the production line? Why is there a need for additional start-up costs of the SRAM?

Answer. The SRAM production line is in full operation, producing at a planned program production rate of [deleted] missiles per month. The last SRAM will be delivered from the current production line in August 1975. If a decision is made to procure SRAM for the B–1, a gap in missile production of approximately four years will occur. Reopening of the SRAM production line will require expenditure of additional funds for items such as tooling refurbishment, loss of learning (retraining) and a limited requalification of the missile and substitute components.

Cruise Missiles

Chairman McClellan. How many years was the Subsonic Cruise Armed Decoy (SCAD) in advanced development and how much was spent in it? Doesn't the Department consider that the SCAD demonstrated satisfactorily that the concept of a cruise missile was feasible? What did the government get out of the SCAD program?

Answer. The initiation of advanced development of SCAD was approved on 15 July 1970 and the program was terminated on June 30, 1973. The effort in fiscal year 1971 was limited to analytical studies and subsystem tests as there were no funds appropriated specifically for the program in that year. Development contracts were awarded in July 1972 so there was actually only one year of real development effort in the program. Total program funding for all years associated with SCAD was $72.3 million.

SCAD definitely did not demonstrate that the concept of a cruise missile was feasible as there were no flight tests and SCAD did not employ the accurate TERCOM updated inertial navigation system to be used by a cruise missile. A proper demonstration of the concept will require actual flight tests with all systems integrated in the missile.

The cruise missile program is benefiting from the SCAD development effort. In the SCAD program a competitive engine selection was accomplished through wind tunnel tests and the selected engine was developed almost to the point of the preliminary flight rating test. This engine is being used in the cruise missile pro-

gram. An airframe was designed and many hours of wind tunnel testing were accomplished. This air frame is being used in the Air Launched Cruise Missile program. The cruise missile program is also benefiting from the many hours of engineering effort associated with the integration of SCAD with the B–52 carrier aircraft equipment.

REGIONAL CONTROL CENTERS

Chairman MCCLELLAN. Explain why the current Regional Control Centers (of which there are now six) should be phased out and replaced by Regional Operations Control Centers. How do they differ? Why can't current control centers be converted to ROCC's? Describe the different locations of the Regional Control Centers, the ROCC's, the JCC's and the BUIC's.

Answer. The current Regional Control Centers (RCC's) are a component of the SAGE System built in the early 1950's to provide active air defense against the air breathing threat of that period. SAGE, consisting of military radars and RCC's, costs about $128 million per year to maintain. The Joint Surveillance System (JSS) will replace SAGE and will consist of FAA radars and four Regional Operations Control Centers (ROCC's) in the CONUS, with one ROCC in Alaska, with the primary mission of providing surveillance and peacetime control of our sovereign airspace. The cost to maintain and operate the JSS and its four ROCC's will be $34 million per year.

The current Regional Control Centers (RCC's house very large, first generation computers which date back to the fifties. The cost to reaccomplish the software would approximate the cost to build the new system.

In addition, the new equipment will require much smaller facilities as the system is designed mainly to perform the peacetime mission of surveillance and airspace control.

During times of crisis, the wartime role of active air defense would depend upon AWACS and an interceptor force made up of dedicated air defense interceptors augmented by aircraft from the General Purpose pool. This is in consonance with the current stated role of air defense which is early warning of bomber attack so that we are able to control our sovereign airspace to insure that a potential enemy does not have a "free ride" over the United States.

The current Regional Control Centers are located at Ft. Lee AFS, Va; Hancock Field, NY; Duluth IAP, MINN; Malmstrom AFC, MT; McChord AFB, WA; Luke AFB, AZ; and Elmendorf AFB, AK. The new ROCC's locations are tentative but will be at existing military facilities in the NE, SE, SW, and NW areas of CONUS and in Alaska. These facilities will be located on bases capable of supporting the operation of AWACS aircraft. All of the BUIC's have been closed except one site at Tyndall AFB in Florida. The BUIC equipment may be utilized in the ROCC's of the Joint Surveillance System.

Chairman MCCLELLAN. What is the current status of the receiver site problem for the Over the Horizon Radar prototype?

Answer. In response to the opposition by the blueberry growers to the original land selected for the prototype receiver site, two additional land options were developed by the Air Force. These new options were briefed and discussed in open forum with the land owners and concerned citizens of the State of Maine. The options were also included in the Final Environmental Impact Statement forwarded to the Council on Environmental Quality on 31 January 1975. The selected option reduces by over 30 percent the required use of productive blueberry land. However, there is a resultant cost increase to the government for land preparation and construction of the site on less desirable land. On 20 February 1975, the Military Installation and Facilities Subcommittee of the House Armed Services Committee approved the request to acquire the land identified in the selected option in accordance with Section 2662, Title 10, USC. However, final acquisition of the land will be in accordance with Section 849 of the Appropriations Act for fiscal year 1975 (Public Law 93–437).

SAFEGUARD

Chairman MCCLELLAN. What is the estimated fiscal year 1976 operations and maintenance cost of the SAFEGUARD system? Why is it necessary to operate it on a full time basis and then phase it down? Why not operate it on a reduced basis from the start? How many people will be required (civilian and military) for SAFEGUARD operation in fiscal year 1976 and in the outyears when the system

will be phased down? Provide the annual operating costs estimated for fiscal year 1977–1979, by appropriation, in addition to the fiscal year 1976 costs requested above.

Answer. The estimated fiscal year 1976 Operations and Maintenance cost of the SAFEGUARD System is as follows:

Appropriation:	*Millions*
Missile procurement, Army	[1] 11.6
Operations and Maintenance, Army	85.3
Military personnel, Army	8.1
Total	105.0

[1] Includes $9.7M prior year funds which will be used to provide engineering support and project management in fiscal year 1976. Balance (fiscal year 1976 funding) provides replenishment repair parts ($1.9M).

The operation of a deployed system permits us to gain needed experience in the complexities of an operational system. We will, for the first time, be in a position to verify our support planning in the areas of training, operational procedures, security and logistics. Full time operation is considered essential in order to experience the full spectrum of interrelationships and interfaces which comprise a fully tactical BMD environment. A one year period of operation is considered to be the minimum duration to permit us to encounter a range of problems.

This activity has the highest degree of visibility of all our BMD efforts and, consequently, is a vivid reminder to the Soviets that we can deploy and operate an effective system. The Soviets have been gaining their operational experience for many years. SAFEGUARD and our ongoing R&D effort in BMD demonstrate that we can and will keep pace with Soviet BMD developments.

Reduced operation from the start would prevent the Army from acquiring realistic and valid operational information on the overall functional aspects of a complex BMD System. In the same light, reduced operation from the start would indicate to the Soviets that our resolve in BMD is less than genuine.

The numbers of people required for SAFEGUARD operation in fiscal year 1976 are 505 civilians and 599 military. For fiscal year 1977 and beyond, the numbers of people to be required are estimated as [deleted] civilian and [deleted] military. These numbers of people required for fiscal year 1977 and beyond are current estimates and are subject to further refinement as the extent of operations is more clearly defined.

The operating cost requirements for the SAFEGUARD System during the outyears are under current intensive review and are subject to considerable refinement. The current projections for fiscal years 1977–1979, by appropriation, are as follows:

[In millions of constant dollars]

Appropriation	Fiscal year— 1977	1978	1979
Missile procurement, Army [1]	2.2	2.3	2.3
Operations and maintenance, Army	80.5	80.6	80.6
Military personnel, Army	6.9	6.0	6.0
Total	89.6	88.9	88.9

[1] Replenishment repair parts.

Submarine Communications

Chairman McClellan. What will happen to the TACAMO aircraft when and if Sanguine is ever deployed?

Answer. Both Sanguine and TACAMO can provide survivable communication to our Fleet Ballistic Missile Submarines. However Sanguine will provide greater coverage and endurance than TACAMO and will allow the submarine greater operational flexibility. Therefore, we expect that when Sanguine, or a more survivable ELF system (SHELF) becomes operational, we will consider phasing out TACAMO.

Tactical Nuclear Weapons

Chairman McClellan. Explain what types of tactical nuclear weapons and delivery systems in our current inventory are not considered appropriate to the European environment? What types of weapons would be considered "more appropriate" to the European environment?

Answer. To put this response into context we must first discuss the rationale for having these weapons in Europe. Theater nuclear weapons form an integral part of the US commitment to Europe's nuclear defense. They are an essential components of a credible NATO military posture; they enhance deterrence because Warsaw Pact conventional or nuclear attack plans must take into account the possibility of a NATO nuclear response; and in the event deterrence fails, they provide a source of limited and controlled options. The European environment, however, is characterized by large concentrations of population, extensive urban and industrial development, and large numbers of cities, and in a relatively confined geographic area. If deterrence were to fail, the potential for unwanted collateral damage would be high in this environment.

Therefore, recent DoD and NATO studies suggest both changing NATO procedures and modernizing certain current nuclear weapons and delivery systems to (1) achieve the damage desired while decreasing the probability of unwanted damage; and (2) reduce the vulnerability of the theater nuclear forces to surprise attack by increasing their mobility. By modernizing and restructuring the size and composition of our theater nuclear forces, we could enhance their flexibility, selectivity, survivability and safety. Such improvements in military effectiveness increase the credibility of our theater forces, thereby enhancing their deterrent value in the European environment.

Poseidon warhead assigned saceur

Chairman McClellan. How many SLBMs and warheads are assigned to SACEUR? Are these SLBMs counted in the US/USSR strategic balance? What specific missions are these warheads supposed to fill?

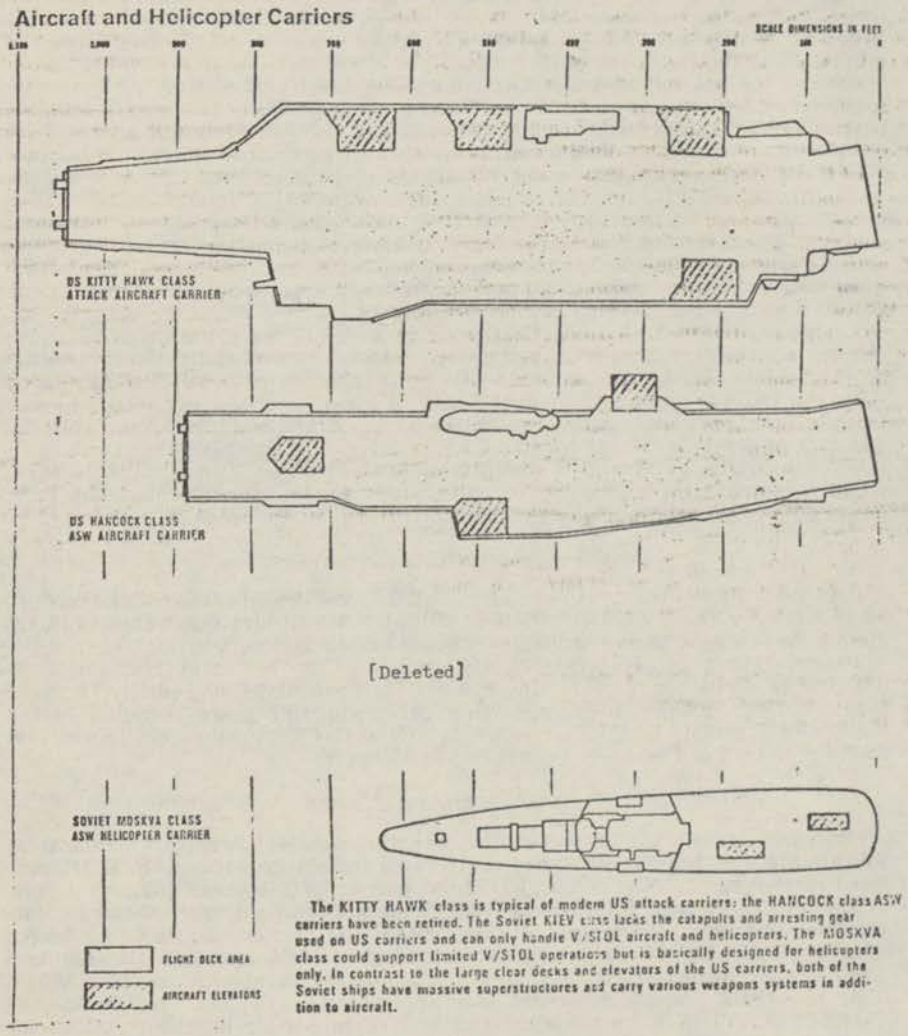
Answer. There are [deleted] SLBM warheads (no set number of missiles) assigned to SACEUR for targeting against high priority, time sensitive nuclear threat targets. The SLBMs supporting this requirement are included in the US/USSR strategic balance as reported in the CJCS's Posture Statement and in the Secretary of Defense's Annual Defense Report.

Soviet Aircraft Carrier

Chairman McClellan. Compare the size, displacement, weapons complement and aircraft complement of the Soviet aircraft carrier with both a U.S. MIDWAY-sized carrier and CONSTELLATION-sized carrier (III–7, classified).

Answer. The Soviet KIEV-class CVSG (missile-equipped anti-submarine carrier) is about 90% the length of a MIDWAY-size carrier and 85% the length of a CONSTELLATION-sized carrier but is about 60% and 50% the displacement of these respective classes, making it more comparable in size to a World War II ESSEX Class U.S. carrier (see appendix I). [Deleted.] MIDWAY and CONSTELLATION have minimum gun and surface-to-air missile installations, respectively (see appendix II). KIEV's aircraft complement includes ASW/forward observer helicopters (HORMONE) and [deleted] V/STOL (vertical/short takeoff or landing) fighter. KIEV is not equipped with catapults or arresting gear for carrier-based aircraft in the Western sense. MIDWAY and CONSTELLATION-size carriers have balanced aircraft complements for a variety of missions (see appendix II).

APPENDIX I



The KITTY HAWK class is typical of modern US attack carriers; the HANCOCK class ASW carriers have been retired. The Soviet KIEV class lacks the catapults and arresting gear used on US carriers and can only handle V/STOL aircraft and helicopters. The MOSKVA class could support limited V/STOL operations but is basically designed for helicopters only. In contrast to the large clear decks and elevators of the US carriers, both of the Soviet ships have massive superstructures and carry various weapons systems in addition to aircraft.

APPENDIX II

CARRIER COMPARISON (U)

	Kiev	Midway	Constellation
Size (feet):			
Length overall	[Deleted]	972	1,047.5.
Beam, extreme		238	248.5.
Draft, maximum navigable		35.5	37.
Displacement, full load (tons)	35–40,000 estimated	64,000	80,300.
Weapons complement:			
Missiles	[Deleted]		2 twin Terrier (Surface-to-air).
Guns		3 5 in./54 (127 mm)	
Torpedoes			
ASW			
Miscellaneous			
Aircraft complement	25 V/STOL or 36 helos	24 fighters	24 fighters.
		36 attack	40 attack.
		4 early warning	6 recon/attack.
		4 electronic warfare	4 early warning.
		3 light photographic	5 electronic warfare.
		3 helo (SAR/utility)	3 helo (SAR/utility).
		Poss. 10 ASW fixed-wing	Poss. 10 ASW fixed-wing.
		Poss. 8 ASW helo	Poss. 8 ASW helo.

Korean Defense

Chairman McClellan. If the Republic of Korea could defend itself alone against invasion by North Korea, why should U.S. forces be stationed in Korea? What is the annual cost—by appropriation—of U.S. deployments and reinforcements related to Korean defense?

Answer. Our military presence in the Republic of Korea operates as a restraint to possible North Korean adventurism and also means that other powers in the area must think twice before instigating major trouble on the Korean peninsula or redeploying forces to theaters where they might prove more threatening to us. Our troops there contribute to stability on the Korean peninsula and in the area. Moreover, the confluence of interests of four major powers is found in northeast Asia. Hence the American presence in South Korea serves a powerful political purpose in terms of international stability and in terms of dampening incentives toward the acquisition of nuclear weapons.

Department of Defense accounting records are not maintained to reflect total U.S. costs on an area or country basis. Operating costs for FY 1975, therefore, were estimated by using appropriate factors. Included are the costs of all military and civilian personnel located overseas and the cost of operating and maintaining facilities overseas. These costs do not include indirect logistic and administrative costs for support from outside the country, nor do they include major procurement or military construction costs. On this basis, the estimated annual operating costs of maintaining U.S. military forces in Korea in fiscal year 1975 are $580 million. Note that this is not a marginal cost estimate; i.e., one should not expect that these costs could be saved were those troops not deployed in Korea.

NATO Allies Defense Expenditures

Chairman McClellan. You indicate that most of our NATO allies are increasing their real defense expenditures despite inflationary and balance of payments pressure. Would you provide a chart that shows NATO allies defense expenditures in current and constant dollars, 1970–76, and comment on the increase or decrease in each country's real defense expenditures.

Answer: [Deleted.]

Many of the allies have indicated that they expect to increase their defense expenditures in constant prices in the 1975–76 time period.

At the present time Belgium, Denmark, the Federal Republic of Germany, the Netherlands, Norway and the United Kingdom have indicated that their defense spending will increase in real terms during the 1975–76 time period.

Army Division Force Structure

Chairman McClellan. You refer to a change in the strategic concept made by a previous administration that permitted a reduction in Army Divisions from 16 to 13, but indicate that heavy reliance was placed on high priority Guard and

Reserve Divisions. Which specific Divisions in the Guard and Reserve were to be deployed almost as rapidly as our Active Divisions, under previous planning? Compare the readiness proposed at the time the reduction to 13 Divisions was made and the current readiness posture proposed in the fiscal year 1976 Budget.

Answer. It was initially intended to place reliance on high readiness reserve brigades to take up the slack caused by reducing the active Army to 13 divisions, until such time as the reserve divisions could deploy. We programmed these brigades to be ready in [deleted] days or less following mobilization. [Deleted.]

Our analysis indicated limitations on reserve unit readiness which cannot be overcome quickly or easily. [Deleted.] We continue to search for ways to improve the readiness of Reserve Component divisions, and while there are no panaceas apparent we are making progress. In the interim the Reserve Component divisions are scheduled to deploy about [deleted] after mobilization and must be considered as a hedge against prolonged war. However, we believe reserve battalions and brigades can contribute significantly through affiliation with active divisions. Affiliation improves readiness and training, and we believe that affiliated reserve battalions and brigade size units will be able to deploy with the active divisions with which they are affiliated. A significant portion of several of the 16 active divisions will actually be reserve battalions and brigades.

Chairman McCLELLAN. Would you provide a comparison of the old 2½ war strategy and the planning with respect to where the 16 Divisions in the Army would be used and the current 1½ war strategy—both with 13 Divisions and 16 Divisions?

Answer. We would emphasize that the relationship between a two and a half war, or a one and a half war, or a one war strategy have never been precise. Under the two and a half war strategy, the U.S. maintained minimum forces for a NATO contingency and a minor contingency, while having the forces to meet a major contingency elsewhere, such as in Northeast or Southeast Asia. When we talked about a two and a half war strategy, we did not have all of the forces to pursue it: witness the very substantial expansion of the U.S. Army after 1965 when we put almost half the pre-war force which allegedly was capable of dealing with over two major conflicts, into Southeast Asia. We must recognize that there is a shortfall between our fiscally constrained force structure and the goals against which we measure it. We should also realize that when the 2½ war strategy was enunciated we had a decisive strategic nuclear advantage. Since that time there have been significant quantitative and qualitative changes in both Warsaw Pact and NATO forces, and there have been new interpretations of our forward defense strategy in NATO.

As we have stated, we believe that our budget force of 16 active Army divisions—partially structured with reserve units—is the minimum we need in today's environment, measured against our goal of being able to deal simultaneously with one major attack and one minor contingency. The employment of our forces would vary according to the situation presented and would be dependent on where the major attack and contingency occurred, in what order they occurred, the lag between them, and the amount of warning received.

Chairman McCLELLAN. You refer to three factors in planning Army division structure—the ratio of force to space, the need for a reserve, and attacker/defender ratios. Yet your presentation nowhere actually describes the particular inputs used in determining the calculation that 19 active duty divisions would be required for prudent risk. Using the three factors mentioned in your statement, would you show the computations used in obtaining 19 divisions and 16 divisions?

Answer. The determination of force levels is, of course, not a simple matter of identifying and quantifying a small number of variables and then making a few calculations to arrive at an answer. Methods of estimating requirements rely on many variables each of which has uncertainties. Among these variables are the size and timing of the threat, the degree of allied participation assumed, and the measurement of the force combat capability represented by many different weapons systems. Additionally, these factors interact in ways that are difficult to simulate. Consequently, numerous calculations are made using a number of different methods and the results are then reviewed and compared. Ultimately, it is the analysis and judgment of experienced people operating in a fiscally constrained environment that set the force levels we request.

[Deleted.]

Based on these and many other analyses and the requirements for forces elsewhere in the world, we believe that our fiscally constrained force of 16 Army

and three Marine Corps active duty divisions and eight Army and one Marine Corps reserve divisions represent the minimum required for a prudent level of risk.

26-Wing Structure in Air Force

Chairman McClellan. What would be the proposed composition of a 26-wing structure in terms of aircraft? Compare this to the existing 22-wing structure.

Answer. The following table depicts the current and anticipated 26 organizational wing force structure for active Air Force fighter and attack aircraft. Important changes in structure which occur are:

1. Phase out of A–7s, F–105s, and some F–4s from the active force.
2. Introduction of A–10 close air support aircraft, and a Hi/Lo Mix of F–15 and F–16 air superiority aircraft.
3. The current number of 26 under equipped (equivalent to about 22 fully equipped wings) organizational wings is maintained, while the number of UE aircraft grows in order to fully equip the 26 wing structure.

CURRENT AND PROJECTED AIR FORCE ORGANIZATIONAL WING STRUCTURE

	Current force		Fiscal year 1981 force	
	Wings	UE aircraft	Wings	UE aircraft
Aircraft type:				
F–16	0	----------	[Deleted]	[Deleted]
A–10	0	----------	[Deleted]	[Deleted]
F–15	0	----------	[Deleted]	[Deleted]
F–111	4	276	[Deleted]	[Deleted]
F–4	18	1,044	[Deleted]	[Deleted]
A–7	3	216	[Deleted]	[Deleted]
F–105	1	36	[Deleted]	[Deleted]
Total	26	1,572	26	[Deleted]

Chairman McClellan. Is the Air Force to increase the number of wings by four within existing manpower resources, or will an increase be made in manpower authorizations as the number of wings increase? How much of an increase is to be proposed in manpower?

Answer: The Air Force plans to increase the number of aircraft in its tactical fighter force wings without an overall increase in the USAF military manpower ceiling. This would be accomplished through a combination of the following: the newer aircraft being introduced into the tac air structure (F–15s, F–16s, and A–10s) generally require less manpower per aircraft than the aircraft they replace (F–105s, F–4s, and A–7s); and anticipated manpower reductions in other mission areas are expected to absorb any increased manning in the tac air area without exceeding the Air Force's current overall manpower levels.

The Air Force already has a 26 wing organizational headquarters structure. Therefore no increase in wing headquarters manpower will be required.

Attack Carriers

Chairman McClellan. Explain why there are 13 carriers and only 12 active wings. Would you explain how many carriers are allocated to each of the four missions on page III–41–42 of the classified statement.

Answer. With the intense fiscal and manpower pressures on the Defense Program, some reduction in the size of the carrier force and carrier air wings is unavoidable as our older carriers and aircraft reach retirement age. To provide a dedicated air wing for the 13th carrier we would have to increase aircraft procurement. There are not enough acceptable aircraft with service life remaining available in the active Navy force to equip the 13th carrier on a routine basis, but these assets could be readily available from the Navy Reserve or from the Marines. Obviously, Reserve forces could not man and maintain a carrier in a combat ready condition.

With our planned reduction in forward deployments we believe 12 carriers are sufficient to meet routine peacetime forward deployed commitments. However, we do see the requirement for 13 carriers to respond to contingency deployments. If the contingency required the presence of Navy aircraft afloat

and Marine aircraft ashore it would most likely be a contingency justifying reserve mobilization, in which case a Naval Reserve Air Wing could deploy on the 13th carrier. If the contingency was not serious enough to warrant mobilization, the carrier could be employed as a platform for a task-organized Marine Aircraft Group.

With respect to mission allocation, the four functions in the classified statement do not constitute a full spectrum of naval missions to which our general purpose naval forces might be applied. The allocation of carriers to various types of operations would be highly dependent upon the detailed operational situation—particularly the disposition of the threat.

ASW Missions

Chairman McClellan. You indicate that the U.S. anti-submarine warfare problem is not in the number of platforms, but rather modernization of platforms and sensors. Yet, your planning envisions a gradual growth to 70 ASW aircraft squadrons and 93 attack submarines—with potential increases outside the program period. Would you explain what the actual requirement in terms of numbers of aircraft/squadrons and attack submarines actually is?

Answer. The Defense Report noted that current and projected inventories of ASW aircraft and submarines are adequate for the ASW task. We do not foresee major increases in ASW force level requirements. Instead we are gradually replacing old platforms with new ones and improving the sensors and weapons of those vehicles which have sufficient service life remaining to justify such modernization. For example, rather than buying larger numbers of attack submarines and increasing the number of forward ASW barrier stations we plan to operate, we calculate that an equal or greater effectiveness improvement, at much lower cost, will result from equipping our PERMIT and STURGEON-class submarines with the new BQQ–5 sonar which is being installed on the LOS ANGELES-type submarines during initial construction. It is true that our submarine force level rises during the program period, but this merely reflects a return to the required level of about 90 submarines. In reducing below that figure during the current period—e.g., by retiring diesel submarines before nuclear replacements are delivered—we are incurring a measure of risk. We have judged this risk to be acceptable in view of the need to free funds for modernization of the submarine force. Any deviations from the 90-submarine level in the outyears [deleted] are minor and subject to change as retirement dates are refined.

With respect to ASW aircraft, the situation is more complex since a variety of different types are involved. As is shown in Table 5 of Appendix D to the Defense Report, the increase in total ASW aircraft of all types is very slight during the program period (five aircraft in a total inventory of about 850). There are some significant changes in type and mix both within the program period and later, but such variations generally stem from replacement of older models with newer, more capable aircraft at rates and schedules which differ by aircraft type. For example, we plan to continue buying P–3C aircraft at a modest pace to replace P–3A/B aircraft in the active force and to transition P–3A/Bs to the reserves where they will replace obsolescent P–2s on less than a one-for-one basis (P–2 squadrons have 12 aircraft while P–3 squadrons have only 9). In this case, overall force capabilities will be improved by increases in unit effectiveness even though numbers of aircraft will actually decrease.

Throughout the program period the overall force level and mix of ASW aircraft is considered adequate for the aircraft share of the ASW mission. Our current estimate of requirements for the middle to late 1980s is as shown below:

ASW aircraft type	Number of squadrons	UE/squadron	Total (AAI)
Land-based fixed wing (P–3)	[Deleted]	9	[Deleted]
Carrier-based fixed wing (S–3)	[Deleted]	10	[Deleted]
Helicopters (SH–3, Lamps)	[Deleted]	8–16	[Deleted]

This future requirements estimate is, of course, subject to revision based on new intelligence or changes in priorities, but at present it is the basis for our modernization and procurement planning. The increase of [deleted] aircraft in

the early 1980's (over the [deleted] aircraft average in the program period) is primarily attributable to greater requirements for destroyer-based (LAMPS) helicopters as more surface combatants capable of operating LAMPS aircraft enter the fleet.

U.S. Forces in Thailand

Chairman McClellan. Provide the number and type of forces planned for Thailand, fiscal years 1973–80.

Answer. Our end fiscal year strengths for 1973 and 1974 were 42,000 and 35,000 respectively. We presently have a military authorization of approximately 27,000 personnel in Thailand. Our current force includes eight tactical fighter squadrons, one AC–130 gunship squadron, one RF–4 squadron, [deleted] B–52's, 4 U–2's, 3 P–3's, 2 DC–130's, and various support aircraft such as C–130 airlift and CH–3, HH–43, CH–53, and HH–53 helicopters. It is the intention of both the Royal Thai Government and U.S. Government to continue the reduction of our forces in Thailand.

War Reserves

Chairman McClellan. Provide an analysis showing where increases in various war reserves are being proposed for the first time in FY 1976 and the various amounts by appropriation.

Answer. War reserve stocks of equipment items are integral portions of the overall acquisition objective for such items. As such, equipment is normally not procured specifically as "war reserves," but is procured as part of the procurement of shortages to acquisition objectives. While there are shortages in fiscal year 1976, it is not practicable to separately identify specific procurements as filling war reserve requirements, nor it is appropriate to categorize them as "first time" procurements in fiscal year 1976. War reserve stocks of spare and repair parts are similar. That is, they do not represent "first time" procurements in fiscal year 1976 in that every fiscal year's budget has contained funds for this purpose in both procurement appropriations and stock funds.

The fiscal year 1976 funding request for war reserves of spare parts in the appropriation Aircraft Procurement, Air Force, contained within the Spares and Repair Parts line item, is significantly larger than in previous fiscal years as we attempt to improve our readiness posture by filling substantial deficiencies in this area. For example, $331.5 million is requested in fiscal year 1976 compared to only $33.9 million in fiscal year 1975. Stock funded repair parts are in a similar situation in that we have asked for a fiscal year 1976 appropriation of $326.8 million to procure war reserve stocks compared to $17.1 million programmed for such procurements in fiscal year 1975. However, it should be recognized that no appropriation was requested for this purpose in prior fiscal years because stock funded war reserves were procured with available stock fund cash and that fiscal years 1974 and 1975 were not representative of typical years for this purpose because an extreme shortage of cash has precluded normal war reserve procurement.

Chairman McClellan. What remedial action is being proposed for the U.S. production base in the various sectors of the economy? What is the projected five-year cost? (III–66, classified)

Answer: The following remedial actions are in the process of implementation or are being proposed by the Department of Defense to expand or improve the responsiveness of the U.S. production base.

a. In cooperation with industry and other government agencies, increased emphasis and funding support is planned for the DoD Manufacturing Technology Program. This program is designed to develop or improve manufacturing processes, techniques, materials and equipment to provide for timely, reliable and economical production of Defense material. To support the drive to reduce production costs of Defense systems and to increase U.S. productivity through application of program results within the civilian economy, substantial increases in funding support are planned for the program in FY 1977–81. The present level of DoD funding for this effort is approximately $88 million annually. It is proposed to increase this to approximately $250 million annually by FY 1981.

b. To reduce weapon systems costs and leadtimes and to obtain the technological advantages of modern production facilities, action has been initiated to modernize government-owned production, repair and maintenance facilities.

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c. The Department of Defense proposes to develop incentives that will encourage private investment in modern, more efficient production resources and thus increase the productivity of the U.S. production base, and reduce unit costs.

d. In cooperation with industry and other government agencies, action is being proposed to alleviate shortages of the strategic and critical materials that would limit full production of the U.S. production base in time of an emergency.

e. Since we are largely dependent on in-house facilities for munitions production, a major program to upgrade government-owned munitions facilities has been initiated which will make the base more responsive and cost-effective. The projected cost for this program through fiscal year 1980 is approximately $2.4 billion.

f. The Department of Defense, in conjunction with other appropriate government agencies, proposes to initiate industrial base studies in various sectors of the economy that will be designed to identify production bottlenecks and to determine appropriate corrective actions. The objective of this proposed program will be to expand or improve the responsiveness and efficiency of the U.S. production base.

Support to Other Nations

Chairman McClellan. Cite examples over the past two years where the U.S. has refused sales of military equipment to foreign customers where "regional security or other U.S. interests" would be adversely affected. (III–67, classified)

Answer. The Department of Defense does not keep records of specific FMS purchases requests which have been turned down. There are a variety of considerations which could cause denial of a request. The Department of State provides guidance for denial of requests for foreign policy reasons. The criteria for most denials is examination of the nature of the weapon involved as well as legal and foreign policy considerations. This necessitates interagency consultation regarding sensitive requests, and denials of requests normally are made after such consideration.

Foreign nations do not welcome a formal denial of a purchase request which they perceive as valid. Therefore several techniques are employed to signal in advance of any formal request what the position of the USG is likely to be regarding a potentially sensitive sale. The objective of these techniques is to reduce the number of occasions where the USG must issue a formal denial of a prospective purchase. Among these techniques are:

a. Foreign diplomatic or military representatives inquire, informally and discreetly, regarding releasability of equipment if doubt exists regarding approval of a formal request.

b. USG policies on releasability are made known to foreign countries. Sometimes this policy receives wide publication, but sometimes it is furnished discreetly only to representatives of the country involved.

c. Commercial requests for export licenses needed to demonstrate products overseas sometimes are denied because of objections by either the State or Defense Departments. Knowledge of this provides a signal to the prospective purchaser that a purchase request would be denied.

Aid to Hanoi

Chairman McClellan. Provide estimates of the value of aid to Hanoi FY 68 to date. In this analysis, you may include separately the value of transporting the goods to Hanoi, as long as the value is in local (not U.S.) currency, i.e., priced at the rates actually paid, not imputed paid by U.S. dollars. Describe some of the larger items being provided by category, and estimate the amount of aid provided Hanoi in each category.

Answer. In response to this and similar questions concerning comparative support to North and South Vietnam, an interagency working group was convened in order to arrive at the best estimate of total communist assistance to North Vietnam. The memorandum which has been prepared jointly by the Central Intelligence Agency and the Defense Intelligence Agency is reprinted below and includes detailed data for the period 1970–1974. Information prior to 1970 is considered too sketchy to provide a meaningful estimate of communist assistance to North Vietnam.

MEMORANDUM OF MARCH 5, 1975

COMMUNIST MILITARY AND ECONOMIC AID TO NORTH VIETNAM 1970–1974 [1]

1. The Intelligence Community has been requested to estimate the amounts of Communist aid delivered to North Vietnam in the years 1970–1974, using current U.S. dollar costs of the materiel and services provided (see Table I). It is important to recognize that the Intelligence Community's estimate on this subject is not equivalent to—and hence not comparable with—U.S. appropriations for military and economic aid to South Vietnam, for the following reasons:

(a) On the matter of accuracy, our information on North Vietnam has always been incomplete, although coverage on civilian imports is substantially better than for military aid. The drawdown of the U.S. presence in Southeast Asia has further limited intelligence collection capabilities in the area, so that current information on North Vietnam is less comprehensive than it was formerly. In particular, on the question of Communists military aid, our information base is very spotty. Hence we know we are seeing only part of the picture on military aid, and our estimates for the part we cannot see have a wide margin of error.

(b) Military aid to North Vietnam is focused on materiel required for the type of military action undertaken by the Communist forces in South Vietnam—i.e., selected attacks from redoubt areas at times and places of their choice. U.S. military aid to South Vietnam supports a different military mission—i.e., defense of scattered communities, large agricultural areas, and lines of communication, plus reaction and reinforcement of local forces after Communist attack. As the total forces for the different missions differ in size, so do their requirements for assistance. Throughout the war, South Vietnam's forces have been roughly twice the size of North Vietnam's forces in the South, primarily because the missions of South Vietnam's forces—protecting population and holding territory—have required a much larger and widely dispersed military structure.

(c) The GVN has therefore also required a combat air force and an ability to redeploy forces rapidly by ground and air transport. Thus, the types of equipment supplied to South Vietnam by the U.S. have been more sophisticated and therefore more expensive than those required by Hanoi. South Vietnam also requires considerably more logistic support.

(d) In addition, shipping, overhead, and other support costs of military aid to the GVN are substantially more than support costs of Communist aid to North Vietnam because of the greater distance involved and other factors. (See Table II at annex.)

2. Several conclusions may nonetheless be drawn with respect to levels of military and economic assistance to North Vietnam from 1970 through 1974.

(a) Total Communist military and economic aid to North Vietnam in 1974 was higher (in current dollars) than in any previous year.

(b) The suspension of US air bombardment in North Vietnam at the beginning of 1973 brought about a large decrease in assistance for defense against such bombardment or to replace losses caused by it (e.g., air defense equipment, missiles, trucks, etc.).

(c) The US disengagement from combat and the reduction in the level of hostilities in South Vietnam in 1973 were reflected in a substantial decrease in the amount of ammunition and ground force equipment received by North Vietnam, compared with 1972.

(d) In 1974, the delivery of ammunition to Hanoi markedly increased over 1973 and reached a level as high as that of 1972,[2] although deliveries of ground force equipment continued at relatively low levels.

(e) Economic aid was reduced in 1972 with the closure of North Vietnamese ports, but with their reopening rose sharply in 1973 and reached a record level in 1974. The economic aid increase in 1974 was further spurred by typhoons which damaged the 1973 North Vietnamese autumn rice harvest, the inflation of dollar values in 1974, and the increased pace of reconstruction during 1974.

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[1] This memorandum has been prepared jointly by the Central Intelligence Agency and the Defense Intelligence Agency, and concurred in by the Bureau of Intelligence and Research, Department of State.

[2] The dollar figure shown in the table for ammunition deliveries in 1974 is considerably higher than that for 1972, but tonnages were about the same. Inflation of ammunition prices explains the difference.

3. The figures leading to the above conclusions are shown in Table I. They give a rough order of magnitude of Communist military assistance to North Vietnam and a somewhat more precise indication of economic aid. Within the category of military assistance, the estimates of deliveries of equipment and materiel ($275 million in 1974), as well as the estimate for transportation equipment ($25 million in 1974), are fairly good. Even a more complete data base would produce estimates of the same relative magnitude. This is not true, however, for those items listed under the "other military-related support" heading, where the lack of hard data makes our estimates subject to wider margins of error.

4. It should also be noted that in the final analysis what is significant is not so much the level of military assistance but the relative balance of forces on the battlefield in South Vietnam. North Vietnamese forces in South Vietnam, supported by record stockpiles of military supplies, are stronger today than they have ever been. The Communists are expected to sharply increase the tempo of the fighting in the next few months. Given the present military balance in the South, the GVN's forces will not be decisively defeated during the current dry season. At currently appropriated levels of US military assistance, however, the level of combat that we anticipate in the next few months will place the Communists in a position of significant advantage over the South Vietnamese forces in subsequent fighting.

TABLE I.—ESTIMATED COMMUNIST MILITARY AND ECONOMIC ASSISTANCE TO NORTH VIETNAM

[In millions of current U.S. dollars] [1]

	1970	1971	1972	1973	1974 [2]
Military	205	315	750	330	400
Military equipment and materiel	140	240	565	230	275
Air defense equipment	20	85	310	100	55
Ground forces equipment	45	80	110	40	45
Ammunition	70	60	130	85	[3] 170
Other	5	15	15	5	5
Military transportation equipment (trucks, helicopters, transports)	20	15	30	35	25
Other military-related support (delivery and packaging costs, spare parts, POL for the military, technical assistance and training, medical supplies) [4]	45	60	155	65	100
Economic	735	755	465	670	1,295
Commodity shipments [5]	635	645	360	540	1,145
Food	65	60	80	170	420
Fertilizer	10	15	5	5	25
Petroleum	10	10	5	15	55
Machinery, transport equipment, and metal products	240	175	125	165	345
Other	310	385	145	185	300
Technical assistance (includes cost of foreign technicians in NVN and NVN trainees abroad)	100	110	105	130	150
Total of estimated Communist goods and services provided to north Vietnam	940	1,070	1,215	1,000	1,695
Less North Vietnamese exports to communist countries [6]	50	50	30	80	125
Total estimated Communist aid to North Vietnam	890	1,020	1,815	920	1,570

[1] Because of rounding, individual figures do not always add to the totals in this table.

[2] The data for 1974 are preliminary.

[3] Although ammunition supplied to North Vietnam in 1974 constituted an estimated 40 percent of its military aid, our data regarding probable ammunition costs per ton are admittedly "soft." Therefore, if our price estimates are off by, say, 10 percent, the total value for ammunition alone could fluctuate by some U.S. $17,000,000.

[4] The lack of hard information on the items included under "Other military-related support" makes these estimates subject to a wider margin of error than exists for other categories of military assistance to North Vietnam.

[5] For economic goods, the cost of transportation is included in the cost of the goods as shown in the table. (For military goods, delivery and packaging costs are included under "Other military-related support.")

[6] Since North Vietnamese exports in these years paid for some of North Vietnam's imports, we have subtracted them to derive our estimates of Communist aid to North Vietnam.

TABLE II.—COMPARSIONS OF MAJOR CATEGORIES OF COMMUNIST MILITARY AID TO NORTH VIETNAM AND U.S AID TO SOUTH VIETNAM [1]

[Dollar amounts in millions of U.S. dollars]

	Communist military aid delivered to North Vietnam, calendar year 1974		U.S. military aid so far appropriated to South Vietnam, fiscal year 1975	
	Amount	Percent	Amount	Percent
Total military aid [2]	$400	100	$700	100
Military equipment and materiel	275	69	268	38
Air defense equipment	55	14	----------	Negligible
Ground forces equipment	45	11	----------	Negligible
Ammunition	170	43	268	38
Other	5	1	----------	Negligible
Military transportation equipment	25	6	----------	Negligible
Delivery costs	20	5	74	11
Other military-related support (including spare parts, POL for the military, technical assistance and training, medical supplies, and miscellaneous costs)	80	20	358	[3] 51

[1] For reasons explained in the text, our figures on Communist aid to North Vietnam (some of which are soft estimates) are not readily comparable with U.S. aid appropriations for South Vietnam. Also, the data we have on Communist aid is kept on a calendar year basis while U.S. aid appropriations are keyed to a fiscal year cycle. The above table, however, gives a rough indication of the way the two aid packages break out in calendar year 1974 for Communist aid and fiscal year 1975 for U.S. aid.

[2] Figures may not add because of rounding.

[3] One reason for the wide disparity is a charge against the U.S. aid account for administrative expenses for the DAO in South Vietnam which has no known counterpart on the Communist side. There are also other items for which no counterparts on the Communist side are available, such as offshore maintenance servicing of military equipment, and construction.

Sustaining a War in Europe

Chairman McClellan. Exactly how much sacrifice is involved in the ability to sustain a conventional war in Europe by virtue of the new approach to Army General Purpose Forces? How long could our present force fight a NATO war and how long could our 16 Division force fight?

Answer. In fiscal year 1973 the active Army had 13 divisions and 14 Support Increments and the Army Reserve Components had 8 divisions and 28 Support Increments. This equated to two Support Increments for each division. We believe that this ratio provided a balanced force which could support itself for the duration of an intense conflict. Our fiscal year 1976 active Army force has 16 divisions and 13⅔ Support Increments. The reserve forces continue to have 8 divisions and 28 Support Increments. Our force is less well supported for a prolonged conflict now than it was in the past, and our active force is more reliant than before on the Reserve for its sustaining support. We believe that the Reserve Components can provide the necessary support for our active forces in a timely manner if mobilized. As part of our Total Force Study we are examining both the requirements for and capability of our reserve Support Increments to support the force as well as methods to rapidly man the necessary additional support units identified by the Total Force Study from the Individual Ready Reserve.

The question of how long the NATO forces could fight a NATO/Warsaw Pact war is a difficult if not impossible one to answer. However, it is accurate to say that the additional three active divisions will increase our early available combat power, permitting us to have greater probability of "winning" the first battle and, in turn, raising the nuclear threshold. Of even more importance, these additional divisions provide substantially more deterrence to the Warsaw Pact and other would-be adversaries.

Tank Production

Chairman McClellan. Identify the countries and types of tanks which have been provided since the October 1973 War. Also indicate the types of tanks and countries to whom we are committed to providing 795 tanks.

Answer. The following tanks by type, country and quantity have been provided since 1 October 1973 or are still committed as of March 10, 1975:

Type	Country	Delivered Oct. 1, 1973 to Mar. 10, 1975	Committed as of Mar. 10, 1975
M48A1	Jordan	[deleted]	
M48A1	Taiwan	100	
M48A1	Greece	65	
M48A2C	Turkey		54
M48/A1/A2C total		[deleted]	54
M48A3	Israel	[deleted]	[deleted]
M48A3	Tunisia	13	1
M48A3	Morocco	26	
M48A3	Vietnam		[1] 4
M48A3 total		[deleted]	[deleted]
M60	Israel	[deleted]	
M60	Ethiopia	22	
M60 total		[deleted]	0
M60A1	Argentina	1	
M60A1	Jordan	[deleted]	
M60A1	Israel		[deleted]
M60A1 total		[deleted]	[deleted]
Subtotal		1,089	(2)
Grand total		[deleted]	

[1] From prior year programs—not funded by fiscal year 1975 DAV program.
[Deleted.]

Chairman McCLELLAN. What was the level authorized for war reserve stocks for allies in past years with regard to tanks?

Answer. The tank war reserve requirements for allies (WRSA), as computed in the fiscal year 1972 through fiscal year 1976 budget Authorized Acquisition Objectives (AAO's), are reflected below. No allied war reserve requirements for tanks were included in the AAO prior to the fiscal year 1972 budget computation.

Fiscal year:	
1972	180
1973	529
1974	991
1975	1,845
1976/T	3,649

There is a requirement for 500 M60 tanks in the fiscal year 1976 WRSA objective for special contingencies. The balance of the requirement (3,149) is for other types of tanks.

Chairman McCLELLAN. What are the projected foreign tank requirements for M60s over the next five years, by year? (III–87, classified)

Answer. The projected foreign tank requirements for M60s over the next five years are:

Calendar year:	
1975	355
1976	352
1977	585
1978	588
1979	589

INFANTRY COMBAT VEHICLES

Chairman McCLELLAN. Describe the Soviet BMP combat vehicle and compare with the MICV.

Answer. The Soviet BMP is a modern armored infantry combat vehicle, first publicly displayed in 1967. It is in current production, and has been fielded

in substantial numbers. It is a lightly armored, full tracked, amphibious, air transportable vehicle designed as an integrated fighting unit, carrying a crew of three plus an eight-man squad. It is an infantry fighting vehicle—designed to operate with tanks in combat in a role which differs from that of a conventional armored personnel carrier. It is equipped with three types of anti-tank weapons, including a 73mm smoothbore gun with automatic loader, a SAGGER missile launcher, and an RPG–7 antitank grenade launcher. In addition, it has a 7.62mm PKT machine gun coaxially mounted with the main gun in a powered turret, two light 7.62mm machine guns located at forward firing ports, and an AKM 7.62mm assault rifle located at each of six additional firing ports.

The U.S. Army MICV now in development will have a BUSHMASTER 20–22mm rapid fire cannon installed in a powered and stabilized turret. This gun will be effective against personnel and lightly armored vehicles and will have some capability against slow aircraft and helpicopters. MICV is [deleted] has a total personnel capacity of 12 (one more than the BMP) and, like the BMP, is designed as an infantry combat vehicle rather than a conventional armored personnel carrier. It will have a 7.62mm coaxial machine gun and six 5.56mm port firing weapons. MICV is about 35% heavier than BMP and its larger size provides more space per man inside the vehicle. The table below compares characteristics of the U.S. MICV and those of the German MARDER and the BMP:

	MICV	MARDER	BMP
Combat weight, pounds	43,000 (production goal)	60,400	30,000.
Range, miles	300–350	372	310.
Armament:			
Turret stabilization	Yes	No	No.
Main cannon	20–25mm rapid fire	20mm rapid fire	[1] 73mm.
Coax machine gun	7.62mm	7.62mm	7.62mm.
Rear cupola machine gun	None	7.62mm	None.
Firing port guns	5.56mm	4 9mm	8 7.62mm.
Missiles	None [2]	None [3]	4-SAGGER.
Anti-tank grenade wpn	None	None	RPG–7.
Crew, number	2	3	3.
Total personnel (less crew)	10	7	8.
Speed, miles per hour:			
Highway	43	43.5	40.
Cross-country	23	17	
Swim	4–6	([4])	4.
Ground pressure, pounds per square inch	6–9	11	11.
Ground clearance, inches	18.4	17.3	15.8.
Estimated unit procurement cost fully equipped (fiscal year 1975 dollars)	240,000	390,000	220,000.

[1] Has automatic loader and 40 rounds of ammunition.
[2] (Deleted.)
[3] Hellebarde anti-tank weapon is under study.
[4] Swim capability, using auxiliary flotation equipment under development.

Chairman McClellan. Compare the Federal Republic of Germany's armored infantry combat vehicle with the proposed MICV. Why wouldn't their vehicle meet U.S. requirements. What is the cost of the German vehicle compared with the MICV?

Answer. A comparison of the MICV with the German MARDER infantry combat vehicle and the Soviet BMP is included in the response to the previous question. The MARDER is an excellent vehicle in many respects, but it is larger, much heavier, and substantially more expensive than MICV. Unlike MICV, it is not amphibious without special flotation equipment nor is it air transportable in the C–141A. The MARDER main armament (RH202 automatic 20mm cannon unstabilized) is less effective than the stabilized BUSHMASTER gun for MICV.

MARDER has a road speed capability similar to MICV, but its off-road mobility is not as good as MICV, particularly on soft terrain, primarily because of MARDER's higher ground pressure. [Deleted.]

Modification of MARDER to eliminate some of the shortcomings with respect to U.S. requirements could be accomplished, but is not considered practical because of the additional weight and cost penalties involved in a vehicle already too heavy and too expensive to meet U.S. requirements.

Anti-Tank Weapons

Chairman McClellan. What is the proposed TO&E number of Dragons and TOWs to be included in our forces throughout the program period (give number

of launchers and number of missiles)? Give a range of estimates for the war reserves and inventory objectives, if specific numbers are not available.

Answer. The total number of TOE TOW launchers and Dragon trackers currently approved by the Department of Defense for the fiscal year 1980 Army and Marine Corps forces are shown below:

Army	[Deleted]
Marine Corps	
Total	

Additional launchers and trackers are required for maintenance float and combat consumption. Total requirements are shown below:

Army	[Deleted]
Marine Corps	
Total	

TOW and Dragon missiles are not provided by TOE; missiles are issued as a round of ammunition. Requirements for missiles are established from estimates of combat consumption. The following table shows inventory objectives for High Explosive Antitank (HEAT) missiles:

Army	[Deleted]
Marine Corps	
Total	

ROLAND II

Chairman MCCLELLAN. On page III–108, you indicated that development of this system has already been completed, and your statement further indicates that the system has performed as specified. What was the cost of research and development to the Germans on ROLAND II? Why will an additional $226 million need to be spent for the U.S. version—what deficiencies does the German version have that are not acceptable to the U.S.?

Answer. The cost for research, development, test and evaluation of the European ROLAND amounts to [deleted] ROLAND I cost is [deleted] and was shared equally by the FRG and the French. The FRG spent another [deleted] to upgrade the ROLAND I to ROLAND II. The U.S. funding for the ROLAND program breaks down to:

	Million
Prime contractor	$168.7
Flight test targets	21.1
Assist contractor	6.1
US/FRG/FR cooperative program	2.9
Government in-house	37.5
Other	1.3
Total	237.6

The prime contractor funds are for the conversion to a U.S. design and the fabrication of test hardware to prove the U.S. produced ROLAND is ready for production. The U.S. design will include a number of changes from the French and German configurations, i.e., U.S. manufactured vehicle, prime power, communications, IFF and environmental control units. Since these items are not peculiar to ROLAND, both the French and Germans use their own vehicles and other items listed above. Flight test targets are needed to more adequately test the system due to France's and Germany's lack of facilities. We have and will continue to meet with the Germans and French to expand our cooperative testing in an effort to reduce our overall test requirements.

[Deleted.]

NAVAL RESERVE SHIP MANNING

Chairman MCCLELLAN. Describe the current and planned program of using Naval Reserve manning for selected surface ships.

Answer. In fiscal year 1976 and fiscal year 1977 we plan to test the concept of manning selected surface combatants (destroyers and frigates) to only 80% of wartime requirements with active personnel. Remaining billets would be filled with Selected Reservists. Such "80/20" ships would remain in the active force but would not conduct routine forward deployments. Under mobilization, we would expect them to be ready for combat more rapidly than our NRF destroyers, which typically are manned at 60 percent active, 40 percent reserve. In a non-

mobilization crisis we could fill the remaining billets with active personnel drawn from the shore establishment.

The potential advantages of the 80/20 concept are that it could lower personnel costs slightly and provide for better utilization of some Selected Reserve personnel. Potential disadvantages are decreased material readiness and availability for deployment, both in peacetime and under crisis conditions. We are testing this concept on five ships in fiscal year 1976 and fiscal year 1977. If it proves successful, we are prepared to expand the program in later years. However, we must insure that we have enough fully active ships to meet the initial requirements of a non-mobilization contingency or a large-scale war, as well as to support routine peacetime deployments.

13TH AIRCRAFT CARRIER

Chairman MCCLELLAN. How long is it estimated that it would take the 13th carrier to outfit and deploy in an emergency with USMC or reserve squadrons of aircraft?

Answer. The 13th carrier would already be equipped to operate the type aircraft with which it would deploy in an emergency. The deployment time constraint factor would therefore involve the carrier landing proficiency of the pilots. In recent years, the heavy forward deployment commitments of our carriers have resulted in only a limited amount of carrier deck training time available for our Navy Reserve and Marine squadrons. Consequently, at the present time it would take at least a week to get these pilots re-qualified in carrier landings and ready to go aboard ship. However, since we do not plan to forward deploy the 13th carrier on a routine basis, it would normally be available as a training deck for our Naval and Marine reserve squadrons. This could increase our overall pilot readiness so that fully qualified and currently proficient Reserve or Marine pilots could be ready for immediate deployment. As a result the 13th carrier (provided it was not undergoing major repair) could be ready to deploy as quickly as portable squadron and personal gear could be loaded aboard, and, dependent upon the ship's location, the aircraft either hoisted or flown aboard. In the past this process has taken less than 48 hours. Consequently, with the increased pilot training it will offer, the 13th carrier would be expected to respond in an emergency with about the same dispatch as most of our other 12 carriers.

CV vs. CVAs

Chairman MCCLELLAN. Compare the aircraft complement of a CVA with the comparable complement of CV—both as to types and numbers. Also compare crew size. When you refer to conversion of a CVA to a CV, is anything involving the ship (as opposed to the actual aircraft complement) involved? Please explain.

Answer. The planned air wing composition for our modern CVAs or CVs could be compared as follows:

	CVA	CV
F-14/F-4	[Deleted]	
A-7		
A-6		
KA-6		
RA-5/RF-8		
E-2		
EA-6		
S-3		
SH-3		

[Deleted.] Essentially, a CV allows the operational commander to vary the carrier aircraft load-out to meet the threat. CVs undertaking Atlantic sea lane protection in the event of a conflict with the Soviet Union would most likely be loaded F-14 and S-3 "heavy", whereas a CV supporting an amphibious assault would probably be A-7 and A-6 "heavy".

The crew size of the planned CV air wing would be 259 men, one S-3 squadron, larger than that for the CVA wing. However, the size of the ship's company would be the same.

The primary alteration to the ship during CV conversion is the installation of the Tactical Support Center, which is essentially a module added to the Combat Information Center for control and post-flight analysis of the airborne ASW systems. Additionally, support equipment for ASW aircraft operations and maintenance is installed and provisions made for handling ASW munitions.

Chairman McCLELLAN. Would you compare the capabilities of the LHA with the capabilities of a modern attack carrier? From a standpoint of projection and "show the flag", what is the real difference?

Answer. The LHA will be 820 feet long and displace over 38,000 tons. It will have a maximum speed around 23 knots. It will be able to go [deleted] nautical miles and remain at sea for 75 days without re-supply. It will have accommodations for over 1,800 combat troops and their equipment. About 28 assault helicopters and between 4 and 8 landing craft will be available to deploy the combat troops forward. These capabilities should allow the LHA to accomplish its stated mission, "to transport and land troops and their essential combat equipment and supplies by means of embarked helicopters, amphibious craft and amphibian vehicles, in amphibious assault".

A modern attack carrier (CVAN–68) is 1,092 feet long and displaces 91,400 tons. Its maximum speed is over [deleted] knots. It could go [deleted] nautical miles at 20 knots, and carries enough stores to remain at sea for 75 days. It can operate the equivalent of 133 A–7 aircraft under sustained combat conditions. It can provide 3,000 tons of aviation strike ordnance and [deleted] gallons of jet fuel without replenishment. These capabilities enable it to accomplish its stated mission, "to support and operate aircraft to engage in attacks on targets afloat and ashore which threaten our use of the sea and to engage in sustained operations in support of other forces".

One of the primary objectives of force presence (showing the flag) is to provide a visible deterrent to a potential enemy. The effect of a weapon system in a a force presence role is therefore, to a large degree, dependent upon the potential enemy's perception of its capability. In some scenarios, the presence of the awesome airborne striking force of an attack carrier may be required. In other scenarios, an amphibious assault by the Marine forces of a LHA could be more threatening to the potential enemy.[1] Thus, dependent upon the scenario, the capability of an LHA could enable it to effectively fulfill a force presence role.

We will continue to closely consider the type of force presence required while planning the forward deployments of our CVs/CVAs and our LHAs.

Chairman McCLELLAN. Compare the capability of a Forrestal class carrier with the proposed new nuclear carriers to be started in 1978. If they have greater capabilities, why is a one-for-one replacement required, especially in view of the phase-in of the LHAs which your statement indicates could provide deployments to forward areas in lieu of a carrier?

Answer. The design of CVNX is still under consideration and we cannot yet specifically compare it with the Forrestal class. [Deleted.] A comparison of the Forrestal and the CVAN–68 class follows:

	Forrestal	CVAN–68
Length (feet)	1,039	1,092
Beam (feet)	252	252
Displacement (tons)	79,250	91,400
Maximum speed (knots)	[Deleted]	[Deleted]
Endurance at 20 KN (NM)	[Deleted]	[Deleted]
Maximum aircraft parking weight (lbs)	70,000	90,000
Hangar deck dimensions (feet)	740 x 101	684 x 108
Personnel accomodations	5,001	6,287
Fresh water:		
Storage (gallons)	250,074	378,500
Daily distillation (gallons)	240,000	400,000
Jet fuel (gallons)	[Deleted]	[Deleted]
Aviation strike ordnance	1,700	3,000
Operational number of aircraft (A–7 equivalents)	123	133

The need for one-for-one replacement of our Forrestal class carriers by the CVNX is due to the wartime operational mode in which we deploy our carriers.

[1] It should be clearly understood, however, that the LHA must depend upon the carrier, and its aircraft, for protection in areas outside of the range of friendly land-based tactical air where an air threat exists.

We believe that in the foreseeable future we will need a force of large-deck carriers from which we can employ high performance fighter and attack aircraft in areas where the enemy threat is expected to be high. In response to increasing threat capabilities, the newer carriers will be somewhat more capable. The same force levels are needed to provide the same geographic coverage.

The substitution of LHAs for CVs/CVAs is primarily applicable to a peacetime, force presence mission. The combat missions of these two weapon systems are substantially different. The CV/CVA could not be expected to accomplish the LHA role (amphibious assault) nor could the LHA fulfill the CV/CVA requirement of providing sea-based TACAIR in a high-threat environment. Since we size and structure our military forces upon expected requirements for combat, the size of our CV/CVA force is not affected by the availability of LHAs for employment in peacetime missions.

Mine Helicopters and Countermeasures

Chairman McClellan. Explain what the $9 million requested in FY 1976 (for mine countermeasures) will do for us. What system will be improved and how?

Answer. The $9 million requested in FY 1976 is for mine countermeasure R&D programs which can be grouped in three basic areas.

Countermeasures Against Deep Moored Mines.—The Advanced Surface Ship Minehunting and Neutralization System is designed to hunt and neutralize mines [deleted]. Fabrication of an experimental sonar subsystem will be 75% completed during the FY 1976 program. This system will be used aboard Navy Ocean Minesweepers (MSOs) and any future surface MCM platforms that will replace our MSOs. The FY 1976 program also includes a request of $0.2 million for completion of technical and operating evaluation of the Double Alpha mine countermeasures system. [Deleted.] This system is designed for use on airborne MCM platforms but can also be used on surface platforms. The FY 1976 request for these two programs totals about $4.2 million.

Improvements in Airborne MCM Capabilities—The fiscal year 1976 program will provide funds to initiate the development of three airborne MCM programs and completion of technical and operating evaluation of a fourth system. One of the programs to be started is development of a Rapid Deployment Moored Sweep which can be placed in operation more rapidly than present systems. This system will reduce crew requirements per helicopter by three and increase the present sweep rate [deleted]. The second new program is the Magnetic Environmental Gear which will be able to monitor magnetic sweeping output and/or survey sweep areas to determine magnetic anomalies prior to sweeping [deleted]. The last two programs are part of an Airborne Minehunting System. The airborne search sonar will complete technical and operating evaluation during fiscal year 1976 and development of a mine neutralization subsystem and design of its aircraft installation will be initiated. [Deleted.] The request for these four airborne MCM programs totals about $3.3 million. Because of the increased reliance which has been placed on airborne MCM, these R&D programs are particularly important.

Submarine and Surface Ship Self Protection System.—[Deleted.] The fiscal year 1976 request for this program is about $0.6 million.

Military Sealift Command Operation of Underway Replenishment Ships

Chairman McClellan. What type of pay scales are the civilian crews on MSC operated UNREP ships paid? Are they commensurate with other civilian manning of commercial ships, or are they closer to naval salaries? Why are these ships operated with a reduced manning level—and how much of a reduced level is involved here?

Answer. The civilians who serve aboard MSC-operated UNREP ships are U.S. Civil Service mariners employed by the Navy. The pay scales of these Civil Service employees are based on prevailing wages for comparable ratings in the U.S. maritime industry as required by Title 5, U.S. Code, Section 5348. The Department of Defense Wage Fixing Authority reviews wage rates in the industry and approves the rates for Civil Service mariners employed by the Navy. While the wages of Civil Service mariners are commensurate with civilians who man commercial ships, there is no direct correlation between the fringe benefits of these two groups. The fringe benefits (vacations, health insurance, retirement, etc.)

for Civil Service mariners are the same granted other Civil Service employees. The fringe benefits for seamen on commercial ships are the results of company and union negotiations.

The program to man some fleet support ships with U.S. Civil Service crews was inaugurated for two basic reasons: (1) it permitted a greater number of highly trained military people to be available for duty upon combatant ships where their skills were needed and (2) it provided an opportunity to reduce the operating costs of a small portion of the force of fleet support ships. The civilian crew and the military communications detachment of MSC-operated UNREP ships represents only about 50 percent of the number of personnel which manned these ships when they were operated by the Navy. These large reductions are possible because these ships have been demilitarized. They are no longer equipped with heavy weapons nor Combat Information Centers, and they no longer perform other purely military functions. Elimination of these military capabilities permitted this 50 percent reduction in crew size. Additional manpower savings are realized by eliminating the personnel pipeline associated with Navy manning.

The reduced military capability of these civilian-manned UNREP ships limits the number of ships in the force which can be so manned. In wartime, a large portion of our UNREP force will be required to operate in a high threat environment where their military capabilities will be vital. Other UNREP ships will be operating in areas of relatively low threat. It is this mix of operating requirements which has provided the opportunity to achieve the economies associated with a mixed force of military and civilian-manned UNREP ships.

F–14

Chairman McClellan. You indicated that some F–14 production will be diverted in order to provide the Iranians with their aircraft prior to full equipage of USN and USMC units. Your statement says that "in view of the economic and foreign policy benefits to be gained by accommodating the Iranians, this delay is considered acceptable". Do you think that, as a general policy matter, it is advisable to delay foreign sales? Why couldn't we just hold procurement for U.S. forces at four per month and let the Iranians buy off the tailend of the production line in order to keep the line open?

Answer. Our planned, fiscally constrained, U.S. F–14A procurement schedule provides for the transition of USN/USMC fighter squadrons to the F–14A at the rate of [deleted] per year from fiscal year 1976–79. This non-disruptive, steady transition rate is necessary because the F–14A/PHOENIX is a sophisticated weapon system that requires careful, detailed training of both aircrews and maintenance personnel to achieve maximum, safe performance. In view of current fiscal pressures, we are structuring modest-sized, but adequate, F–14 training facilities. These facilities are capable of accommodating the initial surge transition of our first 7 squadrons but during fiscal year 1976–79, in addition to initial transitions, these facilities will also be tasked with training replacement aircrews/maintenance personnel for our previously-transitioned squadrons. Hence, we have chosen to introduce the F–14A into our operating force at a pace of [deleted] squadrons per year.

During the fiscal year 1976–80 period our Department of the Navy active fighter force will be structured as follows:

	U.E. aircraft by fiscal year—				
	1976	1977	1978	1979	1980
F–4	336	288	[Deleted]	[Deleted]	[Deleted]
F–14	120	144	[Deleted]	[Deleted]	[Deleted]

This force level will enable us to continuously fully equip our carrier air wings and our Marine air wings, with a minimum amount of disruption which could degrade our readiness.

Since we are able to achieve the desired size, structure and readiness of our fighter force by procuring F–14s at the rate of 3 per month, it appears reasonable that the remaining production capacity be used to accommodate the Iranians in a timely fashion.

Airborne Warning & Control System

Chairman McClellan. You indicate that AWACS force levels depend not only on our requirements but also on whether our allies procure AWACS. Is the 34 aircraft buy based on the assumption that NATO will buy zero AWACS or some other number? Will there be a one-for-one reduction in the U.S. AWACS buy as the Europeans buy AWACS?

Answer. The 34 aircraft AWACS buy is based on an Air Force detailed analysis of AWACS force requirements which assumed the U.S. would provide [deleted] of the aircraft required for NATO coverage. In more recent discussions with NATO it has been suggested that the U.S. might provide [deleted] of the aircraft required. Because the U.S. would only assume part of the total NATO coverage there will be less than a one-for-one reduction in the U.S. AWACS buy as the Europeans buy AWACS. Our total buy objective depends on the outcome of the current NATO discussions. We expect that these discussions will address the size of the NATO AWACS force, the cost sharing arrangements among our NATO partners and the operational concept of how much coverage should be provided, and by whom.

Short Range Air—Air Missile SRAAM

Chairman McClellan. What is the price goal of the SRAAM, and what kind of large quantities for production are now envisioned?

Answer. We need a standard dogfight missile that costs less than the AIM-9H now in production, which during fiscal year 1976 cost about $24 thousand each for an 800 missile buy. We envision the SRAAM being procured in quantities varying from 5,000 to 10,000 over a seven to ten year period.

Aircraft Shelters

Chairman McClellan. Provide an estimate of the number of aircraft to be deployed to Europe in the event of a NATO war, along with an analysis showing the number of aircraft for which shelters are now available and/or planned, and for what year they will become available.

Answer. [Deleted.]

Civil Reserve Air Fleet

(CRAF)

Chairman McClellan. Describe the conditions under which the CRAF would be activated, and explain the statutory way in which this could be accomplished.

Answer. The CRAF program has three stages. The stage that would be activated depends on the amount of civil augmentation airlift required. Stage I can be activated by the Commander, Military Airlift Command, if in his judgment he needs to expand our peacetime military airlift. Stage II would be available in time of an airlift emergency, as determined by the Secretary of Defense. Stage III could be activated in time of a National Emergency as determined by the President.

Contracting procedures for maintaining a mobilization posture are authorized in 10 USC 2304A16. The contract signed by civil carriers performing peacetime airlift for the DoD contains provisions for the activation of the three stages and aircraft are voluntarily committed by tail number. There are a few carriers who do not regularly participate in DoD peacetime business, yet voluntarily sign a yearly contractual commitment for participation in Stage III.

Airlift Cost

Chairman McClellan. Would you provide a breakout of the $1.5 billion required for the various airlift improvements programs.

Answer. The $1.5 billion represents the estimated total investment cost of our proposed airlift improvement programs. This figure consists of approximately $660 million for the C–141 stretch modification about $800 million to modify existing wide-bodied civilian passenger aircraft to a convertible, passenger-cargo configuration, and about $36 million to procure additional war reserve spare parts needed to support the higher planned wartime utilization rates of our C–5 and C–141 aircraft.

Chairman McClellan. What is the estimated compensation per aircraft, over the ten years after conversion, that the DoD would pay to CRAF modified aircraft owners?

Answer. Currently 90 B–747 aircraft have been offered to the DoD for modification, at a total cost of approximately $620 million. Of this approximately $320 million is for payments to the carrier for their increased operating expenses resulting from the modification. This averages out to about $3.5 million per aircraft over a ten year period.

HEAVY LIFT HELICOPTER

Chairman MCCLELLAN. If Congress directed that all efforts on HLH be terminated immediately, what would be the termination costs to the government?

Answer. The present sunk cost on the HLH program is [deleted]. If Congress directed that all efforts on HLH be terminated immediately, the resulting termination cost is estimated by the Department to amount to [deleted].

INTERNATIONAL MILITARY HEADQUARTERS

Chairman MCCLELLAN. Please summarize fiscal year 1976 cost for each international headquarters. For each, show the number of military and civilan personnel assigned.

Answer. The detailed information requested on international military headquarters is presently being assembled and will be forwarded to the Committee in the near future.

OVERSEAS TRAINING TRAVEL OF RESERVES

Chairman MCCLELLAN. Would you describe briefly your proposed policy with regard to overseas training travel of the reserves. Provide a detailed list of all overseas training missions to be undertaken each fiscal year.

Answer. The Department of Defense has developed a policy of placing increased emphasis on overseas training of Reserve Component (RC) units and individuals to improve the readiness of units to respond to mobilization. This training includes participation in JCS-directed and joint exercises, training in areas of possible deployments, specialized environmental training in established active force training centers, and "Hands on" training in the maintenance and construction fields under the direct supervision of the Active Force. In addition, all services have members of the Selected Reserve who reside in Alaska, Hawaii, Puerto Rico and the Canal Zone and who require formal active service school training in the continental United States to maintain their units' mobilization readiness. These individuals will be authorized to continue to attend such training in fiscal year 1976.

A description of the types of overseas training we propose in fiscal year 1976 follows:

READINESS TRAINING IN THEATER

Strategic intelligence research and analysis training in support of contingency requirements for Europe and Hawaii.

Cold weather operations at the Northern Warfare Training Center, Fort Greeley, Alaska and jungle operations at the Jungle Operations Training Center, Panama.

Anti-submarine and transport aircraft operations and fleet exercises with the active Navy in Europe and the 6th fleet in the Mediterranean Sea.

Refresher operational training at sea conducted at Guantanamo Bay, Cuba.

Amphibious training and air/ground operations training to be conducted at Vieques Island, Puerto Rico.

Area orientation and in-country language training for Special Forces Operational Detachments.

Aerial Port squadrons, PRIME BEEF Engineering, Electronic Installations, and Communications-Electronic-Meteorological (CEM) teams in theater.

Medical training in overseas Army hospitals.

Aerial refueling training in Europe.

MILITARY EXERCISES

Participation in JCS directed and other military exercises.

Required mobilization training for Navy Harbor Clearance Units through participation in Pacific Fleet Naval Control of Shipping exercises.

Amphibious, ground and air operations for Navy and Marine Corps units in the Caribbean Sea and in Europe.

Special Forces Operational Detachments (USAR) in Field Exercise Training "Alpine Friendship" in EUCOM.

The training outlined above will be continued throughout FY 1977 and subsequent years. The Department of Defense and the Services will tailor overseas training to provide exposure for the maximum number of Guard and Reserve Units consistent with their planned contingency and mobilization requirements.

Troop Strenth Overseas

Chairman McClellan. What specific cuts are proposed in overseas troop strength in fiscal year 1976, and where?

Answer. The following table shows planned manpower deployments ashore and afloat outside the 50 states for end of fiscal year 1975 and fiscal year 1976 as given in the fiscal year 1976 President's Budget.

	Fiscal year—		
	1975	1976	Change
Western Europe and related areas Western Pacific (Korea included In West Pacific) Southeast Asia Other foreign countries Territories and possessions Total	[Deleted]		

The table shows an overall reduction of about 10,000 spaces. This results principally from planned reductions in [deleted]. There is a small increase in Korea which is more than offset by reduction elsewhere in the Western Pacific [deleted].

The end fiscal year 1975 manpower in Western Europe and Related areas is several thousand below our normal programmed strength for that area. This temporary deviation has occurred during the reorganization of our European forces which includes the reduction of a significant number of support forces with replacement by combat forces. The increase of approximately 2,000 men from fiscal year 1975 to fiscal year 1976 reflects the return to our normal European manpower level.

Fully Funded Graduate Education

Chairman McClellan. Provide a break down by service of the 3,298 officers receiving fully-funded graduate education. Also provide the specific cost by appropriation of these education programs.

Answer. Fully-funded graduate education officer student loads and cost, by appropriation, by Service for fiscal year 1976 follows.

[In millions of dollars]

Service	Student load	Cost	
		O. & M.	Milpers
Army	899	$3.15	$17.55
Navy	1,049	8.55	22.3
Marine Corps	50	.020	1.034
Air Force	1,300	4.6	27.8
DOD	3,298	16.32	68.68
Total cost		85.00	

Labor Productivity

Chairman McClellan. Provide some of the results regarding productivity that have come from measurement activities. Overall what has been the increase in labor productivity in the Department (or at least on those areas where it is being measured)?

Answer. During fiscal year 1974, almost 360 thousand civilian employees (more than 34 percent of the civilian workforce) were covered in the DOD Productivity Enhancement and Evaluation Program. The Department's productivity evaluation for fiscal year 1974 also included more than 160 thousand military personnel assigned to support functions and 25 thousand employees in Army government-owned, contractor-operated facilities. The Department's goal for fiscal year 1975 is to have productivity evaluation coverage of at least 50 percent of the workforce.

The DoD has achieved an 11.4 percent labor productivity growth since fiscal year 1967 (the base year used in computing productivity indices for the Federal sector) in the areas covered by productivity evaluation. A substantial part of this gain (9.9 percent) was achieved by the end of fiscal year 1969. Since that time, Defense has been able to achieve a labor productivity increase of 1.5 percent in spite of the personnel turbulence caused by a decline in workload of almost 30 percent in the measured areas.

Productivity indicies, in terms of output per manyear, disclose trends on a consistent basis between different periods of time and provide an overall assessment of actions affecting labor productivity such as; (1) investments in labor-saving equipment; (2) changes in organizations, systems, work processes and employee skills; (3) personnel motivation and effort; and (4) quality changes. They disclose changes in trends and can be used to identify areas in need of aggressive management attention.

Aircraft Support Costs

Chairman McClellan. Provide comparative life cycle data on fighter, attack, and transport aircraft support costs that has been obtained through your efforts to improve identification of support costs of aircraft systems.

Answer. Comparative data on aircraft support costs has not yet been collected. The DoD Visibility and Management of Support Costs Group established to address this problem has provided the Services with broad guidelines for operating and support cost reporting (the CAIG O&S Cost Guide), and has asked each Service to demonstrate its current capabilities to generate operating and support costs for aircraft, using existing data systems.

The OSD is now beginning to evaluate the Services input, all of which are due March 31, 1975. In the next few months a decision will be reached on specific formats and data content for further collection of O&S costs. Additionally, efforts will be made during calendar year 1975 to establish cost definitions and to sponsor sample data collections for other types of weapon systems.

Recovering Utility Costs

Chairman McClellan. In its report on Unrecovered Costs for Utility Services furnished to non-appropriated fund and non-government activities (February 7, 1975), the General Accounting Office pointed out the need for a uniform policy of charges and revisions to Defense Department Directives. What revisions are now planned in directives, and when will the new directive be finalized: Will the Navy be directed to charge the non-appropriated fund activities for refuse collection and disposal services, as well as sewage charges?

Answer. A revised DoD Directive 1330.2, "Funding of Morale, Recreation, Welfare and Religious Programs," has been drafted and is being evaluated by the OSD staff. However, additional information is required to complete the evaluation, and as soon as it is gathered we will be in a position to finalize the directive. This ought to occur within six months.

In regard to the GAO recommendation concerning the reimbursement for utility services by Navy non-appropriated fund activities, we expect to receive the Navy's comments on the report by mid March. Assuming there are no peculiarities to their operations, we ought to ensure consistency among the services, and the Navy would be expected to recover the appropriate cost for refuse and sewage disposal services as indicated in the report.

Jackson–Nunn Amendment

Chairman McClellan. Provide a fiscal year-by-year analysis of the specific offsets being used to meet the conditions of the Jackson-Nunn Amendment

(section 812, Public Law 93-155). Explain the dollar value of each type of offset, i.e., military sales, interest income. Also provide the estimated balance of payments deficit in fiscal year 1975 and 1976.

Answer. Section 812 required the Allies to offset all NATO-related US defense balance of payments expenditures in Europe occurring during fiscal year 1974. The Commerce Department, in consultation with the Department of Defense and the General Accounting Office, subsequently determined that those expenditures totalled $1.983 billion. The Allies have successfully covered the $1.983 billion in fiscal year 1974 as follows:

A. One-half (fiscal year 1974) portion of the fiscal year 1974–75 U.S. FRG offset agreement:

	Millions
Procurement of U.S.-Mil equipment	$515
Troop facilities rehabilitation	112
Real estate taxes and airport fees	4
Uranium enrichment services	37
Research and Development projects	18
USG securities	[1] 421
Total	[2] 1,109

[1] The interest foregone by the FRG in fiscal year 1974 for outstanding securities, $55 million.

[2] Does not add due to rounding.

B. Other European Allied purchases in fiscal year 74 (estimated), $1,050.

We estimate the US NATO-related defense BOP expenditures in Europe will be about the same in fiscal year 1975 as in fiscal year 1974, i.e., $2 billion.

NATO-related DOD expenditures in fiscal year 1976 are expected to be slightly higher than the $2 billion fiscal year 1975 estimate.

U.S./Soviet Counterforce Capability

Chairman McClellan. In a recent article written by Representative Robert Leggett, the question of U.S. vs. Soviet counterforce capability is discussed, and the author makes the point that this country now enjoys a significant advantage in counterforce capability and should actually increase it over the next few years.

In this connection, the article will be placed in the record at this point.

(The information follows:)

Two Legs Do Not a Centipede Make

(By Representative Robert L. Leggett (D-CA)

Sometimes people try to make things simpler than they really are. Dr. James E. Dornan, Jr., writing in January AFJ is one of these.

In opposing the Vladivostak arms limitation agreement, Dornan claims that it leaves the Soviet Union with an unacceptable advantage in counterforce capability. He states, "the Soviets will possess a substantial and highly visible counterforce-capable striking force able to threaten U.S. land-based missiles, and the United States will not possess a similar capability . . . It remains uncertain in the extreme . . . whether the United States will ever come close to matching the Soviets in these areas . . . (Vladivostok) permits—in fact, virtually guarantees—Soviet superority in numbers of MIRVed warheads ond land-based missiles. Moreover, these warheads will be larger than their U.S. counterparts, and thus more counterforce-effective."

Let us consider whether the claim of Soviet counterforce superiority can survive closer examination.

Counterforce Capability Is More Than 3½ Times That of the Soviet Union

The ability of a missile force to destroy a set of hard-point targets such as ICBM silos is dependent on myriad factors. Among other things, hard-point (counterforce) kill capability is—

(1) Proportional to the square of accuracy. That is, doubling accuracy increases counterforce capability four-fold.

(2) Directly proportional to the numbers of warheads. That is, doubling the numbers of warheads, all other things remaining equal, will double the counterforce capability.

(3) Proportional to the ⅔ power of yield. That is, increasing megatonnage by a factor of eight will increase counterforce capability only four times.

Note that accuracy is by far the most important factor; it is as important as the *cube* of megatonnage. I was astounded, therefore, to find Dr. Dornan make no mention whatever of the marked U.S superiority in accuracy, but to base his claims solely on the much less significant factors of numbers of missiles and warheads, yield, and throw-weight. (The latter is a very rough measure of potential total yield and numbers of warheads.)

True silo-killing capability simply cannot be determined from yield and numbers alone. Rather, it is expressed as a factor, "K", which in a simplified form is derived by taking the ⅔ power of the yield, dividing by the square of the accuracy, and multiplying by the number of warheads.

Let us now compare the present-program U.S and USSR missile forces in terms of total silo-killing power. I have synthesized the following accuracy and yield figures from a number of unclassified sources; when there was disagreement between the sources, I have leaned toward maximizing Soviet capability and minimizing U.S. capability (see Table I).

TABLE 1.—PRESENT PROGRAMS

Missile	Yield, megatons		Accuracy (nautical miles)	Warheads		Number of missiles	K	
	Per warhead	Total		Per missile	Total		Per missile	Total
UNITED STATES								
Minuteman III	0.17	280	0.2	3	1,650	550	22.1	12,127
Minuteman II	1	450	.3	1	450	450	11.1	5,000
Titan	5	270	.5	1	54	54	11.7	631
Poseidon	.04	198	.3	10	4,960	496	12.8	6,393
Polaris A-3	.6	96	.7	1	160	160	1.5	240
U.S. total		1,294			7,274	1,710		24,391
UNION SOVIET SOCIALIST REPUBLICS								
SS-9	25	7,200	.7	1	288	288	17.4	5,011
SS-11	1	1,010	1	1	1,010	1,010	1.0	1,010
SS-13	1	60	.7	1	60	60	2.0	120
SS-8	5	545	1.5	1	109	109	1.3	142
SS-7	5	500	2	1	100	100	.7	70
SS-N-6	1	528	1.5	1	528	528	.4	211
SS-N-8	1	180	.8	1	180	180	1.6	288
U.S.S.R. total		10,023			2,275	2,275		6,852

The right-hand column of Table I shows that, when accuracy is considered, our counterforce capability is more than 3⅓ times that of the Soviet Union, and a Minuteman III is more effective (more K per missile) than the SS–9. This may come as a surprise to some readers. I know it will come as a surprise to most of my Congressional colleagues when I raise the point in this year's debate on military procurement.

For years, DoD has presented to Congress and to the public innumerable comparisons of U.S. vs. Soviet missile capability. We have seen comparisons of megatonnage, with the Soviets always far ahead. We have seen comparisons of numbers of ICBM's, with the Soviets coming from behind and forging ahead. And there is always the chart which compares silhouettes of U.S. vs. Soviet ICBM's, with Minuteman looking like a toothpick and SS–9 looking like a cathedral. I call this the "awning" school of strategic thought, since its adherents evidently believe a missile's potential is a function of the number of people it can shade at a picnic.

But we can look in vain for comparisons of total warheads, of accuracy or of total K, in which the U.S. has a substantial lead. If we visualize counterforce capability as a centipede, DoD and Dr. Dornan have attempted to show us two legs—numbers of weapons and yield—and asked us to believe we have seen the whole creature.

If anyone doubts there has been an explicit Pentagon policy of presenting only the alarming news, he has only to watch future pronouncements of total numbers of warheads. In the past, when the Soviets had no MIRV, and we had a massive lead in numbers of warheads, this index seemed to be a forbidden subject among DoD briefers. But now that the Soviets have a MIRV and their throw-weight gives them a potential warhead advantage, we can be sure we will find future warhead comparisons sperading like oil wells in Kuwait. And, we can be equally sure that accuracy and K comparisons will continue to be conspicuous by ther absence from DoD public statements.

94TH CONGRESS WILL WANT TO KNOW ABOUT THE WHOLE CENTIPEDE

While this kind of nonsense has worked well in the past, I hope DoD will recognize that times are changing. The 94th Congress is going to want to know about the whole centipede.

Now let us consider the generation of Soviet missiles we can expect to be deployed in the early 1980s. The SS–9 is expected to be replaced by the SS–18; according to Secretary of Defense James R. Schlesinger, the replacement will have 30% more throw-weight (this emerges as "half again as large" in Dr. Dornan's article). Similarly, the SS–19 is predicted by DoD to have 3–5 times the throw-weight of the SS–11 (also similarly, this emerges as "six times" in Dr. Dornan's article). Let us assume that the Soviets fill all 313 of their large holes with MIRV SS–18s, that they replace all SS–11s with MIRV SS–19s up to the Vladivostok 1320-MRIV limit, and that they continue to progress in accuracy technology as they have in the past.

Since it exaggerates the Soviet missile threat, let us accept the scenario feared by Dr. Dornan and assume the Soviets fill their non-MIRV quota of 1080 vehicles exclusively with missiles. Let us assume the SS–7s and SS–N–6s are phased out, the SS–8s and SS–13s retained without improvement as countervalue weapons, and the remainder of the Vladivostok quota filled SS–N–8s. By thus confining MIRV to large-throw-weight land-based missiles, the Soviet counterforce threat is further optimized although at the expense of some second-strike deterrence.

In this same time frame, it is planned that the U.S. will fully deploy the warhead improvements now well along in development. These include doubling yield without increasing warhead weight, increasing accuracy with everything short of a terminal-homing MARV, deployment of 12 Trident ships including perhaps 6 equipped with the Trident II a missile (which I tentatively assume to have twice the number of warheads of Poseidon) and full replacement of Poseidon missiles by Trident I. Let us assume that we do not deploy new ICBM launchers, and that Polaris, Titan, and Minuteman II are retained without improvement as countervalue weapons (see Table II).

TABLE II.—EARLY 1980's

Missile	Yield megatons		Accuracy (nautical miles)	Warheads		Number of missiles	K	
	Per warhead	Total		Per missile	Total		Per missile	Total
UNITED STATES								
Minuteman III	0.35	578	0.1	3	1,650	550	148.0	81,675
Minuteman II	1	450	.3	1	450	450	11.1	5,000
Titan	5	270	.5	1	54	54	11.7	631
Trident II	.08	230	.18	20	2,880	144	114.0	16,416
Trident I	.08	499	.18	10	6,240	624	57.0	35,568
Polaris A–3	.6	96	.7	1	160	160	1.5	240
U.S. total		2,123			11,434	2,095		139,480
UNION OF SOVIET SOCIALIST REPUBLICS								
SS–18	1	1,878	.3	6	1,876	313	66.0	20,658
SS–19	.2	1,208	.3	6	6,042	1,007	23.0	22,825
SS–13	1	60	.7	1	60	60	2.0	120
SS–8	5	545	1.5	1	109	109	.4	142
SS–N–8	1	910	.5	1	910	910	4.0	3,640
U.S.S.R. total		4,601			8,998	2,399		47,385

Here we find, as Dr. Dornan predicted, that the Soviets are ahead of us in numbers of MIRVed warheads on landbased missiles." In fact they are ahead

by nearly 5 to 1. Trivia enthusiasts will also note that the Soviets retain their yield in megatons, although it is reduced from 8-to-1 down to 2-to-1.

But look at the right-hand column. Our counterforce capability is still three times that of the Soviet Union. And the improved Minuteman III is a more potent silo-killer than SS–18.

Now let us consider the strategic balance of the late 1980s. Predictions this far in advance involve a good deal of supposition and conjecture. But it is possible to make projections which, while they may be mistaken in detail (e.g., we have no way of knowing to what extent the Soviets will take their MIRV under water) will be reasonably accurate in terms of overall trends (e.g., the degree of missile accuracy U.S.S.R. and U.S. technology will permit).

Let us give Soviet technology credit it almost certainly will not deserve, and assume that by the late 1980s the U.S.S.R. can deploy yield and accuracy improvements comparable to those we deploy in the early 1980s. And let us assume the non-MIRV weapons are maintained unimproved for counter-value.

Silhouette Comparison of Minuteman and SS–9

By this time, the U.S. will be able to deploy terminal-homing MaRV. This will improve ICBM accuracy by a factor of 5 (equivalent to increasing yield 125 times), and will improve SLBM accuracy by a factor of approximately 9 (equivalent to increasing yield more than 700 times). The MaRV mechanism, however, requires a yield reduction if throw-weight and MIRV multiplicity are unchanged. (I estimate this very roughly in the absence of authoritative published information.) All 12 Trident ships will be fitted with Trident II missiles. The 10 Polaris ships, which will be well over 25 years old, will be retired. One Poseidon/Trident I ship will also have to be retired to keep below the 1320-MIRV Vladivostok limit (see Table III).

TABLE III.—LATE 1980s

Missile	Yield megatons		Accuracy (nautical miles)	Warheads		Number of missiles	K	
	Per warhead	Total		Per missile	Total		Per missile	Total
UNITED STATES								
Minute men III	0.25	412	0.02	3	1,650	550	2,205.0	1,212,750
Minuteman II	1	450	.3	1	450	450	11.1	5,000
Titan	5	270	.5	1	54	54	11.7	631
Trident II	.06	345	.02	20	5,760	288	6,500.0	1,822,000
Trident I	.06	288	.02	10	4,800	480	3,250.0	1,560,000
U.S. total		1,765			12,714	1,822		4,650,381
UNION OF SOVIET SOCIALIST REPUBLICS								
SS–18	2	3,756	.1	6	1,878	313	948.0	296,724
SS–19	.4	2,417	.1	6	6,042	1,007	324.0	326,268
SS–13	1	60	.7	1	60	60	2.0	120
SS–8	5	545	1.5	1	109	109	.4	142
SS–N–8	1	910	.5	1	910	910	4.0	3,640
U.S.S.R. total		7,678			8,999	2,399		626,894

Here we find that, although the megaton gap has increased to 4-to-1 in favor of the Soviets, the counterforce gap has increased to 7-to-1 in our favor. And while Minuteman III may cast a small shadow, its K is 2205: more than twice the SS–18's 948.

A complete discussion of counterforce, which is not possible in the space available here, would also have to consider factors such as missile unavailability and unreliability, warhead fracricide, and command-and-control problems—the balance of which would degrade Soviet counterforce far more than they would U.S. counterforce. It would deal with the question of how much total K is *required* for an effective counterforce attack. And it would discuss the dubious military and diplomatic utility of threatening the other fellow's ICBMs when he can still flatten you with his SLBMs and manned bombers.

My hope in writing this article is that, by demonstrating how consideration of a single additional parameter can reverse the entire picture, I may encourage those who publicly dicuss counterforce and arms control to do so in less superficial manner than has prevailed in the past.

Chairman McClellan. Would the Department comment on the following questions relative to this article:

a. What is the validity of the "K" factor discussed as a determinant of total counterforce capability? If this factor, as described in the article, is not an adequate determinant of the counterforce capability, what measure does the Department use? Regardless of the particular measure by the Department, provide a table showing relative counterforce capability, U.S. vs USSR in 1975 and projected for 1980.

b. What is the validity of the accuracy estimates for U.S. and USSR missiles used in the article? Has the author made reasonable assumptions with regard to both the U.S. and USSR technological developments that will enhance accuracy?

c. Are the U.S. and Soviet force levels commensurate with what is included in the Five Year Defense Plan and the projected Soviet Force levels under the Vladivostok agreements?

d. Other general comments the Department wishes to make regarding the article.

Answer. a. The "K" factor discussed in Congressman Leggett's article can be used to show the relative importance of some of the key parameters in the counterforce problem; however, it cannot be accurately extrapolated to the point where it is used as a determinant of the hard target counterforce capability of missile forces. Using it as a determinant of force capability neglects some very key aspects of the counterforce problem as follows:

(1) Because of the spacing between ICBM silos (5–10 nm) one RV can destroy, at most, one silo. The "K" factor as used in Congressman Leggett's article implies differently. For example, on page 2 of the article, there is a discussion of the "K" factor of a MM–III vs. the "K" factor of an SS–18: "And while Minuteman III may cast a small shadow, its "K" is 2205, more than twice the SS–18's 948". This implies that MM–III has a substantially better hard target kill capability than the SS–18. However, using the Congressman's assumptions of accuracy, yield, and number of RVs, the U.S. would have high confidence that a reliable MM–III could destroy three Soviet silos whereas the Soviets would have high confidence that a reliable SS–18 could destroy six Minuteman silos. It's not the "K" factor that destroys silos, it's the number of good warheads. A "K" factor of 2205 for a single MM–III has no meaning whatsoever in this regard.

(2) Because of the interference effect (known as fratricide) between RVs attacking the same target or nearby targets, the number of RVs which can effectively be targeted against an individual silo or group of silos is limited. In our calculations, we restrict the number of RVs targeted per silo [deleted] because of the fratricide effect. The impact of this effect, therefore, is to place high priority on a substantial single shot probability of kill (SSPK). A high SSPK against a hardened ICBM silo requires high accuracy, reliability, and yield. The large throw-weight advantage enjoyed by the Soviets provides a greater opportunity for incorporation of the yield and accuracy improvements required to enhance the hard target kill capability of an ICBM force.

(3) The "K" factor ignores the hardness of the silo and consequently implies that the counterforce capability of a missile force is independent of the hardness of the target it is to attack. In fact, the counterforce capability is a strong function of the target hardness.

The Department measures the counterforce capabiliy of U.S. and Soviet missile forces by calculating the number of silos that would be expected to be destroyed using a realistic attack scenario which considers: number of RVs, yield, accuracy, fratricide, reliability, silo spacing and silo hardness.

The following chart depicts present and projected counterforce capabilities of Soviet and U.S. ICBM forces assuming a first-strike attack for each side.

[Deleted.]

c. The force levels shown for the present time period are accurate. The early- and late-1980s forces have many inaccuracies; those shown for the Soviet Union do not agree well with our intelligence projections.

d. The author has oversimplified the counter-force problem and, in so doing, has arrived at erroneous conclusions. Applying the realistic constraints inherent in a counterforce attack reveals that the large throw-weight advantage the Soviet ICBM force enjoys over the U.S. Minuteman force provides the Soviets a far greater opportunity to improve their hard target kill capability by deploying a large number of high yield and highly accurate MIRVs.

Currently, neither side has a capability to destroy a large fraction of the other side's silos in a preemptive strike. However, the Soviet Union has already begun what appears to be a very substantial deployment of ICBMs—and each model has a significantly greater capability than its predecessor. This initial deployment will significantly increase Soviet capability to attack hard targets. Continued deployment of this new ICBM force with improved accuracies and increased yields will give the Soviets the capability to threaten the survivability of a large fraction of the Minuteman force. To deter limited strategic nuclear attacks as well as to urge restraint in Soviet ICBM deployments, we plan to make modest improvements in the Minuteman force which we hope will deter the Soviets from exploiting their throw-weight advantage.

British Contribution to NATO

Chairman McClellan. It has been reported that Roy Mason, the British Defense Minister, in announcing the cutbacks in the defense budget, indicated that "the Royal Navy's planned number of frigates, destroyers and mine countermeasures vessels would be reduced by about a seventh; of conventional submarines by a quarter and of afloat support by a third." What will the impact of this reduction have on NATO's ability to protect sea lines of communication?

Answer. The planned changes in the British naval force level are due to the British decision to concentrate their defense effort on central Europe, the Eastern Atlantic and the home islands, and to abandon their major contributions east of Suez and in the Mediterranean. The reduction of [deleted] major escort ships by 1980 will be accomplished by retiring aging, less capable vessels. Reductions in the Atlantic fleet will probably be compensated by shifting ships from the Mediterranean to the Atlantic. Therefore, NATO's capabilities to protect the Atlantic line of communication should not be affected. But, the withdrawal from the Mediterranean will ultimately reduce the number of NATO major surface combatants available in that area [deleted].

The reduction of the British conventional submarine force [deleted] is expected to decrease the size of that force [deleted] by 1978. This reduction will be partially compensated for by the addition of [deleted] new nuclear attack submarines to the fleet [deleted]. Because these vessels are more capable than conventional submarines, the diesel submarine reduction will not impact significantly on NATO's current capabilities, [deleted].

The British will retire mine countermeasures vessels [deleted]. While these reductions will not directly affect NATO's ability to keep sea lines of communications open, the number of mine countermeasures vessels available to sweep English ports, in the event that they are mined, will be lower.

Chairman McClellan. Do you not consider that such a reduction represents a visible lessening of the British resolve to provide tangible support to NATO? Will the U.S. make up any deficit in seapower resulting from this cutback?

Answer. The British have made it absolutely clear that NATO remains the linchpin of their security and the first and overriding charge on their defense resources. In adjusting British force levels and deployments to match the resources available for defense, the British Government will reduce its commitments outside of Europe and concentrate its general purpose forces in those areas of NATO where its security interests primarily lie. These areas are the Central Region, the eastern Atlantic and Channel, and the UK and its immediate approaches. By so concentrating its forces, the UK will, in some instances, actually strengthen its forces committed to these more limited areas.

There are no plans for the US to make up for reductions in British seapower.

Payment of Per Diem to Military and Civilian Personnel

Chairman McClellan. In a recent report to you dated December 13, 1974 (B–163126), the General Accounting Office recommended that you adopt a per diem policy covering temporary duty travel that reimburses military and civilian employees equally under the same travel conditions and that such reimbursement closely match expenses incurred. What actions have been taken with respect to making the two systems comparable and eliminating the GAO's findings that there were overpayments being made to military personnel?

Answer. A reply to GAO is currently being staffed which concurs in the recommendation that the Department of Defense adopt the average lodging cost method

for administering per diem payments to military personnel on temporary duty. The Joint Travel Regulations are being revised to establish the average lodging cost method in conjunction with a legislative proposal to increase the statutory limit on per diem to $35 effective July 1, 1975. Should the new per diem rate not be enacted by July 1, 1975, we intend to continue our efforts to establish the average lodging cost method for military personnel. We are also working with the General Services Administration to fix a realistic commuted food and incidentals rate for both military and civilians to serve as a base for per diem payments under the average lodging cost method.

State Income Taxes

Chairman McClellan. How much does the Department estimate is lost each year through the failure of military personnel to pay state income taxes? How many personnel in the military are estimated to pay no state income taxes at all?

Answer. The Department has no basis on which to estimate the loss in state revenue due to the probable failure of some military members to file state income tax returns. Likewise, we have no basis for estimating the number of military members who pay no state income taxes at all. It should be noted that seven states do not impose individual income taxes on residents. Twelve of the 43 states that do impose such taxes either exclude military pay from taxation or generally do not impose a tax on those who maintain no permanent place of abode within the state or maintain such residence elsewhere and do not reside in the state for specified periods during the tax year. Numerous other states with income tax laws have unique provisions that exclude all or part of military pay under various conditions. These are factors that would greatly complicate determining just the number of members subject to state income taxation and the number who aren't.

By law, the Secretary of the Treasury may not enter into agreement with any state for the withholding of state income tax from military pay. State income tax returns are thus a matter between the individual member and the state claimed as his legal domicile. Nevertheless, this Department makes every effort to apprise all of our military members of their rights and obligations with respect to state and local tax laws through numerous internal publications and other information channels. This is done as a continuing information and education effort. Further, since 1963 the military services have been annually furnishing copies of Individual Wage and Tax Statements (IRS Forms W–2) to the states which military members serving in the United States have indicated as their legal residence for tax purposes. Generally, the degree of follow-up by the states, based on these submissions, is believed to be minimal.

The states should, as a minimum, match the W–2's received against the tax returns submitted and initiate follow-up procedures in the event of missing tax returns. After these actions, the Military Departments would then be able to assist in locating any delinquent taxpayers and offer counseling service to these members on their responsibilities.

Chairman McClellan. What prevents the Defense Department from withholding state income taxes on payroll amounts for individuals whose "Home of Record" state has an income tax and a withholding law?

Answer. Under provisions of 5 U.S.C. 5517, the Secretary of the Treasury shall enter into an agreement requested by any state which has income tax and withholding provisions so as to require the head of each Federal agency to comply with the state withholding statute with respect to employees who are subject to the tax and whose regular place of Federal employment is within the state with which the agreement is made. The statute states that such agreement may not apply to pay for service as a member of the armed forces. In deliberations on the bill which was to result in this statute, the House Ways and Means Committee indicated in its report that "The bill, as reported, does not authorize withholding with respect to compensation for service as a member of the Armed Forces of the United States. Your committee believes that to extend the authorization contained in this bill into this area would create serious administrative problems in view of the fact that service in the Armed Forces may frequently be of a temporary nature or may be transient in character." In 1952, when this law was enacted, there were 34 states which had some type of income tax laws, nine of which exempted military members from any tax obligation and about 10 others which exempted some portion of military pay from taxation. Today there are 43 states

with income tax laws, the majority of which have special provisions for those serving in the military.

The "home of record," referred to in the question, does not necessarily represent a member's legal domicile for purposes of state income taxation. Many careerists claim as their legal residence or domicile a state other than the one from which they entered into active duty. The legal domicile or residence declared and claimed by the member is not challenged. Legal domicile is often defined as that place where a man has his true, fixed and permanent home and principal establishment, and to which whenever he is absent he has the intention of returning. The existence of the requisite intent of returning must be judged circumstantially. Some of the clearest indications of this are voting registration, voting, licensing a motor vehicle, owning real property and payment of personal property and income taxes. These indicators, while known to the states, are not reflected in military personnel records.

We are not currently in a position, therefore, to either challenge or verify a member's declaration of legal residence or domicile for purposes of taxation. Further, any attempt by the Services to adjudicate in such matters could possibly be challenged on legal grounds.

Chairman McCLELLAN. What are the operational problems of withholding income taxes based on simple directions to be provided to the military disbursing centers from state tax agencies? Are the computerized pay systems now in effect in the military sufficient to withhold state income taxes? What does the Department estimate the increased costs of such withholding to amount to in fiscal year 1976?

Answer. One of the first problems might well be a requirement to verify whether the legal residence or domicile claimed by each military member is legally and technically correct. To adjudicate in such matters would probably require statutory authority and would represent a major undertaking by both the Services and the individual states.

Unfortunately, there are 29 variant sets of withholding tax regulations among the states that have income tax laws applicable to members of the military. For some states, withholding is based on tables; for some, it is based on a percentage of gross pay; and for others, it is based on a percentage of Federal income tax withheld. The percentage and table break points vary greatly from state to state as do exemptions by reason of service in the military. Further, marital status and number of exemptions for dependents have different effects in each state. These are but a few factors which would complicate withholding for state income taxes.

Frequent changes in state tax law provisions would have to be monitored and maintained current, and for many individual reassignments it would require reexamination of the rate of tax. Further, withholding for state income taxes would require major redesign and reprogramming efforts with respect to computerized pay systems of the Services. The Navy, having unique problems with regard to those serving on sea duty, is still in the process of implementing the computerized Joint Uniform Military Pay System for active duty personnel. The Army is also in the process of implementing the computerized pay system for its reserve components. Without the assistance of computerization, it would be exceedingly difficult to implement manually the variant state withholding procedures.

The computerized pay systems now in effect or being implemented within the Services are capable, with major modification, of withholding for state income taxes. Major reprogramming and redesign would be required as would additional personnel, new hardware, forms and computer time.

The Services roughly estimate total development costs for state income tax withholding at $9.9 million. Annual maintenance of the system is estimated at $4.7 million for all Services. Such costs would not generate any additional tax revenue for the Federal tax base. In effect, costs would increase for DoD, with a rise in personnel costs. We do not believe such costs should be incurred without full information as to the extent of noncompliance with state tax laws and only then, should this figure be unacceptable, after the individual states and this Department have exhausted all efforts to gain compliance through less costly means.

It is estimated that implementation of withholding systems by all Services would require from 24 to 30 months.

Chairman McCLELLAN. Does the Department support S. 556, a bill to permit withholding of state income taxes from military compensation?

Answer. This Department has not yet completed a report on S. 556. As with any other legislative proposal, it will be given careful consideration. However, in view of the complexities and costs involved in withholding from military pay for state income taxes, we believe that the extent of noncompliance should first be determined by the states and then, if necessary, less costly means should be pursued by the states and this Department to achieve compliance, short of wtihholding.

It is estimated that withholding would cost DoD about $9.9 million in development costs and about $4.7 million in annual operating costs. Given today's budgetary realities, we find it difficult to support incurring such costs without exhausting all less costly means for achieving the desired results. To date, it does not appear that the states in general have actively pursued delinquent military tax cases. This Department stands ready and willing to assist them in every way possible should this be undertaken.

Servicemen Missing In Action

Chairman McClellan. Explain the procedures used in changing the status of missing in action servicemen to "presumed dead"? What is the status of current determinations and court cases since the McDonald v. McLucas case?

Answer. The recording and changing of status of the missing are governed by Sections 551–558, title 37, United States Code. Under public law, the Service Secretaries are given responsibility for status changes. To assist him, each Secretary calls upon professionals within his organization who conduct an exhaustive study, based on all available information of each individual case. Their task is a painful one requiring countless hours of deliberation and calling ultimately for difficult decisions. The subject of status determinations is not a new one for the Services. Those involved in this often unhappy part of the prisoner of war/missing in action issue are experienced, skilled, and expert in upholding the public law and at the same time protecting, to the best of their ability, the ultimate interests of the missing men and their families.

In making status determinations, two options exist in addition to that of retaining the individual in a missing status. In those cases where information is received which conclusively establishes that the member is dead, then a report of death will be issued. A finding of death, commonly known as a "presumptive finding," is made when circumstances are such that the missing individual cannot reasonably be presumed to be living. An individual who was lost over water and who was not among those released or acknowledged by the other side in any way is one good example of a potential "presumptive finding."

Status changes are not unalterably tied to the inspection of combat sites or to the recovery of remains. Changes in status have been made from missing in action or prisoner of war to killed in action throughout the recent conflict, based on individual reviews of all available evidence. A number of changes, both as findings and reports of death, have been made since the signing of the Agreement in Paris.

All of the reviews have been conducted in accordance with the law and with full consideration of all the facts, and the Services have administered the law with full regard for the missing member and his family. Procedures have been revised to comply with the decree which was entered on March 11, 1974 in McDonald v. McLucas. After the appeal of this decision by the counsel for the plaintiffs, the Supreme Court affirmed the decision of the lower court on November 11, 1974.

Specifically, the decree enjoined the defendants from conducting any such status reviews unless next of kin currently receiving governmental financial benefits that could be terminated by a status review are given notice of a status review, a reasonable opportunity to attend a hearing, with a lawyer if they so choose, reasonable access to the information upon which the status review will be based, and permission to present any information which they consider relevant to the proceeding. Further, the decree states that these rights need only be afforded to those next of kin, currently receiving governmental financial benefits which could be terminated by a status review, who demand it after notice.

The Services promulgated regulations to implement these requirements, and all reviews since March 11, 1974 have been conducted in full compliance with those requirements. The service regulations require that reviews be preceded by the offer of the rights to the affected parties. When the case of a missing serviceman is to be considered for review, the specified next of kin are to be informed by a letter from the appropriate service. The letter also contains an explanation

of their rights to a prior hearing of counsel, of access to information and to present information. If a hearing is desired by the specified next of kin, additional liaison by the Service Casualty Office is to be conducted to ensure a time convenient to the family. In a number of instances, hearings have been rescheduled several times pursuant to family requests. A summary of the service case material to be utilized in the hearing is made available to the specified next of kin prior to its scheduled date. No information which has not been made available to the specified next of kin as a result of the hearing will be considered by the review board in the course of their deliberations.

The work of the Secretaries in implementing this law is complex and difficult. The law, for example, covers peacetime as well as combat losses. Although in some cases the facts surrounding the loss are clear and unambiguous, other cases provide few indications that reveal the complete story. This is true even in peacetime losses where initial circumstances indicate strong probability of survival and good chances for location and recovery.

The fact that a man's status has been changed by the military services, regardless of circumstances or when such a change was made, does not mean that the government ceases its efforts to account for him. Some time ago a JCRC search team was ambushed and an officer killed while engaged in a field search operation. The individual who was the object of that operation had previously been classified as killed in action, remains not recovered. Our efforts in Southeast Asia will continue to address individuals in this category just as they do those who are missing.

On 9 August 1974 a petition was filed in the US Court of Claims as a class action against the Secretaries of the Military Departments. Plaintiffs are eleven family members representing seven servicemen who were listed as deceased prior to the Paris Agreement of 27 January 1973. Counsel for the plaintiffs is Dermot G. Foley, Esq., who is the brother of an Air Force officer listed as missing in action.

The thrust of this action is substantially the allegations that these seven determinations of death previously made were done so as a denial to due process under the Fifth Amendment to the US Constitution, that they were made without authority and are, hence, null and void, and that the status of each MIA who has been the subject of such determination of death must be restored retroactively to missing status. A hearing date for the action has not been established. However, the matter is currently in active litigation.

Chairman McCLELLAN. Provide an estimate of the fiscal years 1974, 1975, and 1976 pay and allowances provided to families of missing in action servicemen?

Answer. In response to a recent Congressional inquiry, information was specifically compiled to reflect the total military pay and allowances which had been credited to the accounts of missing servicemen during calendar year 1974. This figure was $19,852,524. The amounts of the payments to PW/MIA dependents vary among the individual cases with respect to rank of the missing member and to whatever modifications to his previously designated allotments may have been made under the law by the authority of the Secretary of the appropriate Military Department. Because a number of servicemen have been in a missing status for nearly a decade, it has been necessary in many cases to increase the amounts of dependency allotments through the years to avoid to the extent possible the family hardship which has resulted from increased cost of living.

Additionally, the amount of $4,153,916 was credited as government interest to the accounts of missing members which are on deposit in the Uniformed Services Savings Deposit Program (USSDP). This program is now in effect only for the accounts of missing servicemembers and continues the 10% interest rate, compounded quarterly. As a general practice, the services have encouraged PW/MIA dependents, as well as non-dependent primary next of kin, to avail themselves of this opportunity for saving through the utilization of that portion of the missing member's pay and allowances which is considered to be in excess of their needs. The percentage of missing member pay which is being deposited monthly in the USSDP accounts varies among individual cases from almost negligible amounts to nearly full pay and allowances.

It is estimated that the figures mentioned above would approximate the amounts applicable to fiscal year 1974 and 1975. As the number of servicemen remaining in a missing status has decreased, promotions and raises in military pay have become effective. If changes in status continue to be made at the current rate, the fiscal year 1974 figures would approximate the amount for fiscal year 1976.

Chairman McCLELLAN. What are the Department's plans concerning these men, and in what ways can the costs be reduced?

Answer. The Secretaries of the Military Departments, acting under statutory authority, continue to credit full pay and allowances to the accounts of servicemen who remain in a missing status.

JUNIOR ROTC

Chairman MCCLELLAN. It has been reported that consolidation of Junior ROTC programs of the services has been considered. Is this true? Was any study performed? Would you provide the current Defense position on this and the conclusions and recommendations of any study made on this subject.

Answer. No. DoD study of which we are aware has been directed toward or recommended the consolidation of Junior ROTC programs. The DoD position on this matter would be to oppose such action. The enabling legislation, Public Law 88-647, "Reserve Officers' Training Corps Vitalization Act of 1964," requires that the 1200 units prescribed are to be equitably distributed throughout the nation. The implementing DoD Directive, in furtherance of this consideration, prohibits the establishment of more than one Military Service's Junior ROTC in a school. However, consonant with equitable geographic distribution, multiple units exist. A multiple unit is any group of units sponsored by a Military Service within one school district. The DoD Directive states that multiple units should be managed so as to minimize the number of instructors. For example, in Chicago there are 38 Army Junior ROTC units. These units can be manned with fewer than the one officer instructor per unit they are authorized by law.

ALLIED WAR RESERVES

Chairman MCCLELLAN. In presenting previous budget requests for allied war reserves to the Congress, the Defense Department has stated that allied war reserve items were not designated specifically for the allies and are available for use by U.S. forces. Army procurement documents show that the fiscal year 1975 ammunition procurement request for the allied war reserve program included $44 million for ammunition items which were not in use by U.S. forces; e.g., $17 million for nonstandard mortar ammunition. Other items, such as 57mm recoilless rifle ammunition, though not being procured, is also no longer used by U.S. forces but is being stored in substantial quantities for the allies. How does DoD reconcile the procurement and/or storage of such items with what the Congress was told? In a period of rapidly rising costs and the need to reduce federal spending, how can the cost of procuring and storing items solely for the allies be justified?

Answer. The war reserve stocks for allies (WRSA) program was designed to give the U.S. a responsive capability to assist certain Asian Allies by providing materiel support in the event of some future conflict while those allies provided the bulk of the manpower required for their own defense. Since WRSA stocks remain under U.S. title and control until their transfer to an ally is legally authorized, and are not normally segregated from other war reserves, they could be used to support U.S. forces if the need arose. Furthermore the vast majority of the individual items, and the bulk of the aggregate stockpile, are common to the U.S. and the specific allies considered. Therefore, it is generally true that WRSA is part of the total U.S. war reserve that could be used by U.S. or allied forces as an emerging situation demanded, subject to proper legal authority. This general explanation was previously provided the Congress.

There are some exceptions to the general rule: there are a few items stocked as WRSA which are not planned for use by U.S. forces (e.g., 57mm, 60mm). Also, there are a few additional WRSA items (e.g., 2.75" rockets, CBU-25, some firebombs—BLU-32), for which the U.S. Services currently state no requirement, but which "in a pinch" could be used by U.S. forces.

The WRSA concept requires the U.S. to plan to provide materiel support for all allied weapons if it is to be effective; thus it is necessary to build and maintain inventories of some ammunition items which have no application to U.S. equipment. To do otherwise would reduce the total effectiveness of our allies' forces. As previously noted, the items which are not common to U.S. needs, however, represent a very small fraction of the total requirement. The alternative to this approach would have been to plan on replacement of non-U.S.-standard equipment in Asian allied inventories, which would have eliminated the need to maintain ammunition which is not planned for use by U.S. forces.

ALLIES ACQUISITION OF M48 & M60 TANKS

Chairman MCCLELLAN. What are authorized acquisition objectives of our allies for M48 and M60 series tanks?

Answer. This is a complex question as the criteria for AAO determination, even in the U.S. Army, are variable. For example, at the current time the U.S. Army AAO for tanks includes, among other things, the 16 division active army, reserve components, War Reserve Stocks for Allies (WRSA), and contingency stockage requirements. However, the Foreign Assistance Act signed by the President on December 30, 1974 contains a prohibition against WRSA. Therefore, as a minimum the U.S. AAO for tanks or any given weapon system could change by the amount for WRSA.

We do not hold information concerning allied authorized acquisition objectives (AAO) for any tanks. Obviously, it is not possible to determine any other country's equipment AAOs unless details of the criteria used to determine the AAOs are known. Allies whose TOEs authorize M48 tanks are as follows:

Number of units, type units and M48 tanks authorized: [Deleted.]

In addition, based on actual deliveries as of March 5, 1975, the following friendly countries have received M48 series and/or M60 series tank assets shown below:

	Quantity
M48 Series:	
Greece	1440
Germany	462
Israel	-----
Jordan	-----
Spain	131
Turkey	2704
Taiwan	160
Korea	421
Norway	38
Pakistan	202
Tunisia	13
Vietnam	74
Morocco	26
M60 Series:	
Germany	2
Israel	-----
Ethiopia	22
Jordan	-----
Austria	120
Iran	-----
Argentina	1
Italy	100

Chairman MCCLELLAN. Previous budget requests for allied war reserves have included funds for the procurement of the M60 series tank. The Congress has been told that these funds were requested on the basis of theoretical allocation of funds and that the allied requirements would be filled from older items replaced in U.S. units. Army spokesmen stated that the M60 series tank would not be available for allied war reserves until 1981. Since the U.S. requirement for these items would stand on its own merits, why were they used as the basis for the allied war reserve request? Couldn't the older items be retained for the allies in retention levels in the inventory without including them in the DoD procurement program?

Answer. The confusion that has developed over tank procurement has resulted from a misunderstanding of the difference between the manner in which authorized acquisition objectives (AAOs) and procurement requirements are calculated and the method in which on-hand assets are distributed. For any given item (e.g., tanks a total requirement or "AAO" is calculated. This AAO includes items needed to equip active and Reserve U.S. forces, for maintenance float, and for war reserves (U.S. and Asian Allied combat attrition, combat pipeline needs, Special Contingency needs and certain specific operational projects). Current inventories and projected losses from inventory are considered to compute the

procurement needed to attain the AAO at some specified time (normally several years in the future.).

In contrast, the distribution of on-hand assets is based on priorities established by the Army resulting from an assessment of how the Army would react to conflict that could occur in the very near term.

In determining the new procurement requirements all existing inventories of a particular item are applied against the AAO. In the case of tanks this means that on-hand assets of both M60 and M48 series tanks are applied to determine any new procurement funding needs.

Many requirements contribute to the total AAO, allied war reserves stocks being one of the numerous contributors to the total. No short-term priority is implied in this process. However, it is in the distribution of existing inventories that relative short-term priorities are recognized. As a result of a previous DoD practice of identifying, through a hypothetical allocation of dollars, procurement requests to WRSA, confusion over the tanks occurred. There has never been any intention within DoD to earmark and set aside M60 series tanks for Asian Allies' war reserves while U.S. needs were not fully met. In fact, our current distribution plans identify M48 series tanks for the possible use of our Asian Allies.

ALLIED WAR RESERVE PROGRAM

Chairman MCCLELLAN. What is the estimate of the total allied war reserve program? Does DoD actually plan to stockpile defense items in these amounts for the possible future use of allies?

Answer. The total requirements (Inventory Objective/Authorized Acquisition Objective) for the War Reserve Stocks, Allies (WRSA) and Special Contingency Stockpile (SCS), as now computed by the Services, approximate $7.5 billion. Available U.S.-owned assets on hand or on order are approximately $633 million with total funds included in the fiscal year 1974, fiscal year 1975, fiscal year 1976 and fiscal year 197T budget being approximately $710 million.

This $7.5 billion total stated requirement for WRSA and SCS is dominated by the Army's $5.0 billion computed requirement for WRSA ammunition. This is $5.0 billion compares with an Army WRSA ammunition requirement computed at approximately $3.4 billion about 12 months ago, and reviewed in detail by OSD last summer. The increase in the stated requirement from $3.4 billion to $5.0 billion has two components: (1) the Army has recently introduced a WRSA requirement for $700 million worth of modern ground munitions; and (2) price increases which account for the other $900 million. Primarily because of the recently severe ammunition price increases, the current 5-year (fiscal year 76–80) defense program does not contain funds to meet the total Army ammunition AAO (including WRSA and the SCS) by end fiscal year 1980.

A current shortfall of about $6.2 billion exists against the total WRSA/SCS requirement when considering available U.S.-owned assets and current budget dollars. This shortfall will eventually be addressed by considering not only assets made available as a result of Service funding, but also considering ally-owned assets whether acquired via local manufacture, FMS, MAP or MASF. It is valid to assume that U.S. Service funding in future years would be something less than the amount of the current shortfall.

The exact future Service funding to specifically meet WRSA and the SCS war reserve cannot be determined. Not only are the requirements fluid in nature, but likewise the future availability of ally-owned assets from other sources is unknown.

Chairman MCCLELLAN. How are the allied stockpile programs related to and coordinated with the foreign assistance programs?

Answer. The allied stockpile programs are coupled with the foreign assistance program only in that net materiel requirements for selected allies take into consideration full credit for assets already held by those allies which in many instances were provided through the security assistance program. Additionally those assets normally in the peacetime pipeline and any in-country production capability are also given credit. These stockpiles remain under U.S. title and control. These programs do not in any way circumvent the legislation authorizing the foreign assistance program, however. Although it is legally unnecessary to so provide, the DOD Appropriation Act, 1975, states (Section 85D): "No funds appropriated to the Department of Defense in this Act may be used to

transfer war materials to any foreign country, unless such transfers are specifically authorized by law."

Chairman McCLELLAN. Is allied war reserve ammunition stored overseas in special allied war reserve accounts which include many ammunition items used extensively in Cambodia and Vietnam? Are these reserves being used to provide a backup for operational requirements in Southeast Asia?

Answer. Army ammunition distribution documents for the Pacific report: (1) ammunition stocks which support current operations in Cambodia and Vietnam; (2) stocks which have been provided Korea under MAP; (3) stocks which are maintained for ROK backup (U.S.-owned and controlled); (4) stocks for the 8th U.S. Army; and (5) USARPAC stocks for training, operational projects, basic load, and prepositioned war reserves. Each of these reported stockpiles maintains some items which could be used in Cambodia and Vietnam (e.g., 105mm howitzer ammunition is maintained in practically all "accounts"). There are no Air Force stocks maintained as WRSA in the Pacific.

Operational requirements for SEA could be met by providing assets from any of the above described "accounts" or from CONUS. However, any stocks transferred—regardless of the source—would be accounted for, as required by law, and charged against the funds appropriated for a specific category of foreign assistance (e.g., MAP, DAV).

Chairman McCLELLAN. Is it proper to use allied war reserve stocks for this purpose after the Congress was told that they would remain under U.S title and control? Moreover, how does DoD assure that MAP or MASF reimbursements for such transfers are actually used to replace allied war reserves?

Answer. Any U.S. asset transferred to a foreign country is charged against the appropriate category of foreign assistance authorization and funding (e.g., MAP, DAV). We consider it perfectly proper to use whatever U.S. assets are needed to meet Cambodian or RVN requirements so long as the proper accounting for those stocks used is as required by law and the total transfer stay within Congressionally authorized/appropriated funding levels. We do not consider those transactions which may have involved the issue of assets from U.S./Asian Allied war reserves to conflict with our statement that WRSA assets are maintained under U.S. title and control. In those cases where war reserves have been used to fill Cambodia or RVN orders the assets involved have been maintained under U.S. title and control until they were issued, and proper charges were made to the appropriate account (i.e., MAP, MASF, or DAV) at the time of issue.

In the case of MAP/MASF(DAV) ammunition reimbursements, the following situations normally exist. For ammunition items on which an open U.S. procurement order exists, issues will be procured and applied as "paybacks". For MAP (non-Cambodia) orders for which there is no current U.S. procurement order, the reimbursement is considered a "free asset" and has been used in the past to offset future funding requests in subsequent budgets. For orders associated with Vietnam and Cambodia—in which only a total ammunition line is appropriated—reimbursements may be applied to any item. However, if Section 514 is not amended, the reimbursements associated with Vietnam and Cambodian requirements could not legally be used to replace allied war reserves.

Chairman McCLELLAN. Has the Defense Department provided war reserve ammunition to any Asian Country since 1969? Is this ammunition considered a part of the allied war reserve? What was the cost, source of funding, and authority for stockpiling these assets? Was the Congress told that these assets had been set aside for the allies? Have assets been set similarly aside for other allies?

Answer. The Department of Defense does not have the legal authority to provide U.S. war reserve ammunition to any Asian country under the War Reserve Stock for Allies (WRSA) program. That program only authorizes procurement and stockpiling by DOD, but does not authorize transfers to foreign countries by DOD. Since WRSA stocks remain under U.S. title and control and generally are not physically segregated from other stocks, they may have been used as a source of supply along with other DOD inventory assets for support of Asian countries in the past, subject to reimbursement from security assistance funds or foreign purchase proceeds. In considering the allied war reserve net requirements which are part U.S. inventory objectives, assets in the foreign country, assets in the peacetime pipeline and any in-country production capability are given full credit. The funds and authority for the WRSA program were first requested in fiscal

year 1973 through the DOD authorization and appropriations acts and totalled approximately $525 million through fiscal year 1975. Notification of the Congress concerning this program was made during the appropriate committee hearings. Funds are being requested in fiscal year 1976 for a Special Contingency Stockpile of more modern ammunitions for other friendly non-Asian nations. These assets could be either transferred under Security Assistance Legislative Authority to foreign countries, or utilized by US Armed Forces should their use be required to serve U.S. national defense requirements.

Chairman McClellan. To what extent is the overall modernization and expansion program of Army ammunition production facilities and the $368 million procurement request in fiscal year 1976/197T based on the allied requirements, and how does Section 514 of the Foreign Assistance Act affect the program?

Answer. The overall ammunition modernization and expansion plan is currently sized on hypothetical future wartime consumption requirements, which include Asian Allied consumption of [deleted]. Depending on the specific item of ammunition, the portion of the total capacity requirement that is attributable to possible future Asian Allied wartime demands can vary from none of the requirement to most of the requirement.

It is the opinion of the DoD that Section 514 of the Foreign Assistance Act of 1974 (which proscribes stockpiling for allies) does not apply to the DoD munitions production base modernization and expansion program.

Special Contingencies Stockpile

Chairman McClellan. In addition to the allied war reserve program, DoD is planning to request funds in fiscal year 1976 for a special contingency stockpile. What is the objective of this stockpile, and how does it differ from the allied war reserve program?

Answer. In general, the Asian Allied force structure used to size WRSA requirements is less modern and sophisticated than some other potential U.S. allies. As a result of this, munitions and equipment stockpiled as WRSA would not, in general [deleted].

SCS will constitute a flexible stockpile which could be used, with the proper Congressional authorization whenever and wherever future U.S. interests might dictate. Like WRSA, SCS items will remain under U.S. title and control until their transfer is legally authorized.

Both WRSA and SCS are included within U.S. Service inventory objectives (called AAOs by the Army). In contrast, the DoD request for Congressional authority and appropriations to permit procurement in anticipation of Foreign Military Sales (FMS) from inventory has not been translated into any adjustment to U.S. Service inventory objectives.

Chairman McClellan. Under this program, would DoD procure defense items in advance of offers or acceptances of sales to foreign countries? Are these purchases authorized under present law? Would these purchases be in addition to those provided for with funds appropriated under the Foreign Military Sales Act? Are there any assets presently on hand for the purpose of the special contingency stockpile? Have purchases been previously made for the special contingency stockpile or similar purposes?

Answer. The Special Contingency Stocks (SCS) are not intended as procurement in advance of offers or acceptances of sales to foreign countries. SCS requirements are included in U.S. Service inventory objectives so that, once they are procured and in inventory, they will provide a hedge against our having to drawdown U.S. inventories of modern weapons in order to meet unforeseen, urgent demands from U.S. Allies. Some ammunition and equipment assets which were on hand prior to establishing SCS requirements have been applied to those requirements; however, the current budget requests the first new funds to procure for SCS.

However, as a separate program, the fiscal year 1976 budget request does include draft legislation that provides for authorization and appropriation of leadtime funds which will be used to finance the procurement of needed inventories of combat essential hardware and consumables in advance of anticipated U.S. forces inventory drawdown caused by urgent Foreign Military Sales—the Inventory Replenishment Fund (IRF). Specifically, this proposal provides for (a) authorization; (b) a separate appropriation within the DoD military func-

tions; and (c) transfer authority from the separate appropriation to existing appropriations. Funds requested for the IRF are different from and not additive to funds appropriated under the Foreign Military Sales (FMS) Act. Funds appropriated for FMS are solely for the purpose of extending credits or guaranteeing loans to finance military purchases by foreign countries. The IRF, in contrast, is for the requirements of our armed forces to replace what is sold from inventory under FMS.

Chairman McClellan. Section 514 of the Foreign Assitance Act provides that only funds authorized under foreign assistance legislation (or DoD appropriations in the case of Vietnam) may be used to acquire, store, and maintain any defense articles or war materials intended for future use of allies. Assuming that Section 514 will continue in force without amendment: How will allied war reserve assets presently on hand or delivered from fiscal year 1974 funds be accounted for in the DoD inventory? How will assets delivered from fiscal year 1975 funds be disposed of? Is DoD considering an increase in war reserves for U.S. forces to compensate for the elimination of the allied stockpile programs with DoD appropriations? Does DoD plan to request funds under the foreign assistance program for allied stockpile programs? Is DoD requesting amendment of Section 514?

Answer. The fiscal year 1976 DoD authorization request does contain a proposed amendment to Section 514 of the Foreign Assistance Act. The DoD feels strongly that it has compelling and convincing reasons for requesting amendment of Section 514 of the Foreign Assistance Act. Therefore, we feel confident that the Congress will recognize the wisdom and logic of those arguments and grant the requested legislative relief. The DoD is not currently developing any plans against the contingency that Section 514 remains in force without amendment. If Section 514 is not amended, since it is prospective only, it would not technically affect war reserves for which funds had been obligated prior to the date of its enactment or items set aside, reserved or earmarked prior to that date. However, should Section 514 remain in effect without amendment, the DoD will have to completely rethink the assumptions and ground rules which underlie all its logistics planning for wartime.

"Excess Defense Articles"

Chairman McClellan. According to a recent report to the Congress on supply system inventories, about $8.5 billion in various defense items, including ammunition, tanks and other combat vehicles, weapons, and spare parts, are being held in the inventory above approved force acquisition objectives in economic and contingency retention levels. Although not declared DOD excesses, these stocks come within the definition of excess defense articles and may be transferred under the conditions of the Foreign Assistance Act at no cost to MAP, or may be sold to foreign countries at reduced prices. A comparison of year-end balances over several years shows that considerable quantities of various types of these defense articles have moved in and out of the inventory.

What is the source of these "excesses," where are they physically located, and are any of these standard items still in general use by U.S. forces?

Answer. DOD economic and contingency retention stocks are that portion of the supply system inventory which were originally procured by the Military Services or Defense Supply Agency to satisfy requirements in support of U.S. forces or authorized allied forces. At some time subsequent to the procurement and receipt of this materiel, reevaluation of these requirements indicated that these assets were now beyond the immediate needs of the Services but were within authorized retention limits. In recent years the primary reason for the increase in these stocks has been the reduction in demands and the decreased pipeline requirement following the cessation of active U.S. participation in the Vietnam conflict. The majority of economic retention and contingency stocks are physically located at the Military Service/Defense Supply Agency supply depots. The remaining stocks are located in storage facilities at posts, camps, stations and bases in the United States and possessions and in foreign countries and supply ships afloat. Current DOD policy states that in order to qualify for economic retention, an item must have a reasonably predictable demand rate. Therefore, it follows that the economic retention stock is maintained for items in use and being demanded by U.S. forces. Contingency items, however, in accordance

with DOD policy, have no predictable future requirement based on past demands, but are being retained for possible contingencies. Contingency items are usually not in general use by U.S. forces.

Chairman McCLELLAN. What are the economic and contingency purposes for which these assets are being retained and give some specific examples?

Answer. Economic retention stock is that portion of the quantity of an item excess to the Approved Force Acquisition Objective which it has been determined will be more economical to retain for future peacetime issues in lieu of replacement of future issues by procurement. To warrant economic retention, items must have a reasonably predictable demand rate. Contingency retention stock is that portion of the quantity of an item for which there is no predictable demand or quantifiable requirement, and which normally would be allocated as potential DOD Excess Stock, except for a determination that the quantity will be retained for possible contingencies. Some specific examples of contingency retention items are:

A. Items peculiar to ships in the reserve fleet such as parts for the battleships, Missouri and New Jersey.

B. Aviation parts to support aircraft in storage at Davis Monthan AFB, Arizona.

C. Materiel to support selected weapons which have been or are planned to be transferred to allied forces, such as F–4 aircraft, destroyers and submarines.

Chairman McCLELLAN. Are any of these assets being specifically held for possible future transfer to foreign countries by sales, grants, loans or other legally authorized transfer?

Answer. Yes, each of the Military Services has identified items in the supply inventory as contingency retention stocks using as justification the possible future transfer of these assets to foreign countries through sales, grants, loans or other legally authorized transfer. In many instances this action is necessary to prevent the premature disposal of assets prior to the accomplishment of the authorized transfer.

Chairman McCLELLAN. Would you provide a listing of articles furnished from these stocks to foreign countries in FY 1974 and FY 1975, showing the authority for such transfers, the amount DOD was reimbursed for them, and by whom the reimubursements were made?

Answer. (a) These excess articles listed below were provided to foreign countries under the Military Assistance Program (MAP):

Major items	Fiscal year 1974	Fiscal year 1975 (6 months)
Vehicles and weapons:		
Buses	10	----
Commercial ambulances	31	14
Commercial trucks	2,114	54
Pistols	2,807	316
Carbines	1,752	26
Rifles	29,243	527
Submachine guns	1,666	9,476
Machine guns	24,127	27
Riot control guns	3	----
Subcaliber weapons	2	----
Antiaircraft guns	18	----
81 mm mortars	161	26
Loading machines	1	----
Rocket launchers	13	----
Fire control computers	2	----
Other weapons up to 75 mm	----	2
107 mm—4.2 inch mortars	----	2
Missiles:		
Nike	1	----
Falcon	89	----
Bullpup	2,060	----

(b) The excess articles listed below were allocated to foreign countries requesting purchase through the DOD MIMEX (Major item military excess) procedures. These articles require reconditioning by recipient country.

Description	Quantity	
	1974	[1] 1975
Aircraft A-37A		8
Aircraft C-54	5	
Aircraft U-6A		1
Aircraft T-28C		3
Helicopter OH-13S	16	
Helicopter TH-13T	54	
Trailers, all types	15	245
Trucks 2½ ton and under	1,183	824
Trucks 5 ton	15	75
Trucks 10 ton	17	3
Rocket 3.5 smoke	7,850	
Warheads rocket 2.75 inch		5,000
Grenade	5,860	1,303
Submarine gun, cal. .45	223	
Machine gun, cal .50	20	
Howitzer SP M155	13	
Rifle, cal .30	20,200	4,595
Launcher M48	8	
Generators	4	27
Loader		1
Graders road	6	3
Scrapers road	3	
Cranes	22	2
Concrete mixer	2	
Pontoons		4
Engine jet T-58/GE1		2
Beacon AN/URN-5		1
Training aids		3
Fuel tanks		120
Receiving set		1
Remote recorder		1
Terminal telephones		116
Pump water		2
Outboard motors		2

[1] As of January 1975, value of allocations for sale of excesses for fiscal year 1974 was $3,100,000 and fiscal year 1975 was $1,800,000 as of January 1975. Identification of the purchasers is not presently available and such information would have to be obtained from the services.

Chairman McCLELLAN. Since these assets are considered "excess defense articles" and would not be replaced, what happens to the funds received by DOD when they are sold to foreign countries?

Answer. The funds revert to the U.S. Treasury.

SOUTH VIETNAM

Chairman McCLELLAN. What will be the impact if Congress does not appropriate the requested $300 million supplemental for South Vietnam?

Answer. Inventories of ammunition, POL, and other combat supplies will continue to be drawn down. As a consequence, the RVNAF will be forced into a defensive posture in the face of an increasing offensive tempo by the DRV/PRG. RVNAF outposts will be abandoned and defenses consolidated. The military initiative will continue to swing.

Chairman McCLELLAN. Do you believe South Vietnam as a free nation will be a viable political entity during the next five years, and if so, in what way is it related to the level of U.S. military assistance that needs to be provided during that time period?

Answer. South Vietnam as a free nation can be a viable political entity during the next five years only if adequate U.S. military assistance is furnished to the RVNAF in the interim. If the GVN can turn its attention and talents toward development of its very significant natural resources and its civilian economy in order to develop an export earning potential, with which to bolster its economic sector, and if the military and economic sectors of RVN can be stabilized, the political sector can be strengthened.

SOVIET MIRV DEPLOYMENT

Chairman McCLELLAN. Would you summarize in a brief statement what the current status of Soviet MIRV deployments is. How many MIRV'd missiles are

currently deployed and in place? What types are they, and what is their accuracy?

Answed [Deleted.]

Chairman McClellan. At the present time, which side has greater total payload/throw-weight available to it? Your statement discusses this subject but places much greater weight on the throw-weight of the missiles than the bomber payload. If this is the case, why do you consider the B–1 to be essential?

Answer. Based on operational, or on line, ICBMs, SLBMs and bombers, the United States can project [deleted] of total throw-weight/payload compared to a high/low estimate of [deleted] for the Soviet Union. For the Soviet Union, the high projection reflects the capability to assign all of the new Backfire bombers to the strategic mission while the low projection considers Backfire in only the peripheral role. The following table summarizes throw-weight by delivery vehicle.

	1,000 pounds	
	United States	U.S.S.R.
Operational ICBM's Deployable SLBM's Missile, total UE operational bombers Total	[Deleted]	

As you can see from the table above, almost [deleted] of our throw-weight/payload is carried in bombers. The last B–52 was produced in 1962. In the interim, Soviet air defenses have grown in both quality and quantity. Therefore, the capabilitites of a manned bomber are essential to our deterrent. The B–52 must be replaced and the B–1 is the replacement.

Anti-Tank Weapons Capability

Chairman McClellan. Your statement indicates that you cannot provide a simple quantitative measure with which to compare antitank weapons inventories. Since the Middle East War of 1973 demonstrated how significant these weapons can be, can you just give us a comparison of the number of antitank missile launchers and missiles available to each side (the aggregate totals).

Answer. As indicated before, there is no simple quantitative measure to compare inventories of antitank weapons for the two sides. Estimates of the numbers of missile launchers and missiles are available in simple aggregate totals. The best estimate of Snapper/Sagger/Swatter missile launchers available are [deleted] for the USSR and [deleted] for the PRC. The numbers for Snapper/Sagger/Swatter missiles are [deleted] for the USSR and again [deleted] for the PRC. Although the estimates for the PRC do not indicate an antitank missile availability at the present time, the capability of the PRC to produce this equipment has been demonstrated.

The US inventory includes [deleted] TOW, [deleted] DRAGON, and [deleted] SS–11 launchers for a total of [deleted] missile launchers. The missile inventory includes [deleted] TOW, [deleted] DRAGON and [deleted] SS–11 for a total of [deleted] missiles.

All Volunteer Force

Chairman McClellan. What is the position of the Joint Chiefs on the increase or decrease in readiness that is attributable to an All Volunteer Force that has a lower educational level than a force in a draft environment. Your statement points to the key factor of personnel motivation. How do the professional military leaders view the motivation of personnel in the All Volunteer Force?

Answer. A significant problem affecting readiness now is the retention of skilled personnel in the mid-level NCO ranks. The All Volunteer Force has not been in being long enough for that critical area to be staffed principally by entrants through the All Volunteer process. It is anticipated that this situation will correct itself as the All Volunteer entrants saturate the system. In this regard, there is no indication that the educational level of the All Volunteer Force will not provide sufficient distribution of educational talent to attain the necessary skill levels.

Several factors have contributed to the motivation of the All Volunteer Force. In the AVF, service is at the individuals' option, and offers a viable career option, a choice of skills, experiences and travel, and improvements in pay and living/working conditions. Furthermore, the Services are not presently encumbered with training and utilizing individuals who desire to avoid compulsory military service or those who do not have the potential for success.

NATO and Warsaw Pact Comparison

Chairman McClellan. How long do the Joint Chiefs believe the NATO allies can withstand a conventional attack in Central Europe before the nuclear weapons will be used? Are the JCS assessments the same as those made by our regional commanders in NATO/Europe?

Answer. The answer is sensitive to the assumptions that underlie the question. In the event the Warsaw Pact is able to mobilize and attack without significant NATO preparation, the Pact attack could force a nuclear response in a matter of a few days. On the other hand, if pre-attack indicators are read properly and the necessary political and military counteractions, including mobilization and reinforcement, are implemented, it may not ever be necessary to employ other than conventional weapons. As warning and reaction are decreased. NATO conventional capability decreases, and the period of time NATO can withstand the assault decreases. Thus, tactical nuclear forces are necessary for the defense of NATO and serve as a visible deterrent to a surprise assault. There is general agreement among all commanders on this issue.

Chairman McClellan. When is deployment of a MIRVed version of the SS–X–16 projected to be deployed?

Answer. The basic missile could have an initial operational capability in 1975, followed by the MIRVed version in the [deleted] time period.

Soviet ICBM's

Chairman McClellan. Provide a table showing each type of Soviet ICBM silo along with its characteristics (size and hardness), as well as the various missiles that can be deployed in it.

Answer. [Deleted.]

Chairman McClellan. Is there any evidence, other than circumstantial, that the SS–X–16, or any other Soviet missile, is being developed as a land-mobile system? Describe this specific evidence.

Answer. [Deleted.]

Chairman McClellan. What is the accuracy of the mobile ICBMs projected for the USSR in 1980?

Answer. The initial accuracy is estimated as [deleted] nautical miles.

Trident

Chairman McClellan. The chart on page 32 shows that a C–4 TRIDENT has 20 percent less throw-weight capability and a slightly worse CEP than a C–3 Poseidon. Why is this the case?

Answer. [Deleted.]

Soviet Ballistic Missile Submarine

Chairman McClelan. What do you estimate that the active radar seeking SS–NX–13 missile's targets are—carriers?

Answer. [Deleted.]

Chairman McClellan. Why is there such a large discrepancy between US and Soviet SSBN overhaul time? What is the future projection of overhaul time?

Answer. A basic constraining factor in all Soviet nuclear submarine overhauls, including the SSBNs, is the inadequacy of [deleted].

Whereas, the average number of months a US nuclear submarine spends in overhaul is [deleted] months, Soviet nuclear submarine overhauls average between [deleted] months. [Deleted.]

Chairman McClellan. Compare the projected numbers of SSBNs and SLBMs on line, US and USSR, taking into account the matters you discussed involving length of Soviet overhauls and reduction of Soviet SSBN deployments.

Answer. On line is defined as submarines and missiles on patrol or available for deployment. It does not include those submarines in overhaul or conversion. Considering currently estimated Soviet overhauls [deleted] conversions, deployment patterns, and new construction, the following table provides a comparison between the planned US and best estimate of the USSR on line SLBM Force. It should be borne in mind that in the 1978–79 time period, boat construction should be finalized so that a portion of these facilities used for construction can be used for retrofit and repair. It does not consider any force modification which may be required from a final agreement based upon the Vladivostok understandings.

EQUIVALENT MEGATONNAGE

Chairman MCCLELLAN. A measure known as "equivalent megatonnage" used to be displayed as a comparison of force capability. Would you provide estimates of the US and USSR equivalent megatonnage for the 1966–1980 time period, and comment on this measure—both in terms of the comparison as well as relevance of the specific measure.

Answer. Equivalent megatonnage (EMT) is considered to be a measure of the ability to inflict destruction on the soft urban-industrial target areas of the oponent through strategic nuclear forces. EMT is calculated by taking the yield to one-half power for weapons greater than 1 MT and 2/3 power for weapons less than 1 MT. The following table provides estimates of total US and USSR equivalent megatonnage for the period 1966–1980. It reflects weapons which would be loaded for initial strikes by unit bombers, operational ICBMs and deployable SLBMs, and does not consider any force modifications which may be required from a final Vladivostok agreement based upon the Vladivostok understandings.

[Deleted.] Due to introduction of new MIRVed ICBMs, the EMT trend shows the continually increasing capability of Soviet forces relative to the United States during the 1975–1980 time period.

CRUISE MISSILES

Chairman MCCLELLAN. Provide a comparison of U.S.S.R. and U.S. cruise missiles (launchers and numbers of missiles) by ship through 1980.

Answer. Chart I projects the U.S.S.R. cruise missile capability (launchers and missiles by ship type) through 1980 based upon intelligence estimates of known Soviet operational and programmed cruise missiles. Chart II depicts the U.S. cruise missile capability (launchers and missiles by ship type) through 1980 based upon current U.S. Navy program estimates. Figures include Harpoon and Standard Arm (Anti-Radiation Missile) missiles and launchers. It should be noted, however, that launcher comparisons provide misleading indicators of relative capabilities, [deleted].

INDUSTRIAL MANAGEMENT AT PUGET SOUND NAVAL SHIPYARD

Chairman MCCLELLAN. A GAO report on the Puget Sound Naval Shipyard noted that equipment justifications were being based on questionable machine-usage information and on projections of work no longer done by the shipyard. The Navy replied that it was conducting in 1974 a "shipyard modernization program restructure analysis" which, in the equipment areas, was to document equipment used and to project future needs. This analysis, according to the Navy, would validate the need for existing and proposed equipment.

Has the analysis been completed?

Answer. The shipyard modernization program restructure analysis for the Puget Sound Naval Shipyard was completed during November 1974, but has yet to be implemented.

Chairman MCCLELLAN. What effect has it had on earlier decisions to purchase equipment, and how much equipment was involved?

Answer. The restructure analysis in the area of industrial production equipment was made to revalidate the data base used in establishing the relationship between functional work elements and machine time. This data base will become operational with the fiscal year 1977 program. Puget's fiscal year 1974 and fiscal year 1975 projects were screened for requirements and it was determined that all items under procurement remain valid requirements. Fiscal year 1974 and fiscal year 1975 OPN budgets for procuring industrial produc-

tion equipment are extremely constrained and only hard core items are under procurement.

Chairman McClellan. How much equipment has been declared excess as a result of the analysis?

Answer. Five items of equipment have been declared surplus to Puget's needs and reported idle to the Defense Industrial Production Equipment Center (DIPEC) as a result of the data gathering phase of the analysis. The analysis has identified equipment which show low utilization for the current workload. Even though idle for prolonged periods of time, conditions such as fluctuating workloads, and R&D functions, create the need to retain certain idle equipment as "mission support" equipment. The shipyards are required to review these under-utilized items for need to accommodate known requirements in performance of the shipyards' mission and positively identified the equipment as "mission support" to DIPEC. Equipment which is identified as excess to future need will be promptly declared idle and excessed.

Chairman McClellan. What effect has the analysis had on shipyard operating costs?

Answer. The analysis has just been completed and will be implemented starting in FY 77. Therefore, no effect on shipyard operating cost has yet been realized.

Chairman McClellan. The report recommended that existing criteria for labor standards be reevaluated to insure that the application of standards at the shipyards contributes to more efficient management. In its response to the report, the Navy stated that (1) the responsibility for developing and maintaining standards was being transferred from the Production Department to the Planning Department at all shipyards; (2) qualified work measurement technicians were being relocated to the Planning Department; and (3) a new job-planning system was being implemented.

Have the Navy's actions achieved identifiable savings by increasing efficiency in naval shipyards?

Answer. The transfer of responsibility for standards development and maintenance and the relocation of work measurement technicians from the Production Department to the Planning Department has recently been completed in four of the eight naval shipyards. The remaining four are scheduled to complete the transfer by the end of calendar year 1975. Identifiable savings as a result of this action cannot be measured until such time as the product of this change is reflected in the return costs of waterfront work.

As stated in the original Navy response, the new job planning system (Work Oriented Job Order System) is also scheduled for general application no later than the end of calendar year 1975. The impact of this system on producing timely, cost competitive ship overhauls of good quality is expected to be significant, but an actual measurement of increased shipyard efficiency as a result of its application will not be possible until sufficient experience is gained in its application.

Any increase in naval shipyard efficiency achieved by the above actions will be extremely difficult to relate to a specific effort. These actions are only three of many continuous efforts on the part of Navy management to more efficiently manage its resources and operations. The total effort is so interdependent that the measurement of effectiveness of each of its separate parts is not practical.

Chairman McClellan. The report noted that shipyards were not recording the incidence or cost of correcting defective work and, therefore, had no basis for identifying or correcting production problem areas. The Navy replied that it had reemphasized to all shipyards the management advantages of an effective work and spoilage program.

Has the Navy's action improved quality control in naval shipyards, reduced the incidence and cost of defective work and achieved measurable savings in costs of operations?

Can you provide specific savings achieved as a result of these actions?

Answer. The Navy's action to re-emphasize the management advantages of an effective work and spoilage program, and the continuing management attention being directed to Quality Assurance during the Naval Sea Systems Command Performance Evaluation Team (PET) visits and Quality Assurance Audits of naval shipyards has resulted in revised procedures being instituted at naval shipyards, to more effectively identify the incidence and cost of correcting defective work. This is supported by an analysis of the Cost Class under which

defective work and spoilage is reported which reflects a 100 percent increase in the dollars being reported in fiscal year 1974 versus 1973.

It is emphasized that even though the Navy can demonstrate a marked increase in dollars being reported for defective work and spoilage, this does not have a definite correlation to quality. The increase could be caused by a number of, or combination of factors such as (a) more accurate reporting of costs because of Command emphasis, (b) higher shipyard workload, (c) inflationary impact, or others. We are unable at this time to report the effectiveness of these actions in terms of improved quality and reduced costs, since detailed analysis over an extended period of time, of defective work surfaced as a result of this program, is required to establish and evaluate trends in quality improvements and directly related cost reductions. The Naval Sea Systems Command is continuing its program to refine its efforts in this area. Current actions underway include a review of discrepancy item reporting systems employed in naval shipyards to determine the optimum system criteria necessary to identify, assure timely correction of, and selectively evaluate discrepancies that occur, and identifying discrepancy item reporting requirements to facilitate their inclusion into the standard naval shipyard Management Information System.

In summary, the Navy has recognized the need for continuing assessment of the quality of work performed in naval shipyards, the need for reducing the incidence and cost of defective work, and considers that the actions underway will achieve these objectives.

Aircraft Modification Program

Chairman McClellan. A GAO report dated October 1, 1974, contained several recommendations concerning the management of aircraft modification programs in the military services. DOD stated that the military services were implementing the recommendations in its response to the report.

a. One recommendation was that each service should develop and submit, with its budget request for aircraft modifications, summary data showing a projected installation schedule which considers modification workloads already approved and funded and which forecasts capabilities for installation.

Have the services achieved measurable savings in connection with their 1976 budget requests for aircraft modification funds as a result of this procedure? What is the magnitude of these savings?

b. Another recommendation was that the services should more fully use the modification capability and capacity that exists below the depot level.

Have the services been able to identify any cost savings through increased utilization of modification capability and capacity below the depot level? How much?

c. The report also recommended that the Navy should evaluate its backlog of modification work to insure that the modifications were still warranted.

Has the Navy been able to reduce planned installation costs for modifications as a result of this evaluation? If so, how much?

Answer. The Military Services are in the process of implementing the GAO recommmendations. However it is premature at this time to answer the above three questions. During the forthcoming apportionment hearings the Services will be required to submit appropriate data/information as backup to their modification programs.

Marine Corps Supply System

Chairman McClellan. A recent GAO report concerning the Marine Corps logistics system recommended that certain functions be reduced or eliminated. According to DoD's response to the report, the Marine Corps will eliminate integrated managed items from its centrally managed inventory. This involves about 157,000 or 73 percent of the Corps' supply support items.

To what extent will the elimination of these items reduce personnel, office space, and automatic data processing equipment requirements for the Inventory Control Point (ICP) complex being constructed at Albany, Georgia?

To what extent will personnel and storage requirements at the Albany and Barstow, California warehouses be reduced?

The Corps' centrally managed inventory will be reduced to 58,499 items, when integrated managed items are eliminated. According to Defense Logistics Services Center reports the figure may be as low as 29,340. Moreover, the items are primarily consumable, represent a variety of supply classes, and could be handled by integrated managers without any problem.

Why is it necessary for the Marine Corps to continue central management of such a relatively limited number of items?

Could management of these items be assumed by other DoD supply activities? Wouldn't it be feasible for the Defense Supply Agency to handle this for the Marine Corps?

(c) Most of the Marine Corps' principal items are also procured and provisioned by other military services which use the items the most. However, Marine Corps headquarters procures some principal items from commercial sources, and the Corps' ICP provisions new principal items.

Why is it necessary for the Marine Corps to procure and provision principal items?

Could another military service perform these functions for the Marine Corps?

(d) Marine Corps depot maintenance operations are relatively small and performed on a job-shop rather than a more efficient assembly-line basis. GAO recommended that equipment be overhauled by the cognizant military services to eliminate the overhaul function of the Marine Corps' two maintenance depots. DoD's response to the recommendation referred to a DoD-wide study regarding the potential for further interservicing of depot maintenance that had been underway for several months.

What progress has been made on the study and how will this affect the potential for interservicing Marine Corps depot maintenance requirements?

(e) Most of the Corps' ground ammunition is procured by the Army and stored by the Navy. GAO recommended that ammunition be subject to DoD-wide management to reduce Marine Corps headquarters' ammunition management function. DoD's response to the recommendation refers to a review of further centralization of the management of ammunition that was initiated in June 1974.

What is the status of the review?

What decision has been made regarding the Marine Corps' management of ammunition?

Answer. These questions pertain to the GAO Final Report B–146828, "Marine Corps Logistics System Could be Drastically Reduced by Greater Reliance on Integrated Managers." This GAO report is now being reviewed. When the DoD position on the matter has been determined, the committee will be informed without delay.

"Food Purchases for the Military Services"

Chairman McClellan. A General Accounting Office (GAO) report in military food procurements noted that rigid specifications increase costs and decrease the number of available suppliers. GAO suggested that the Military Services should develop alternative specifications as to form, grade, and sizes for use whenever solicitations for food items are made.

Does DoD plan to revise its specifications so that more commercial food items would be acceptable?

What are the estimated savings in procurement costs that could be realized by revising specifications?

Answer. Food specifications (Military and Federal) used by Department of Defense (DoD) in its procurements are prepared to keep requirements to a minimum and to provide the supplier as much flexibility in source and selection of raw materials and in processing as possible. However ,if DoD is to describe the product which it wants so that all vendors bid and produce on an equal basis, the specifications must be definitive and restrictive. Since specifications are a part of a contractual package, they must also be rigid. The specifications do include alternate types, classes, styles and grades where appropriate. The Military Services, which are responsible for the acceptability of their troop feeding programs, determine which of these alternatives will be acceptable for their use. These minimum alternatives are listed in the Federal Supply Catalog, Class 89, as being authorized for procurement and use. This entire food system is based on minimum requirements.

Food specifications are dynamic documents which are constantly being revised as a result of value engineering proposals, complaints from the Services, procurement problems, technology changes, and scheduled periodic reviews. The DoD goal is to keep requirements to a minimum so that more commercial products can meet the specifications. Not all commercial products are of equal quality or acceptable for DoD use. DoD does attempt to use well defined and commercially accepted standards where they exist. DoD does use the U.S. Department of Agriculture (USDA) standards for grades for canned and frozen fruits and vegetables as well as USDA inspection, and the canned items are

bought "off-the-shelf;" i.e., already processed commercial products. This category of canned and frozen fruits and vegetables constitutes a considerable portion of DoD food procurements. DoD also uses the USDA standard for grades for its meat procurements.

It is impossible to provide an estimated savings in food costs by revising specifications as each revision must be considered separately as it is made. During the revision of specifications, changes may be made that will increase the cost of a product when the Services and the specification preparation agency believe such a change is required. The constant effort, though, is to find ways to reduce product costs. For example, the Services recently approved use of size range 4 for breaded shrimp which it was estimated would save $217,700 annually. They also deleted the grade requirement for chicken used for dehydrated products and changed the lima bean requirement in frozen mixed vegetables. Both changes give the processors greater flexibility and should reduce costs. DoD has asked the Army, which has the DoD responsibility for preparing the specifications, to increase its support of specifications so as to provide greater attention to the cost impact of changes to the specifications.

Chairman McClellan. The report stated that it could not be readily determined whether commissary prices included all retail and wholesale costs as required by law because costs pertaining to troop issue and commissary transactions were commingled. Furthermore, transportation costs from inland depots to embarkation ports, totalling about $1.2 million a year, were not included in commissary prices, according to the report. We understand that the Army and Air Force are developing procedures for segregating costs at the retail level.

What is the status of the program for segregating costs at the retail level?

What action has been taken in response to GAO's recommendation that the wholesale costs also be segregated?

What has DoD done to bill commissaries for transportation costs from inland depots to embarkation ports?

Answer. The Army and Air Force have developed procedures to segregate troop issue and commissary costs at the installation level and plans are to implement these systems on 1 July 1975.

Recent requirements that commissary resale stores be self-sufficient have resulted in a DoD study of commissary management. The segregation of troop issue and commissary costs at the wholesale level by the Defense Personnel Support Center will be addressed as a part of this study.

DoD believes that its interpretation of the law is sound; that is, this transportation charge should not be passed on to the overseas customer, and there are no present plans to revise DoD Directive 7420.1. However, the additional GAO comments in the final report are being taken under advisement and this subject continues to be reviewed.

Depot Maintenance Plants in Germany

Chairman McClellan. A GAO report dated June 12, 1974, concerning Army maintenance in Germany noted that the costs of operating depot maintenance plants had risen sharply, and it would be more economical to return some items to the United States for repair. We understand that the Army has decided to discontinue all depot maintenance operations in Germany.

What are the estimated savings that can be achieved by having depot maintenance work for the Army in Europe performed in the United States? Identify by appropriation account in fiscal year 1976.

Answer. Based upon the Department of the Army study of March 1, 1974, it is estimated that approximately $3.0 million per year can be saved by having the Army's depot maintenance work in Europe performed in the United States; as savings are accrued, they will be reflected in appropriation account O&MA Program 7, sub-program 7M.

Chairman McClellan. The report also noted that depot maintenance plant were performing repairs that should have been done by lower maintenance levels.

To what extent has the Army in Europe increased the efficiency of lower maintenance levels and what effect has increased efficiency of lower maintenance levels had on depot maintenance requirements?

Answer. The depot maintenance requirements have been reduced approximately 25 percent as a result of the increased effort being performed at the lower levels (DS/GS) of maintenance.

Chairman MCCLELLAN. What are the estimated savings that could be achieved by implementing the recommendation that the Naval Sea Systems Command expand the use of mechanized material ordering and adopt the mechanized job order system?

Answer. Although it is expected that substantial dollar savings will occur as a result of adopting the mechanized material ordering and job order systems, a projected dollar savings amount cannot be provided until completion of evaluations of pilot installations.

Pilot communications capability installations have been requested for the Portsmouth and Charleston Naval Shipyards. One of the products to be obtained from the pilot project installations is the determination of savings achievable by implementation of a mechanized job order and a mechanized material ordering system.

The Portsmouth pilot project is being designed to demonstrate the effectiveness of using on-line computer terminals to and from the Planning and Production Departments. The system will allow retrieval of standard job orders (from previous overhauls of similar ships) from a computer data bank, and on-line updating and computer issue of revised job orders. Simultaneously, the data will be entered into the Shipyard Management Information System (MIS).

The Charleston pilot project is designed to provide an on-line real-time material management system that will provide material status inquiry and update capability at remote terminals from the time the material requirements are identified until the material is issued or disposed of. The system will provide improved material support to waterfront operations through earlier identification of material requirements, improved asset screening, decreased material requisition and receipt processing time, improved status reporting of outstanding material orders and computer assisted monitoring of internal material movement. The mechanized material ordering application of the Shipyard MIS presently under development and scheduled for implementation at all naval shipyards in late 1975, is based on the ability to retrieve material ordering and usage history as well as Design Agent material information from a computer data bank. This application will be interfaced to the Charleston pilot project to form a total real-time material management system for naval shipyards.

Chairman MCCLELLAN. The General Accounting Office (GAO) reported in October 1974 that many items were still active in the Federal Supply System, even though they had been identified as no longer needed and could be eliminated.

How many items in the eDpartment of Defense (DoD) supply system have been identified as no longer needed and what cataloging, supply management, and warehousing costs are incurred by retaining such items?

What progress is being made to eliminate items identified as no longer needed?

Answer. As of December 30, 1974, 162,281 items of the 3,665,199 managed by the DoD were registered in the Federal Supply Catalog file as Supply Status Code (SSC)-6 indicating that the item is terminal/stocked, procurement not authorized. This represents 4.4% of the items wholesale managed by DoD inventory managers. The SSC is the only available means of determining items from the cataloging files which have been replaced through standardization actions. Even though an item has been thus categorized, legitimate uses for many of these items may remain; therefore, no valid estimate of actual unneeded items is feasible. A program for making such determination is described in the ensuing paragraph.

The Defense Inactive Item Program (DIIP) Manual, DoD 4140.32-M, has recently been revised and now provides for treatment of nonstandard items. Items coded as nonstandard will be referred to all registered users for review and decision to retain or delete their user interest on the item. Items coded for deletion by all registered users will be eliminated from the supply system. Items coded for retention for reference and accounting purposes only, which have no assets in the wholesale supply system, will be designated SSC-9, Semi-active. SSC-9 items are not authorized for wholesale stockage but are retained in the catalog for reference and accounting purposes when stocks are in use below the wholesale level. Items coded for retention as semi-active, which have assets, will be considered for disposal and subsequently coded SSC-9 unless the inventory manager justifies retention of stocks. SSC-9 items will be reviewed periodically for further consideration for elimination of the item from the cataloging sys-

tem. These expanded provisions will be implemented by all DoD activities by January 1976. Further, the DIIP, which has been suppressed to varying degrees among the Services/Agencies due to dedication of personnel resources to high priority programming efforts, is now being fully reactivated. The DSA alone has identified 254,948 items for review under DIIP criteria and has forwarded 533,202 requests for review to registered users. These reviews are due for completion in May and June 1975.

Chairman McClellan. GAO also reported that many useable items, which are designated as no longer procurable and earmarked for deletion from the supply system (nonpreferred), are not immediately used. The items remain in warehouses for years while the newer more desirable (preferred) items are purchased and issued. GAO recommended that the nonpreferred items be issued before preferred items, unless the requisitioner could justify the need for the preferred item.

Why hasn't DoD accepted this recommendation of issuing nonpreferred items where it is feasible to do so?

What is the estimated value of nonpreferred items in DoD's supply system?

Answer. We believe that DoD activities are issuing nonpreferred items in most situations where it is feasible to do so. We do not concur in an across-the-board forced issue policy because, as explained in our response to the report, many items have a one-way substitution relationship. An item designated as preferred will work in all applications to replace one or a number of items which have been designated nonpreferred. The item designated nonpreferred will not necessarily perform the functions, in all applications, required of the preferred item. When a nonpreferred item is interchangeable with the preferred item, it is coded "use until exhausted" upon being made nonpreferred. In some instances an item is designated as one which is prone to continuous technical improvements. These items will not be replaced by a new stock number until there is a need for the new stock number. A 60-day minimum waiting period is imposed prior to assignment of a National Stock Number to these types of replacing items. In addition, assets of the nonpreferred interchangeable item are applied to the computation of requirements of the preferred item (up to the reorder level). This encourages issues of the nonpreferred item. Telephone calls are made to requisitioners to determine if a nonpreferred item is acceptable in lieu of a preferred item which may be in short supply and in most cases when the items are of large dollar value. The DoD Steering Committee being formed as a result of the GAO recommendation will investigate further techniques for attrition of nonpreferred stocks.

To determine the estimated value of nonpreferred items in DoD's supply system would require special computer programs by DSA and each of the Military Services. As indicated previously, the assets of nonpreferred items in a family group are rolled up into the assets of the "head of the group," or preferred item, and are not recorded in asset files separately. If this information is still determined to be essential, we would determine an estimated program cost and time for your consideration, prior to programming.

A–6E Medium Attack Aircraft

Chairman McClellan. I note that the requested fiscal year 1976 buy of 12 A–6E aircraft is the last procurement scheduled. What are the reasons for terminating procurement of this aircraft for the Navy?

Answer. Our planned A–6E procurement will provide us a Department of the Navy force of about 192 UE aircraft (16 fully equipped squadrons) through fiscal year 1980. With normal peacetime attrition this force would further decrease to about [deleted]. By that time, we will most likely be developing a follow on to the A–6E in order to modernize that force with then state-of-the-art airborne, all-weather ordnance delivery technology.

During this time of budget constraints, we have determined that our planned A–6 force level can fulfill its required missions with prudent risk. This determination is based upon the mutual reinforcement of Navy and Marine A–6 forces in accomplishing the Department of the Navy all-weather attack missions of close support, anti-shipping and deep interdiction. Additionally, we would expect Harpoon missile carrying aircraft to take over a portion of the all-weather anti-ship mission in the future.

QUESTIONS SUBMITTED BY SENATOR THURMOND

Chairman McCLELLAN. I am submitting a list of questions for Senator Strom Thurmond, who was not able to be present today.

[The questions and answers follow:]

PROPOSED NAVAL REDUCTIONS

Senator THURMOND. Mr. Secretary, it is my understanding the sharp reduction in the Naval Reserve for FY 1976 was to some degree imposed upon the Navy by the Department of Defense. Would you provide for the record the reductions proposed by the Navy and those proposed by the Department of Defense?

Answer. The reduction in Navy Selected Reserve drill strength is a result of some retirements, due to age, and other reductions in Reserve ships and squadrons, and in other units. The majority of the reduction results from identifying ship and squadron augmentation personnel assets significantly in excess of requirements projected for FY 1976 and beyond. During the DoD programing cycle, the Navy initially proposed reducing to a total strength of 108.3 thousand. After reviewing the most recent programing data, the OSD staff proposed reductions in ship and squadron augmentees which would have resulted in a total strength of 85.5 thousand. The Chief of Naval Operations agreed that such a lower figure might be adequate, but that pending completion of detailed studies a total strength of 92.0 thousand was reasonable and would adequately support currently identifiable essential requirements.

REDUCTION IN NAVAL RESERVE ENGINEER BATTALIONS

Senator THURMOND. What is the justification for the reduction in the Naval Reserve engineer battalions from 17 to 8?

Answer. The reduction in Naval Reserve engineer battalions is part of two major DoD objectives: (1) the prudent shifting of some resources towards improved direct combat effectiveness, with an accompanying increased recognition of the potential contributions of the civil sector, and (2) ensuring that all units, active and reserve, are adequately equipped to undertake their missions. With 17 battalions, movement plans have shown that some Seabee battalions will reach the combat theater as late as six months after mobilization. This delay is a reflection of their priority and of the weight of their equipment and construction materials. Furthermore, current medical evacuation policies have reduced the requirements to build hospitals in theater and the U.S. civilian construction industry has a sizable capability to provide manpower to meet long term, rear area construction requirements.

With regard to the second point, the 17 reserve Seabee battalions are currently equipped to about half of their requirements. The proposed program of 8 active and 8 fully equipped Reserve battalions will provide, during a period of full mobilization, the requisite three battalions per Marine Division, with four additional battalions available for other early requirements.

CIVILIAN CONTRACTORS

Senator THURMOND. Explain the reasoning behind the idea that this capability can be assumed in wartime by civilian contractors.

Answer. The basic concept is that more of the long-term construction requirements for a major contingency can be assumed by the civilian construction industry. Civilian contractors would be able to assume a small portion, depending on the conflict situation, as was the case in Vietnam. The rationale, however, is based more on the concept of skilled individuals being available to DoD in the draft environment accompanying mobilization. The construction trade is particularly suited to this approach, and peacetime economies can be achieved by recognizing that this type of draftee would require only brief, basic military training to perform his job. We have proven this capability with Seabees in WW II and the Direct Procurement Program in Vietnam.

Peacetime Contributions of Engineer Battalions

Senator Thurmond. Mr. Secretary, is it not true that the engineer battalions make a contribution during peacetime as opposed say to an aircraft squadron which during peacetime consumes considerable money but does not make a contribution as such?

Answer. The primary contribution of the Department of Defense is to national security. We try to allocate the available resources to maximize this contribution. This leads to a combat-oriented force structure whose peacetime contribution is primarily deterrence, although our operating and support forces on occasion undertake a wide variety of such peacetime functions as disaster relief and evacuation of U.S. citizens. The recent assistance to Mauritius provided by Enterprise is a case in point.

With respect to peacetime use of military construction units, it is DoD policy not to use enlisted personnel in competition with civilian labor where such use practicably can be avoided. Accordingly, the Seabees undertake peacetime construction projects in the U.S. primarily to maintain unit technical proficiency. In addition, they also undertake important projects at remote locations in direct support of the operating forces. The programmed active construction units are expected to be adequate to meet such important peacetime requirements.

Purchase of Surplus Aircraft

Senator Thurmond. Mr. Secretary, what consideration has been given to the feasibility of buying surplus 747's or 707's from the airlines for use in the Airborne Command Post of AWACS program?

Answer. The option of acquiring excess airline 747's has been recently evaluated and does not appear attractive. To remove the airline equipment, refurbish and them modify the airframes to the configuration of the four 747–200B aircraft now under contract (and for the 707–320B aircraft in the case of the AWACS E–3A) would be very expensive. There is also a problem in obtaining "low time" excess airline 747's and 707–320B's from the commercial carriers. We believe that procuring new aircraft with our peculiar airframe modifications done during production is more cost effective. This position applies to both the Airborne Command Post and the AWACS programs. This condition could change, however, with a change in the relative cost of new and used aircraft. The situation will be monitored to ensure that any action taken is the most advantageous for the government.

Boeing AABNCP Management Team

Senator Thurmond. What is the reason for the change in the contractor team last November for the Airborne Command Post program?

Answer. The Boeing AABNCP management team was changed after Boeing top level management was alerted to potential program problems by the Air Force AABNCP program director. The Air Force was concerned that the Boeing management team was not adequately maintaining control of the program.

Question. What cost growth or schedule delays have been experienced in the AABNCP program and what were the reasons for these problems?

Answer. We have experienced some development problems, with resultant scheduled delays and cost impacts. The details of these problems are covered in a U.S. General Accounting Office staff study due to be released this month. As you have been apprised, we believe some additional problems are being uncovered by the Air Force. I do not have a full report on these problems. An in-depth review is being conducted by the Air Force at the present time. We will keep you informed of our contemplated actions following completion of this review.

F–16 Program

Senator Thurmond. Mr. Secretary, break out for the Committee the development program planned for the F–16 for the next few years as compared with the development program envisioned for the F–16 when these proposals were presented to the Congress last year?

Answer. In April of last year, I advised the appropriate Committee Chairman that the flight testing programs for both the YF–16 and YF–17 LWF prototypes should permit us to select the more promising of these two candidate airframe configurations in FY 1975 and proceed into engineering development in prepara-

tion for a possible production decision of an ACF as early as FY 1977 or 1978. Our present program is essentially the same; the source selection was completed in January 1975 and the planned production decision date is February 1978. Additionally, we plan first production aircraft delivery in January 1979 with the first squadron becoming operational in 1980.

QUESTIONS SUBMITTED BY SENATOR YOUNG

Senator YOUNG. Mr. Chairman, I would also like to submit further questions to be answered for the record.

Chairman MCCLELLAN. They will be inserted in the record at this point.

[The questions and answers follow:]

BUDGET COMPARISONS

Senator YOUNG. Mr. Secretary, on balance, how does the fiscal year 1976 Defense Budget request compare with:

(a) Fiscal Year 1975?

(b) Domestic programs?

(c) Defense budgets over the last 10 years?

Answer. The information is included in the following tables:

DEFENSE BUDGET TOTALS

[In billions of current dollars]

	Fiscal year		Change fiscal year 1975 to 1976
	1975 estimate	1976 estimate	
Total obligational authority	89.0	104.7	15.7
Budget authority	90.8	106.3	15.5
Outlays	84.8	92.8	8.0

DEFENSE BUDGET TOTALS

[In billions of constant fiscal year 1976 dollars]

	Fiscal year		Change fiscal year 1975 to 1976
	1975 estimate	1976 estimate	
Total obligational authority	96.5	104.7	8.2
Budget authority	98.6	106.3	7.7
Outlays	93.2	92.8	−.4

COMPARISON OF DEFENSE AND NONDEFENSE PROGRAMS, 1970 TO 1976

[Outlays, dollars in billions; fiscal years]

	1970	1971	1972	1973	1974	1975	1976	Change 1970–76 [2]
National defense [1]	$79.3	$76.8	$77.3	$75.1	$78.6	$85.3	$94.0	$14.7
Veterans, space, international	16.0	16.2	17.9	18.3	20.2	23.5	25.4	9.4
Interest	18.3	19.6	20.6	22.8	28.1	31.3	34.4	16.1
Social and economic	89.6	107.2	124.2	142.6	158.1	190.2	215.8	126.2
Agency total	203.2	219.8	240.0	258.8	285.0	330.3	369.6	166.4
Undistributed offsetting receipts	−6.6	−8.4	−8.1	−12.3	−16.6	−16.8	−20.2	−13.6
Net total	196.6	211.4	231.9	246.5	268.4	313.5	349.4	152.8

[1] During the period 1970 to 1976, National Defense has increased 18.6%, and Social and Economic programs have increased 140.9%.

[2] Includes atomic energy, stockpile, and other functions.

DEPARTMENT OF DEFENSE BUDGETS, FISCAL YEARS 1964 THROUGH 1976

[In millions]

	Outlays		Budget authority	
	Current	Constant	Current	Constant
Fiscal year:				
1964	$50,786	$110,271	$50,669	$112,975
1965	47,098	99,964	50,190	108,914
1966	55,182	112,972	64,720	135,658
1967	68,315	135,158	73,455	147,823
1968	70,027	148,795	76,740	148,795
1969	78,661	143,733	77,485	142,735
1970	77,880	131,627	74,483	126,625
1971	75,545	119,443	72,887	115,973
1972	75,957	111,725	78,012	114,507
1973	73,828	101,693	80,404	109,625
1974	78,445	98,723	88,898	109,994
1975	84,800	93,222	90,758	98,582
1976	92,800	92,800	106,340	106,340

Senator YOUNG. Does this budget contain new programs such as ships, aircraft or missiles?

Answer. Our procurement request for fiscal year 1976 contains relatively few "new starts". In aviation programs, there are only two new utility aircraft, the U–X for the Army at $14 million and the C-12A for the Air Force at $12 million; and one trainer, the Navy's VTAMX at $9 million. There is also $77 million for advance procurement of long leadtime items for B–1 bomber which protects our option to initiate production of the B–1 in fiscal year 1977. With regard to Navy shipbuilding programs, the only new program involves the procurement of two fleet oilers in fiscal year 1976 at $232 million.

The balance of our procurements for fiscal year 1976 is for continuing programs initiated in earlier fiscal years or relatively minor programs such as improved electronics items, munitions or support equipment.

Senator YOUNG. How does this budget request compare in constant dollars with fiscal years since 1970?

Answer. The information is included in the following table:

COMPARISON OF THE DEPARTMENT OF DEFENSE BUDGETS FISCAL YEARS 1970 THROUGH 1976

[In millions of constant fiscal year 1976 dollars]

	Outlays	Budget authority	TOA
1970	131,627	126,625	129,368
1971	119,443	115,973	118,531
1972	111,725	114,507	113,715
1973	101,693	109,625	109,376
1974	98,732	109,994	104,410
1975	93,222	98,582	96,468
1976	92,800	106,340	104,684

COMPARISON OF INFLATION AND REAL GROWTH

Senator YOUNG. It appears that major budget changes are included in military personnel, retired personnel, operations and maintenance, procurement, and research development.

Please comment on these changes, including the amount for inflation as compared to real growth.

Answer. The following table and associated comments provide this information.

BUDGET CHANGES—FISCAL YEAR 1975 TO 1976[1]

[In billions of dollars]

Appropriation title	Fiscal year—				Change fiscal years 1975 to 1976 constant dollar
	1975 current dollar	1976 current dollar	1975 constant dollar	1976 constant dollar	
Military personnel	$25.0	$25.9	$26.5	$25.9	—$0.6
Retired pay	6.3	6.9	6.6	6.9	.3
Operations and maintenance	26.3	29.8	29.2	29.8	.6
Procurement	17.4	24.7	18.8	24.7	5.9
R.D.T. & E	8.6	10.3	9.3	10.3	1.0
Military construction	1.9	2.9	2.1	2.9	.8
Family housing	1.2	1.3	1.3	1.3	
Civil defense	.1	.1	.1	.1	
Military assistance	2.3	2.7	2.6	2.7	.1
Total	89.0	104.7	96.5	104.7	8.2

[1] Totals may not add due to rounding.

AREAS OF GROWTH

Military Personnel—There is actually a reduction in this title related to reduced strength levels, reduced proficiency pay, and bonus payment programs.

Retired Pay—An increase of approximately 51,000 average retired strength is projected for FY 1976.

Operations and Maintenance—There is real program growth planned for areas which will contribute to materiel and personnel readiness.

Procurement—In this title, there are increases related to the build-up of production rates for the A–10 and F–15 aircraft programs, aircraft modification and procurement of spare parts, initial investment toward production of the TRIDENT missile, additional quantities of the M60A1 tank, and additional emphasis on the Navy's shipbuilding program.

RDT&E—The increase in this area is associated with a number of major weapon systems projects such as the TRIDENT missile, cruise missile programs, and the B–1 bomber program; plus continued emphasis on systems in development such as the air combat fighter program which enters full-scale development.

Military Construction—Growth in this program relates to continued emphasis on replacing and upgrading troop housing, modernizing health facilities, and sheltering in-place dual-based and rapid reaction aircraft in Europe.

Family Housing, Civil Defense, and Military Assistance—These programs remain relatively constant in FY 1976.

MANPOWER REDUCTIONS

Senator YOUNG. Mr. Secretary, has there been any manpower reductions in:

(a) NATO forces.
(b) Korean Forces.
(c) Pacific forces.
(d) Other overseas assignments.

Answer. The following table shows our planned military strengths in these areas for end fiscal years 1974 through 1976.

AUTHORIZED AND PLANNED MILITARY MANPOWER

[In thousands of dollars]

	Fiscal year—		
	1974	1975	1976
Europe and related areas	317.2	313.3	315.3
Western Pacific and Southeast Asia (includes Korea)	189.1	161.8	150.3
Korea	42.0	[deleted]	[deleted]
Other foreign areas	8.9	9.3	9.1

Our programmed strength in Europe and Related Areas will not change substantially from end FY 1974. There is a small decline from end FY 1974 to end FY 1975 and a slight increase from end FY 1975 to end FY 1976 because many of the support reductions associated with the Nunn Amendment support to combat conversions are being taken in FY 1975 while the compensating combat increases will not be made until FY 1976. Strength in Korea remains relatively constant. Our overall strength in the Pacific and Southeast Asia declines substantially from end FY 1974 through end FY 1976 [deleted]. Strength in other foreign areas will remain relatively stable.

Cambodian Situation

Senator Young. What is your estimate of the situation in Cambodia? Will the Lon Nol government survive if the Mekong River resupply is cut off?

Answer. The military situation in Cambodia is critical. The Khmer Communists (KC) have embarked on an ambitious dry season campaign aimed at closing the Mekong River. Thus far they have completely interrupted the flow of supplies reaching Phnom Penh via the Mekong, reducing levels of stocks including ammunition. POL, and food to critically low levels. In conjunction with this interdiction effort, the KC have maintained pressure on Phnom Penh and government-held enclaves in an effort to prevent the Cambodian army from reinforcing the Mekong front. On an emergency basis, civilian airlift is delivering approximately 600 short tons of military supplies to Phnom Penh daily. A similar airlift funded by USAID to move civilian consumables is also being initiated. The prognosis for halting the KC and reversing the tactical situation in favor of the GKR is guarded. Without additional U.S. funding, the GKR will fall.

If the Mekong River remains cut off, an overwhelming dependence will be placed upon Pochentong Airfield. To the extent that funding is available, the U.S. will be able to airlift supplies into the capital but, even if the airfield is not restricted by enemy action, it will not be able to sustain a full-scale resupply operation. Given the necessary material assistance, however, the GKR should be able to concentrate its efforts on reopening the Mekong after the current dry season ends.

Supplemental Request

Senator Young. Congress appears to be in the mood to disapprove the Supplemental request for Southeast Asia. What effect will the denial of the Supplemental funds requested have on Cambodia?

Answer. In the event the $222 million request for supplemental funds for Cambodia is turned down by Congress, Cambodia will be faced with the prospect of continuing on with the supplies on-hand and supplies en route in the pipeline. All FY 75 authority to provide military assistance to Cambodia has been used.

Senator Young. What effect will the denial of the supplemental funds have on South Vietname?

Answer. The denial of the supplemental funds will prevent the GVN from alleviating the severe restrictions placed on ammunition and POL consumption due to the $700 million appropriation level. These restrictions have caused serious degradations of the RVNAF capabilities to meet the NVA threat. Even under tightly controlled internal conservation measures imposed by the South Vietnamese Joint General Staff, the drawdowns of in-country stockages will continue apace as the RVNAF responds to NVA initiated activity. Without the additional funding, the GVN will be unable to maintain ammunition depot stockages at a minimum acceptable level to sustain an intense combat consumption rate [deleted] restrict [deleted] the utilization potential of all vehicles, naval craft and aircraft; and jeopardize even that [deleted] utilization rate by the failure to supply critically needed spare parts.

In the final analysis, the lack of supplemental funding does not dictate the imminent collapse of South Vietnam. However, the absence of additional funds will place the RVNAF in a position where they will no longer be able to protect essential outlying population centers and agricultural sectors from further North Vietnamese encroachment.

Effect on South Vietnam of Fund Cutoff

Senator Young. The fiscal year 1976 Budget requests over a billion dollars for South Vietnam similar to last year. In view of the Congressional reduction to $700 million last year, and the President's request to continue funding for only

three years, will South Vietnam be able to survive on first, less funds than requested, and second, after U.S. funds are cut-off?

Answer. With respect to the President's three-year funding proposal, explicit in his request is an adequate level of funding for those three years. Any reductions in these requests would cause a corresponding reduction in the chance for the three-year program to succeed. No one can guarantee that with even the requested aid, South Vietnam will survive; however, without sufficient levels of funding there is little doubt that the South Vietnamese people will ultimately fall victim to North Vietnamese aggression.

Should the three-year proposal become policy as determined by the U.S. Congress and assuming approval of the requested appropriation levels, we would hope that development of the economy combined with access like any other country to normal sources of external financing would be sufficient to enable South Vietnam to effectively carry the defense burden in the out years. Obviously there are many variables. Much depends upon what the North Vietnamese do. At this time one cannot speak authoritatively.

Efficient Utilization of Manpower

Senator Young. Since 53% of the Defense Budget request is for manpower costs, has the Department of Defense been involved with the Military Manpower Commission concerning more efficient utilization of manpower?

Answer. Since the Defense Manpower Commission was established, the Department of Defense, specifically the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), has been working very closely with the Commission. We have met with them on many occasions, provided a significant amount of information as they have requested, and have attempted to be responsive to all their needs for information and data. In the area of manpower utilization, we continually strive to improve our own effectiveness and we have kept the Commission apprised of our efforts in this area. We are aware that they are seeking to develop even better or different ways, if possible, for improvement in this very vital area.

Contributory Retirement System

Senator Young. Has the Department of Defense or the Manpower Commission investigated the institution of a contributory retirement system similar to Civil Service to reduce appropriations for retired pay in the future?

Answer. The Third Quadrennial Review of Military Compensation which is presently under way in the Department of Defense will be examining the present noncontributory retirement system coincident with the requirement placed upon the Department in the "Joint Conference Committee Report on the Department of Defense Appropriation Act, 1975." We will be reporting to Congress on the results of our analysis no later than January 15, 1976. It is my understanding that the Defense Manpower Commission also has this item under consideration.

Unaccompanied Overseas Tours

Senator Young. Has anyone considered unaccompanied overseas tours for our military personnel as a means of reducing support costs, manpower and manpower costs?

Answer. The Army and the Air Force currently use unaccompanied tours for most of their military personnel in Korea, as do the Marines for the division stationed on Okinawa. Six month, unaccompanied unit rotations are planned for the maneuver battalions of the two additional brigades programmed for Europe. Both the Army and the Air Force are currently examining the costs of unaccompanied unit rotation systems for Europe. In addition, the Surveys and Investigations Staff of the House Appropriations Committee is inquiring into the feasibility of instituting unaccompanied individual and unit replacement systems for US Armed Forces overseas.

Military Pay System

Senator Young. The military pay system is a patch-work system at best based on various statutes, rulings and regulations. Does the Defense Department ever intend to scrap the present pay system in favor of a modern, efficient and equitable pay system?

Answer. The Department of Defense has recently initiated a complete review of the principles and concepts associated with the present uniformed services compensation system, which will be known as the 1975 Quadrennial Review of Military Compensation. Under this review, which is required by law, a comprehensive examination of the workings of the entire compensation system will be made with a view toward recommending changes where a need for modernization exists. In this regard, various optional pay systems will be investigated and the views of the Defense Manpower Commission and the General Accounting Office will be solicited and considered. Upon completion of the review, a complete report will be submitted to the Congress which will include the findings and recommendations emanating from the study effort.

Strategic Vehicles

Senator Young. General Brown, the Vladivostok meeting established an equal aggregate level of 2400 strategic vehicles of which 1320 may be MIRVed. Can you expand in more detail as to the effect this will have on:

(1) The balance of strategic power; and

(2) Research and development of strategic weapon systems?

Answer. The Vladivostok accord established the framework for a new SAL agreement based upon the principle of equivalency. The strategic balance is in dynamic equilibrium today and can be maintained at or below the aggregate numbers agreed to in Vladivostok. We are, however, witnessing in the Soviet Union a massive initial deployment of improved strategic weapon systems. The USSR is increasing throwweight, improving accuracy, and deploying MIRVs. The power of the Soviet Union's strategic offense force will, thus, increase even within the constraints of Vladivostok. The Soviet Union is outspending the U.S. by a wide margin in strategic force development and deployment, but our current forces, along with the strategic force modernization programs, such as B–1, Trident and Minuteman improvements, will maintain essential equivalence in the mid-term with the Soviet Union—as measured by the basic factors that determine force effectiveness.

As to your second question, there is no direct impact on R&D but the fact that quantities are limited will naturally place emphasis on maintaining equivalent capabilities within those numerical limits. We cannot prudently allow major asymmetries to develop in qualitative factors that contribute to the effectiveness of our strategic forces.

Soviet Development of Strategic Weapons

Senator Young. Will the Soviets be able to continue their aggressive development of strategic weapons?

Answer. Yes. There is no limitation on development in the Vladivostok understandings. From a technical viewpoint, the Soviet Union has the capability for continued development of strategic weapons. Capital and manpower investment in the strategic weapons R&D base has shown both a significant and continuing growth. Those facilities devoted to the research, design, development and testing of new strategic weapon systems have more than doubled in size since the early sixties.

Soviet Strategic Bomber Force

Senator Young. Is there any indications that the Soviets intend to build a strategic bomber force?

Answer. The Soviets have a strategic bomber force and have had one of varying size since World War II. The present command, Long Range Aviation, was established in early 1946. The present command structure is strikingly similar today and the force is still deployed in the same geographical areas in spite of major changes in equipment. Available information indicates that Long Range Aviation will continue to be an important part of the Soviet strategic strike force for the foreseeable future.

MINUTEMAN Missile

Senator Young. Last year the Air Force wanted to conduct an operational test of a MINUTEMAN missile from a deployed silo in Montana but failed to gain Congressional approval. Is this still desired? If so, what will it prove?

Answer. The Air Force is not requesting FY 1976 funds for OBL. However, we remain convinced that the proposed tests are safe and would add to our deterrent posture. The OBL demonstration had high potential for further enhancing our deterrent posture. The proposal will be reviewed in the future and an appropriate recommendation made based on the then existing circumstances.

As you are aware, the MINUTEMAN II Operational Base Launch (OBL) program provided for the launch of eight MINUTEMAN II missiles from Malstrom AFB, MT over two consecutive winter seasons. The initial four-lannch sequence was to have taken place this winter. On June 6, 1974, the Senate passed an amendment to the Military Procurement and Authorization Act proposing that FY 1975 funds for OBL not be authorized. On July 23 the amendment was approved by the the joint House/Senate conference committee.

The MINUTEMAN IIs deployed today account for about one-half of America's strategic land-based Intercontinental Ballistic Missiles. Under the current program, the 450 MINUTEMAN IIs will remain in the inventory for the foreseeable future. Approximately 70 MINUTEMAN IIs have been test launched from Vandenberg AFB to Pacific Test Range. We believe that through this and other complementary test programs a high degree of system effectiveness has been established. However, a MINUTEMAN missile from an operational Strategic Air Command missile wing has never been flown a flight test. Such tests would not only demonstrate the capabilities of the system under the most realistic operational conditions possible, but also would provide unquestionable proof that the MINUTEMAN II system possesses the deterrent capability that we seek.

Many complementary parts make up the whole of our National defense. The MINUTEMAN II has proven that it provides a highly effective deterrent, as evidenced by the results of rigorous tests conducted at Vandenberg and at other locations.

Senator YOUNG. General Brown, I notice from your statement under General Purpose Force that the USSR and China have an advantage of 2 to 3 times over the US in manpower and weapons. Can we equalize this imbalance with technically better weapons and training?

Answer.—No. We count on total US and allied assets to narrow the gap.

NAVAL BALANCE OF POWER

Senator YOUNG. How does our Navy and Merchant Marine balance with the Soviets on the oceans of the world? Does our Navy and Merchant Marine have the presence to satisfy our national interest?

Answer.—*Naval Forces.* The most widely used indicator of naval balance is the number of ships. Comparative aggregate tonnage is another indicator often used. Using these indicators, the Soviet Union has roughly 2½ times the number of ships, but the US has essentially twice the tonnage.

Any assessment of the balance between the navies of the US and USSR must consider the differing roles and long term construction trends. The Soviet force structure reflects a growing interest in a capability to project power from the sea.

In my judgment, the US Navy is superior in our capability to project sea-based power, and the quality of our attack submarine force is superior to that of the Soviet Union. Our current capability to control the essential sea lanes versus that of the Soviet Navy to deny us their use is, however, far more difficult to assess with reasonable assurance in certain scenarios.

Merchant Marine.—Overall, the Soviet merchant fleet of 1500 vessels of approximately 1000 or more gross registered tons is the world's fifth largest in number of ships and ninth in total tonnage. In contrast, the US fleet of 971 ships ranks seventh. The USSR has some 370 cargo ships and 172 tankers which are believed to be equipped and suitable for military sealift. The United States operates 239 comparable ships and 162 tankers which could be used for military requirements. These assets, in my opinion, fail to meet the total requirements in the event of a major contingency.

Our Navy and Merchant Marine do not have, in my opinion, the presence to satisfy our national interest.

INCREASE IN SHIPBUILDING PROGRAM

Senator YOUNG. Would you recommend an increase in our shipbuilding program?

Answer.—I recommend full funding of the President's budget and the SecDef's Five Year Defense Program.

Inflation has had a severe impact on ship construction and the Navy shipbuilding program has already been modified to stretch procurement. Because the Defense Department must budget for the cost of a new ship four or five years before its completion, escalation of labor and material costs must be estimated. This has been difficult to do. The problem is compounded by a reluctance on the part of the shipbuilding industry to accept Navy contracts in view of increased demands on shipyard capacity placed by the Maritime Administration and commercial shipping firms. It is estimated that more than $2 billion will be required to cover the aggregate costs above that currently authorized to complete ships already authorized by Congress in FY 1975 and prior year programs. These funds are included in the FY 1976 budget request and similar cost estimates are reflected in the FY 1976 and FY 1977 shipbuilding programs.

AIR SUPERIORITY

Senator YOUNG. Considering the Warsaw Pact tactical aircraft superiority of 2 to 1 over NATO air forces, is it correct to assume that they will initially gain air superiority? If so, what effect will this have on NATO ground forces to retain their positions? Also, under what circumstances would you envision NATO air forces regaining air superiority?

Answer. The 2 to 1 ratio reflected in the posture statement represents a comparison of only the in-theater forces. Our planning assumes that we would detect Pact preparations for war and mobilize to deploy sizeable tactical air forces—both land-based and carrier-based—to NATO. These deployments, including about [deleted] USAF TACAIR squadrons between M+3 and M+30 would narrow the spread between the two force levels, giving us a more credible defensive posture. I should add that there would still be important disparities in weapon system capabilities, mobile SAM defenses, aircraft shelters, command control capabilities, and other factors influencing the outcome. The TACAIR programs Dr. Schlesinger and I have described in our prepared reports address themselves to these problem areas. I believe we could achieve general air superiority.

The loss of air superiority in a NATO conflict would have a severe adverse impact on the land battle. Pact planners understand this. [Deleted.] Should they succeed, our reinforcements to Europe would be slowed or stopped, which would virtually render impossible our regaining air superiority. The choice would then be either relinquish major segments of NATO territory or resort to nuclear weapons.

SUBCOMMITTEE RECESS

Chairman MCCLELLAN. Again, gentlemen, I thank you very much for your cooperation and your appearance here today.

The subcommittee will now stand in recess subject to the call of the Chair.

[Whereupon, at 12:27 p.m., Wednesday, February 12, the subcommittee was recessed, to reconvene at the call of the Chair.]

Statement of Hon. William K. Brehm, Assistant Secretary of Defense

[Clerk's Note.—Subsequent to the February 12, 1975, subcommittee hearing, the following statement by Hon. William K. Brehm, Assistant Secretary of Defense for Manpower and Reserve Affairs, was submitted for the record.]

[The materials follow:]

STATEMENT OF WILLIAM K. BREHM

Mr. Chairman and Members of the Committee:

My purpose in appearing before you today is to present the overall Defense manpower program, to discuss the principles upon which it is based, and to provide an overview of the major activities within the manpower program, including initiatives to improve its efficiency and to reduce its cost.

The Defense manpower program comprises our active duty and paid-drill National Guard and Reserve military personnel, and our direct and indirect hire civilians. Of great importance also are our other categories of reserves -- notably the Individual Ready Reserve -- and the civilians employed by the Defense industry. While I may refer to these other groups on occasion, they are not covered by the budget which I am presenting and in that sense are not part of the Defense manpower program even though they are indispensable ingredients in the total Defense effort.

The Defense manpower program is not an entity unto itself. Its requirements are derived directly from our combat forces and their support needs. To the greatest extent possible, we attempt to build the manpower program on the basis of requirements established by our national security objectives and the force levels approved by the President.

The principles underlying the manpower program are several:

1. The size of our manpower program -- related as it is to our force levels -- is determined on the basis of our perception of the threat and our strategy to deal with that threat. As the Secretary of Defense has pointed out, "We have been engaged in the rather peculiar process of reducing our Defense budget in real terms while the Soviets

have been raising theirs." Detente does not give us the luxury of contracting our military strength except through explicit international agreements with the East for mutual and balanced force limitations and reductions. Indeed, unilateral reductions in U.S. Forces would remove the incentive for the Soviets and Warsaw Pact countries to negotiate. Our strength must be adequate to allow us "to shape the future by our own actions rather than to let others do it for us." This requires us to strengthen our forces through more efficient use of our people and through modernization of our equipment.

2. Our military strength must be measured by our forces in being. No longer can we depend on the strength of our Allies to buy us the time to expand our defense production base, to mobilize and deploy our forces, to learn the lessons of the conflict from the mistakes of others, and to turn the tide of war in our favor. The luxury of time -- and the old role that went with it -- are gone, perhaps forever. This means that we must maximize the combat readiness of our active forces; that we must have some of our military strength deployed in critical areas -- notably Europe and Northeast Asia — as an earnest indication of our resolve and strength, and as a foundation for rapid reinforcement to counterbalance moves on the other side; that our Reserve Forces must be trained and equipped for early deployment; and that our manpower mobilization procedures must be well-conceived and well-managed.

3. Our military and civilian personnel -- active and reserve -- fulfill an indispensable public service that must take its place alongside those who contribute to the economic and social progress of this nation.

4. Our military and civilian personnel must be adequately compensated for their services, not only in terms of monetary rewards

and benefits-in-kind, but also in the guarantee of challenging work under creative leadership and equal opportunity.

The men and women of the Armed Forces can, through education, training and experience, grow in ability, productivity and self-esteem. We must improve the environment to enhance this growth and ensure that the value of our people is properly recognized. Because of their adaptability, resourcefulness and dedication, we sometimes err by not communicating properly the underlying reasons behind changes in our personnel policy. I intend to correct this.

The challenge of doing the very best we can for our people while still achieving economies in the management of manpower, recognizing our responsibility to the taxpayer in the stewardship of his contributed resources, is very great indeed -- but one we are dedicated to meeting. I consider the Congress a valuable partner in this judgmental process and will look forward to your counsel.

I. Department of Defense Total Manpower Program

There are several manpower programs within the Department of Defense. Some are covered by military appropriations, some are covered by other appropriations, and some are supported by non-appropriated funds. The table below shows the universe of Defense manpower and provides a total context within which to view the programs under the specific cognizance of this Committee. The "boxed" numbers represent those categories covered by specific numerical authorizations in FY 1975. I will be discussing these in detail. However, I want to emphasize that in our overall analysis of the manpower programs (e.g. combat/support trade-offs, officer grade structure) we generally use larger aggregations.

Total Manpower Strengths
End FY 1976 Budget Plan
(000)

	Appropriated Funds				
	Military Functions		Civil Functions		
	Military Appropriations	Reserve Component Appropriations	Civil Works Appropriations	Non Appropriated Funds	Total Manpower
Military Personnel					
Active Duty	2,100.0	.6	.4	--	2,101.0
Reserve Paid Drill	--	885.1		--	885.1
Civilian Personnel					
Direct-Hire	900.9	84.1	32.0	--	1,017.0
Indirect-Hire	95.5	--	--	--	95.5
Student Programs	22.0	--	1.7	--	23.7
Military Morale & Welfare Activities	--	--	--	300.0	300.0
Totals	3,118.4	969.8	34.1	300.0	4,422.3

II. Active Force Military Manpower

The Department of Defense requests an authorized active force military strength of 2,100,000 for the end of FY 1976. This will be the smallest active duty force the nation has maintained since the years between World War II and the Korean War. The following table shows the trend in active military strength from FY 1964 to FY 1976:

ACTIVE MILITARY STRENGTH
(End-Strengths in Thousands)

				FY 76 Budget Request		Change FY 73 - 76	
	FY 64	FY 68	FY 73	FY 75	FY 76		
Army	972	1,570	801	785	785	- 16	- 2.0%
Navy	667	765	564	536	529	- 35	- 6.2%
USMC	190	307	196	196	196	-	-
USAF	856	905	691	612	590	-101	-14.6%
Total	2,685	3,547	2,252	2,129[1]/	2,100	-152	- 6.7%

1/ Congressional Authorization was 2,149

The FY 1976 request of 2,100,000 is:

- 585,000 lower than FY 1964, just before the Vietnam war.
- 1.5 million lower than FY 1968, the peak of the Vietnam war.
- 152,000 (6.7%) lower than FY 1973.

- 49,000 below the statutory limitation of 2,149,000 in the FY 1975 Authorization Act; and 29,000 lower than our new plan for FY 1975.

The decreases from FY 1975 to FY 1976 occur in the Navy and Air Force and are caused by force changes and support reductions.

The significant force changes from FY 1975 to FY 1976 are:

Army

- **An increase to 16 active divisions, with the Reserve Components providing a brigade for each of three new active divisions.**

Navy

- **Retirement of two attack carriers, with 13 remaining.**
- **A decrease from 70 to 65 fighter/attack squadrons.**
- **A net increase of three attack submarines.**

Air Force

- **A reduction to 30% in the Strategic Bomber alert rate.**
- **An increase in fighter crew ratios from 1.1 crews per aircraft to 1.25.**
- **A transfer of 32 KC-135's, 4 RF-4 squadrons and 2 C-130 squadrons to the Reserve Components.**
- **Activation of three F-5E tactical fighter training squadrons.**

The table below presents the authorization request for active-duty military personnel for FY 1976, for the 3-month transition period called FY 197T, and for the new FY 1977 ending September 30, 1977.

AUTHORIZATION REQUEST
ACTIVE DUTY MILITARY PERSONNEL*
(End Strengths in Thousands)

	FY 1976 (June 30, 1976)	FY 197T (Sept. 30, 1976)	FY 1977 (Sept. 30, 1977)
Army	785.0	793.0	793.0
Navy	528.7	535.9	546.0
USMC	196.3	196.5	197.6
USAF	590.0	590.0	590.0
	2,100.0	2,115.4	2,126.7

NOTE: May not add due to rounding. *Military Functions

The increase of 15,000 in FY 197T is caused by the change to September 30 as the end-date of the fiscal period starting in FY 197T. The summer months are historically our best recruiting months. As a result, in late September the Army and Navy have more men in training than at any other time of the year and require a higher authorized end-strength on September 30 to man the same size force that they had on June 30. Because of a more uniform flow of accessions, the Marines and Air Force are able to adjust with little or no change in end-strength.

The authorization request for FY 1977 contains an additional 11,000. Most of the increase is to enable the Navy to operate new ships entering the fleet in FY 1977; to improve manning levels for other ships and air units; and to train men for new ships entering the fleet in FY 1978. Beginning in FY 1977, the Navy will, for the first time in several years, add more ships than it retires. The small increase for the Marine Corps permits higher manning levels for the Marine Divisions.

To summarize:

- The FY 197T increase is caused by the shift in fiscal year end-date.
- The FY 1977 increase improves our general purpose forces capability in the Navy and Marine Corps.

III. Direct Hire Civilians

The Department of Defense requests an authorized direct hire civilian strength of 985,000 for the end of FY 1976. The following table shows the trend in civilian employment from FY 1964 to FY 1976.

DIRECT HIRE CIVILIANS, MILITARY FUNCTIONS
(End Strengths in Thousands)

	FY 64	FY 68	FY 73	FY 75	FY 76 Budget Request	Change FY 73-76	
Army	360	462	333	337	334	+ 1	-
Navy/MC	332	419	322	318	322	-	-
Air Force	305	331	270	266	256	-14	-5%
DOD Agencies	38	75	73	74	73	-	-
TOTAL	1,035	1,287	998	994 1/	985	-13	-1%

1/ Congressional authorization was 995.

The requested FY 1976 end-strength of 985,000 direct-hire civilians is 50,000 below the FY 1964 level, and over 300,000 below the Vietnam peak in FY 68. The decrease since FY 64 is even more significant considering that over 120,000 military spaces have been converted to civilian positions during this period. This includes the current FY 73-75 civilianization program which calls for converting some 40,000 military jobs to civilian by June 30, 1975. As of December 31, 1974, we had accomplished 33,690 of these conversions. As was the case in FY 1974, a large number of the FY 75 conversions are planned for late in the fiscal year.

To summarize, the FY 1976 request of 985,000 is:

- 50,000 below the FY 1964 pre-Vietnam level.
- 302,000 below the FY 1968 Vietnam peak level.
- 9,400 below our new plan for FY 1975.

The FY 1976 reduction of 9,400 results from the following program changes:

DIRECT HIRE CIVILIAN CHANGE
FY 1975 to FY 1976

Increases	
Naval Shipyards	3,700
Reserve Component Technicians and Support	2,500
Army Maintenance Depots	4,800
	11,000
Decreases	
R&D Activities	5,600
Base Realignments	7,000
Air Force Logistics Workload	4,200
Defense Supply Agency	1,400
Other	2,200
TOTAL	20,400
Net Reduction	9,400

Thus increases of 11,000, which will improve combat readiness, are more than offset by reductions of 20,400 in overhead and support.

The table below presents the authorization request for direct hire civilians for FY 1976, for the 3-month transition period FY 197T, and for FY 1977:

AUTHORIZATION REQUEST
CIVILIANS, DIRECT-HIRE (MILITARY FUNCTIONS)
(End Strengths in Thousands)

	FY 1976 (June 30, 1976)	FY 197T (Sept 30, 1976)	FY 1977 (Sept 30, 1977)
Army	334.1	337.8	337.3
Navy/MC	322.1	322.9	328.5
Air Force	255.9	257.8	255.7
Defense Agencies	72.9	72.9	73.0
TOTAL	985.0	991.4	994.5

The increase of 6,400 in FY 197T is caused by the shift in fiscal year end-date. Because the fiscal period ends on September 30, the total includes 8,200 teachers and employees of the overseas dependent education program. When the fiscal year ended on June 30 as in prior years, these employees had completed the nine-month school year and were no longer on the rolls. This 8,200 accounting increase for teachers is partially offset by reductions of 1,800 in other programs, for a net change of 6,400.

The increase of 3,100 in FY 1977 is caused by the addition of 3,800 more shipyard workers (less reductions of 700 in other programs). This follow-on increase is in addition to the increase of 3,700 requested for shipyards in FY 1976. As you know, we are very concerned about the generally poor condition of the fleet, and increased employment in Naval shipyards will assist in reducing the backlog of ships needing overhaul.

IV. Indirect Hire Civilians

The civilian ceilings established by Congress exclude indirect hire foreign nationals. However, I wish to provide you with data on the trend in indirect hire employment because we include them in our overall manpower planning and display them in the Manpower Requirements Report submitted to Congress.

Indirect hire foreign nationals work for U.S. Forces stationed abroad, but are hired and paid by foreign governments with funds provided by the Defense Department. The major nations involved are Germany and Japan. About 70% of the indirect hires are funded and employed by the U.S. Army.

The table below shows the trend in indirect hire employment.

INDIRECT-HIRE CIVILIANS
(End-Strengths in Thousands)

FY 64	FY 68	FY 73	FY 75	FY 76	FY 7T	FY 77
140	119	102	98	96	96	98

The employment level of indirect-hires has decreased by more than 40% since FY 1964 but remains relatively stable during the period FY 1975 to FY 1977.

The total of overseas foreign national civilian hires in FY 1976 is about 140,000, counting the 96,000 indirect hires shown above and 44,000 direct hires contained within the Direct-Hire Civilian totals I described in the previous section.

V. Civilian Ceiling

The FY 1975 limitation established by Congress exempted four categories of civilian employment from ceiling control: civil functions; National Security Agency; special youth employment programs; and indirect hire foreign nationals. Although employment in these categories is exempt from ceilings, the number hired is controlled by Congress in the appropriations process.

Last year I testified in support of these exemptions and I still believe these categories merit exclusion from Congressional ceilings.

1. The exclusion of civil functions employees is desirable because these programs -- primarily Army Corps of Engineers civil works -- do not relate to the defense mission of DOD. Furthermore, these activities are not included in the Authorization Appropriation Bill prepared by the Armed Services Committees.

2. The exclusion of National Security Agency employees is essential to conform to the law regarding the protection of security information of that agency. Adding NSA employees to the ceiling would cause us to classify various routine reports which convey civilian employment statistics.

3. The continued exemption of employees in special youth programs is desirable to assure continuation of these programs. Including them in the ceiling would place these programs in competition with regular hires for scarce ceiling spaces.

4. The exemption of indirect hire foreign nationals provides DOD with employment flexibility in specific countries overseas, such as Germany and Japan. The exemption also is consistent with the practice of not counting indirect hires as federal employees.

Manpower managers in the military departments have urged me to propose additional categories for exclusion from the civilian ceiling. The prime candidates for exclusion from ceiling are:

- Civilian employees in Industrially Funded Activities, especially those which are engaged in maintenance activities such as shipyards, air rework facilities, and other depot maintenance activities. About 30% of all DOD civilians work in industrially funded activities and 17% of all our civilians work in industrially funded maintenance depot activities.
- Civilians who are enrolled in formal apprentice training programs.

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I believe the Navy will discuss the importance of these exclusions in their testimony.

My own view is that adding or subtracting exclusion categories from civilian ceiling controls is at best a patchwork solution. A far more important question is whether ceiling controls, in addition to existing budgetary controls, promote or hinder the efficient operation of the Defense Department. After long experience with civilian ceilings imposed by the Office of Management and Budget, we concluded that civilian ceilings can lead to serious and costly inefficiencies. This finding was confirmed by the General Accounting Office. For this reason, OMB removed ceiling controls from DOD several years ago as part of a test of operating without ceilings.

I recommend that Congress remove the civilian ceiling controls from the Authorization Act. I am confident that existing financial controls within DOD and the Budgetary powers and oversight exercised by the Congress are adequate to insure that civilian employment will remain within reasonable limits.

If this is not acceptable, as a minimum I would recommend the following changes to the law:

1. Establish a civilian ceiling for DOD as a whole instead of a separate ceiling for each military department. This change would enable us to make necessary increases and decreases in civilian employment plans within the DOD total ceiling.

2. Modify the language which permits the Secretary of Defense to exceed the civilian ceilings by 1/2% in the "national interest" to make it clear that this 1/2%

flexibility can be used to prevent inefficiencies caused by ceiling controls. For example, we would want to use the 1/2% provision to avoid contracting out work which can be performed cheaper in-house, or to prevent reductions-in-force of skilled workers in activities which will be expanded in the following year.

VI. Guard and Reserve Forces

The Department of Defense requests an authorized military strength for the Selected Reserve of 885,100 for the end of FY 1976. The table below shows the trend in Selected Reserve strength from FY 1973 to FY 1976:

SELECTED RESERVE MILITARY STRENGTH
(End-Strengths in Thousands)

	ACTUAL STRENGTH		FY76 BUDGET REQUEST	
	FY 1973	FY 1974	FY 1975	FY 1976
Army National Guard	386	403	400	400
Army Reserve	235	235	212	212
Naval Reserve	126	115	113	92
Marine Corps Reserve	37	31	32	33
Air National Guard	90	94	96	95
Air Force Reserve	44	46	52	53
Total DoD 1/	919	925	905	885

1/ Totals may not add due to rounding

Accountability of Selected Reserve Military Strength

The annual authorization language for the Selected Reserves employs the phrase "will be programmed to attain an average strength of not less than the following:" However, active military and civilian manpower strength authorizations are expressed in terms of fiscal year end strengths.

To provide a common basis for strength accounting within the Department of Defense, I propose that the Congress consider expressing Selected Reserve drill-pay strengths in terms of end-strengths as well. I recognize that past concerns led the Congress to establish an average-strength "floor" for the Selected Reserve, but I believe our support of the Guard and Reserve forces is demonstrated by our recent actions relating to mission transfers, equipping, funding and training.

The tables below show our authorization request for Selected Reserve personnel in both forms -- for FY 1976, the three-month transition period FY 197T, and for the new fiscal year (FY 1977) ending September 30, 1977:

AUTHORIZATION REQUEST
SELECTED RESERVE MILITARY PERSONNEL
(End Strengths)

	FY 1976 (June 30, 1976)	FY 197T (Sept 30, 1976)	FY 1977 (Sept 30, 1977)
Army National Guard	400,000	400,000	400,000
Army Reserve	212,400	212,400	212,400
Naval Reserve	92,000	92,000	92,000
Marine Corps Reserve	32,911	33,284	35,784
Air National Guard	94,574	94,519	94,405
Air Force Reserve	53,210	53,743	55,240
Total DoD	885,095	885,946	889,829

AUTHORIZATION REQUEST
SELECTED RESERVE MILITARY PERSONNEL
(Minimum Annual Average Strength)

	FY 1976 (June 30, 1976)	FY 197T (Sept 30, 1976)	FY 1977 (Sept 30, 1977)
Army National Guard	400,000	400,000	400,000
Army Reserve	212,400	212,400	212,400
Naval Reserve	93,972	92,000	92,000
Marine Corps Reserve	32,481	33,013	34,699
Air National Guard	94,879	94,543	94,502
Air Force Reserve	51,789	53,642	54,395
Total DoD	885,521	885,598	887,996

Note: All figures are from FY 1976 President's Budget.

VII. Military Training

Each year Congress authorizes the average number of military personnel who will be in an individual training status. In FY 1976 an average of 231,000 active duty personnel will be in training, or 11% of the total 2.1 million military personnel requested for the active forces. Another 24,000 will be in active duty individual training from the Reserve Components. The following table shows the trend in training loads for the active and reserve forces:

Training Loads - Average Number in Training
Active and Reserve Forces
(In Thousands)

	FY 1973 Actual	FY 1976 Planned	Percent Change FY 1973-76
Army	109	83	-24%
Navy	77	70	- 8%
Marine Corps	30	26	-11%
Air Force	59	51	-13%
Total Active Force	274	231	-16%
Reserve Components	25	24	- 1%
Total	299	255	-15%

NOTE: May not add due to rounding.

The overall reduction of 16% for the active forces compares with a reduction of about 7% in total active military strength, and with a slight increase in combat force strength. Training for the Reserve Components amounts to about 10% of the training conducted by the active training establishment. The Reserve Component training load has not changed appreciably since FY 1973.

The following table shows active force training loads by the five major categories of individual training and education:

Training Loads, By Training Category
Active Forces
(In Thousands)

Training Category	FY 1973 Actual	FY 1976 Planned	Percent Change FY 1973-76
Recruit	84.1	66.1	-21%
Officer Acquisition	19.2	17.5	- 9%
Specialized Skill	145.5	127.7	-12%
Flight	8.3	5.7	-31%
Professional Development	16.8	14.2	-15%
Total	273.9	231.1	-16%

Recruit training is reduced significantly, reflecting in large part the effect of longer enlistment terms and higher retention rates since the end of the draft. The largest proportional reduction is in flight training. This category, while small in terms of loads, has a high cost. The reduction in professional development education includes a reduction of 28% in fully-funded officer graduate education.

I would now like to enter for the record the training loads which the Defense Department is requesting Congress to authorize for FY 1976, FY 197T and FY 1977.

TRAINING LOAD REQUEST

Active Forces	FY1976	FY197T	FY1977
Army	83,101	75,185	86,341
Navy	70,288	71,304	71,756
Marine Corps	26,489	26,788	25,993
Air Force	51,225	52,280	50,999
Total Active	231,103	225,557	235,089

Reserve Components	FY1976	FY197T	FY1977
Army National Guard	9,788	9,481	10,158
Army Reserve	7,359	5,518	7,495
Naval Reserve	1,712	2,217	2,145
Marine Corps Reserve	2,769	4,088	2,935
Air National Guard	1,952	2,180	2,084
Air Force Reserve	810	836	771
Total Reserve	24,390	24,320	25,588

The slight increase in the training load for FY 1977 compared to FY 1976 is caused by normal minor fluctuations in manpower programming. The training load plan for FY 1975 is 240,372 for the active forces and 22,463 for the Reserve Components. About 77% of the total training load for FY 1976 is accession-related — i.e. is directed toward the task of training new service members.

VII. Deployments

Long-term deterrence in a turbulent and troubled world must, in prudence, be based on the solid foundation of balanced military capabilities. More than ever in this era of nuclear parity, deterrence no longer rests primarily on our nuclear capabilities but equally on our conventional forces. And, if we are to have confidence in our deterrent posture, we must not only have sufficient forces, we must have them in the right places.

Our conventional forces have been steadily shrinking in size. As the Secretary of Defense has said, we may already have gone too far in

cutting those forces following Vietnam. Certainly we have gone well below the pre-Vietnam levels. By 1973, the U.S. had withdrawn and demobilized all the forces that had been added for Vietnam. Since that time, we have continued making reductions, both in total military strength and in deployed strength. Indeed, overseas forces are now almost one-quarter million men (244,000) below the 1964 peacetime level -- fewer deployed forces, in fact, than at any time since before the Korean War.

DEPARTMENT OF DEFENSE
GEOGRAPHIC DISTRIBUTION OF MILITARY MANPOWER

(000)

	Actuals			Planned	Reduction
	FY 1964	FY 1968	FY 1973	FY 1976	FY 73-76
FOREIGN COUNTRIES					
Europe & Related Areas	403	319	320	315*	1%
Western Pacific + SEA	243	860	199	150	25%
Other	73	19	23	9	61%
Afloat (dist'd above)	(80)	(117)	(73)	(65)	(12%)
SUBTOTAL	719	1,200	542	475	12%
US TERRITORIES & POSSESSIONS	1,968	2,348	1,711	1,625	5%
TOTAL MILITARY MANPOWER	2,687	3,548	2,253	2,100	7%

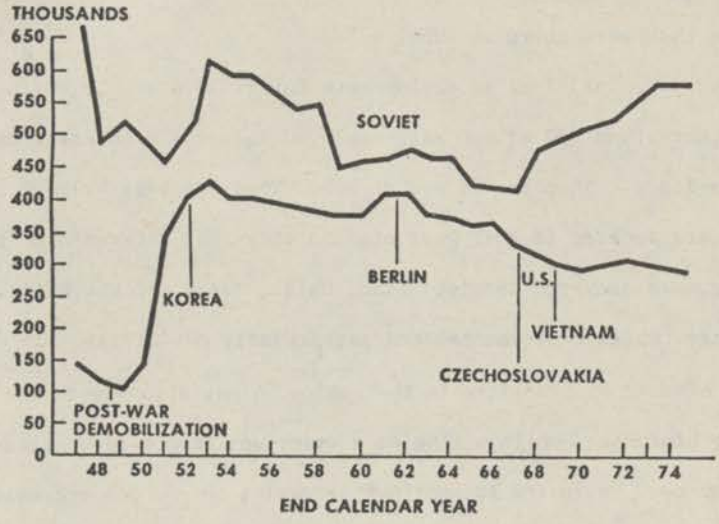
*Budget proposal. Ceiling is 319,000

These reduced U.S. forces cannot deal simultaneously with a large number of contingencies. What we can do, and what we are doing, is maintaining a small number of strong points in areas of critical interest to the United States, retaining the bases necessary to support these points, and improving our capability to reinforce them. As we estimate the requirements for deterrence and collective security, we see a need for deployed forces in Europe and Asia especially, and a hedge against uncertainties elsewhere.

In Europe, our deployed strengths are now about 85,000 men below the 1964 peacetime levels. Soviet forces, on the other hand, have

been steadily increasing,both in terms of quality and quantity,since their invasion of Czechoslovakia.

SOVIET - U.S. MILITARY PERSONNEL IN EUROPE



Given these circumstances, if we are to have the proper balance of conventional forces we must

- o continue to depend upon and to work more closely with our Allies
- o stabilize U.S. force levels in Europe
- o increase our combat capability within these force levels
- o achieve increased capability for rapid deployment of reinforcements

We have initiatives underway in each of these areas, but much remains to be done.

Similarly, our forces in Asia have been reduced well below the 1964 peacetime levels. In Southeast Asia, we have eliminated all forces except in Thailand, where further reductions will depend on circumstances in the area.

By 1973, we had cut our forces almost 35% below the 1964 peacetime levels in the Western Pacific, including the withdrawal of a division from Korea. Since 1973, we have continued to trim our Western Pacific forces, cutting an additional 5% in our overall forces and 15% in shore-based forces. In FY 1976, we will have more than 90,000 fewer in the Pacific than were there in 1964.

Our principal Pacific deployments for FY 1976 are in Northeast Asia. More than 60% of our Asia-deployed forces are in Korea and Okinawa-Japan. Another 25% are at sea. Thus the vast bulk of our forces are located in that part of Asia where the interests of the great powers converge (Soviet Union, China, Japan and the United States). We believe these deployments, and particularly our division in Korea, add an element of stability in the region. They also add to the local balance of forces, while acting as a deterrent to military action by North Korea. We intend to continue examining our forces and base structure in Asia, and, wherever possible, make additional consolidations and reductions in support personnel. We are, however, on the thin side, both in Asia and in our overseas deployments elsewhere. As the Secretary concluded in his Annual Report:

> "As matters now stand, our baseline overseas posture is at the minimum that our commitments, our strategy, and our position as one of the two superpowers requires. To reduce it to any measurable degree in the absence of agreed reciprocal action by the other side either calls for greater faith in the goodwill of other nations than we have experienced in the past, or requires a much more restrictive definition of the U.S. role in the world than the one to which we now adhere."

QUESTIONS SUBMITTED BY CHAIRMAN McCLELLAN

ACTIVE FORCE MILITARY MANPOWER

Chairman McCLELLAN. You note that the size of the manpower program is determined on the basis of perceived threat and strategy to deal with the threat, yet the 2.1 million active strength request for FY 1976 is the lowest level since before the Korean War. Is this an indication that we perceive a decrease in threat or that we are developing alternative strengths to deal with it?

Secretary BREHM. In terms of the size and modernization of the Soviet force, the threat has indeed been increasing while the size of the U.S. force has decreased. However, in recent years, the Sino-Soviet split has diverted a large fraction of Soviet defense resources that might otherwise contribute to the military threat to U.S. interests in Europe and North Asia. Thus, we believe that the size of the military forces that the U.S. and its allies must plan to fight has not increased greatly. However those threat forces have been significantly modernized.

While U.S. forces have been numerically decreasing the forces of our allies have not. In recent years, the European Allies have increased the number of military personnel on active duty, and they have provided better equipment to their forces. In addition, both the U.S. and its allies have attempted to maximize the amount of combat power available for each man in uniform by reducing support forces and increasing combat forces whenever possible and by providing those combat forces with modern weapons.

Because of the efforts of our allies, the benefits of the West's advanced technology, and the Sino-Soviet split, we do not believe that the reduction in the size of U.S. forces requires a new strategy, even in the face of increased Soviet forces. We believe our forces and those of our allies should be adequate to meet the threat to our national security as long as we continue to modernize those forces and make better use of defense resources. However, continued increases in the Soviet forces and decreases in U.S. forces will clearly increase the risks to our

COMBAT READINESS

Chairman McCLELLAN. Although total military strength is declining, the FY 1976 request assumes a net increase in combat capability by reapplying assets gained from rather large reductions in support areas. Three new Army divisions and increased Air Force fighter crew ratios are examples. The Committee has heard varying testimony on the readiness of present force levels; will the requested increases in combat capability result in a force structure adequate to meet the threat as we now perceive it?

Secretary BREHM. As indicated in the answer to the previous question, we believe that our forces and those of our allies will be adequate as long as we continue to make better use of defense resources. The actions of increasing the number of army divisions and fully equipping the 26 Air Force wings are examples of our efforts to make efficient use of the available defense manpower.

By reapplying assets gained from support reductions to increases in combat capability, we are increasing the combat power of the portion of the total force that must immediately respond to aggression. The growth in the size and quality of the active forward deployed Soviet forces requires this additional increment in initial combat power. Of course, we will rely on the Guard and Reserve forces to provide the resources necessary to accomplish to total defense mission.

The active Army force structure is the base from which our initial ground force combat power will be drawn. By increasing the number of Army divisions from 13 to 16 we will be able to respond to aggression more quickly than would be practical if we depended on non-active units.

The U.S. now has 26 Air Force wings, but because they are not fully equipped, the total number of aircraft is actually only enough for 23 complete wings. If the 26 wing organization is fully equipped, initially available combat power will be increased. Because the 26 wing force structure already exists and the new aircraft will be lower cost A–10s and F–16s, this action can be accomplished at minimum cost, with little increase in Air Force personnel.

TOTAL FORCE CONCEPT

Chairman McCLELLAN. Under the Total Force Concept, greater reliance is being placed on Guard and Reserve Units as integral to accomplishing the over-

all defense mission. Would you describe the actions taken to date in this regard as well as further steps planned for the future?

Secretary BREHM. The Total Force policy has become a central element of planning in all the military departments, involving many actions to strengthen the capability of reserve forces to augment active forces upon mobilization. With active forces at the minimum level required to maintain a military balance around the world, application of the Total Force policy has strengthened and will continue to strengthen both active and reserve forces to increase overall DoD capability.

Some specific highlights of actions to date include: (1) affiliation of Army Reserve Component combat battalions and brigades with active divisions to improve training and enable earlier deployment in a mobilization contingency; (2) redistribution of available equipment to the highest priority, earliest deploying Reserve Component units to effect a maximum readiness posture; (3) modernization of Navy and Marine Corps Air Reserves with A–7, P–3, and F–4 tactical aircraft plus the replacement of aging destroyers with vessels from the active fleet; (4) assignment of one-third of Air Force tactical fighter forces and two-thirds of tactical airlift capability to the Guard and Reserve; (5) association of Air Force Reserve units with active strategic airlift (C–5 and C–141) squadrons to increase airlift capability; and (6) elimination of 14 outmoded aircraft types from the Air Reserve Forces since 1966, and replacement with such modern aircraft as F–4s, RF–4s, and A–7Ds.

Total Force actions in the FY–76 budget program include: (1) expansion of the Army's affiliation program; (2) expansion of tank production to allow equipping the Reserves entirely with modern tanks by FY 81; (3) provision of TOW and DRAGON antitank missiles to reserve infantry battalions; (4) establishment of a pilot program to assign individual Naval Reservists directly to the active surface combatants on an 80%/20% Regular/Reserve mix; (5) addition to the Naval Reserve of a quick-response combat search and rescue helicopter squadron; (6) transfer of three amphibious ships and eight patrol gunboats from the active Navy to the Reserve; (7) testing the feasibility of using reservists to provide 65% of the crew of Naval Reserve surface combatants; (8) provision for Naval Reserve air wings to spend active duty training aboard a carrier; (9) testing the feasibility of maintaining Reserve wings combat-ready for early carrier deployment; (10) transfer of weather recon mission responsibility from active Navy and Air Force to their respective Reserve Components; (11) shift of 128 KC–135 tankers to the Air Reserve Forces over a 4-year period; (12) expansion of Reserve crew ratios in C–5/C–141 associate squadrons by FY 78; and (13) continued modernization of Reserve aircraft.

CIVILIAN CEILING CONTROLS

Chairman MCCLELLAN. You maintain the view that civilian ceiling controls can lead to serious and costly inefficiencies, and suggest that budgetary controls offer a more reasonable management vehicle. If manpower and dollar resources are basically in alignment within the budget, why would they become substantially out of line during program execution, particularly if a small degree of latitude is available to accommodate normal small shifts in emphasis during the year?

Secretary BREHM. I am confident that existing budgetary powers and oversight exercised by Congress provide adequate controls over civilian employment. I believe that the addition of civilian ceilings can lead to serious and costly inefficiencies which arise not only from dollar and manpower misalignments but from the necessary management of this added and, I believe, unnecessary control.

Budgeted dollar resources can become misaligned with civilian end strength ceilings for several reasons. Various actions of the separate Congressional committees which prepare authorizing and appropriating legislation can result in imbalances. During execution of the budget, changes in programmed work schedules or additional unprogrammed requirements may, although fully funded, conflict with the end of fiscal year ceiling. Any of these eventualities can lead to costly inefficiencies, such as deferral of needed work, involuntary reductions in force (RIFs) or uneconomical contracting.

It is true that these adverse effects are somewhat mitigated by provisions for flexibility. However, other inefficiencies accompany the addition of ceiling controls to the existing budgetary controls. Ceilings must be administered; they must be allocated, reallocated, adjusted and monitored at every level.

This involves a significant management effort throughout the Department. Moreover, management attention tends to be diverted from the job that must be done to the relationship between the job and the ceiling controls. Of course, the more flexible the ceiling, the less is its adverse impact on our operation. But if, as I believe, ceilings are not necessary for adequate Congressional control, they do not offer benefits commensurate with the effort involved in their administration.

Selected Reserve Strengths

Chairman McClellan. The House Armed Services Committee has recently recommended FY 1976 Selected Reserve strengths approximately 31,000 above requested levels. How does the level compare with strength requirements as you perceive them?

Secretary Brehm. If Reserve strengths are increased by 31,000 what would be the FY 1976 and 197T dollar impact, including pay, training, etc? Please provide this information, by appropriation, for the record.

The Selected Reserve strength of 885,000 expressed to the House Armed Services Committee on March 14, 1975, will allow adequate manning during FY 1976. The requested strengths represent reasonable levels of manning during an interim period while validating requirements generated by ongoing studies.

The dollar impact for a strength increase of 31,000 is as follows:

	MYA budgets	MYA proposed	Difference MYA	Difference (thousands)
Reserve personnel, Navy:				
Fiscal year 1976	93,972	112,000	+18,028	$27.9
Fiscal year 197T	93,972	113,972	+20,000	8.9
Reserve personnel, Army:				
Fiscal year 1976	212,400	226,000	+13,600	16.0
Fiscaljyear 197T	212,400	226,000	+13,600	6.5

Total Manpower Costs

Chairman McClellan. Total manpower costs in FY 1976 will be about 53% of budgeted outlays, as opposed to over 55% in FY 1975. Is this a function of actual savings or is it a reflection of the 5% "cap" on pay increases?

There have been various proposals to transfer the Retired Pay account from Defense to a civilian agency. Would you please comment on the pros and cons of such a proposal?

Secretary Brehm. To address the first question, the cost of manpower increased from $47 bililon in FY 1975 to $49 billion in FY 1976, so there is clearly no absolute savings. On the other hand, the $2 billion increase which includes a 5% pay raise represents a cost growth of 4% which is considerably less than the 9% for the Defense budget as a whole and the 10% for the entire President's budget. The comparable GNP deflator from FY 1975 to FY 1976 was 9%. The comparable Consumer Price Index was 9.5%. By comparison with the growth one could have expected, one might conclude that there was a cost avoidance of about 5%.

The following table contains the cost comparisons in outlays for FY 1964 and FY 1973 through 1976. The FY 1976 costs do contain a 5% pay raise as the President requested. Each additional per cent pay increase for military and civil service employees would result in an additional cost of $240 million.

DEPARTMENT OF DEFENSE MANPOWER COSTS AS A PERCENTAGE OF TOTAL DOD BUDGET

[In billions of dollars]

	Fiscal year outlays				
	Actuals			President's fiscal year 1976 budget	
	Fiscal year 1964	Fiscal year 1973	Fiscal year 1974	Fiscal year 1975	Fiscal year 1976
DOD budget outlays	51	74	78	85	93
Manpower costs	22	41	43	47	49
Percent of DOD budget	43	56	55	55	53

To address the second question, placing military retirement pay in the budget of a civilian agency, such as the Veterans Administration with other post-service benefits or the Civil Service Commission with other federal retirement, would reduce Defense manpower costs by 14%. The following table shows the expected growth in military retired personnel levels. Retirement costs are increasing at a greater rate than other manpower costs. These retirement payments represent costs for previous services. The danger is that these increases may tend to mask the amount actually being spent on manpower for current national security.

Number of personnel receiving military retirement and survivor benefits

Fiscal year:	*Thousands*
1964	400
1976	1,100
1984	1,400
1999	1,800

On the other side of the issue, one can argue that retirement is a major cost of doing business and that all retirement for military and civilians should be borne by each agency. Only military retirement pay now falls into that category. But removing military retirement from Defense would not reduce the cost to the taxpayer.

An alternative would be to provide a system similar to the current Civil Service procedure where each agency makes a payment toward expected retirement costs for current employees, but does not actually pay retirees or assume inflation costs for those previously retired. There are a number of other alternatives which could be considered. It would be helpful to have military and civilian manpower costs more comparable. Similar retirement costs would help. What is most important, however, is that we do not permit growing retirement costs to mask the manpower levels essential to our present and future national security.

Overseas Deployments

Chairman McClellan. In FY 1976 fewer personnel will be deployed overseas than at any time since the post-World War II demobilization, and you allude to the possibility that we may have gone too far. If our units deployed overseas are incapable or only marginally capable of meeting the threat, would it not better serve our interests to remove them completely and rethink our strategy?

Secretary Brehm. Alone, our forces deployed overseas would not be capable of successfully meeting the Soviet threat. But the U.S. is not alone. In Europe, the principal area of our national interest, we depend heavily on the forces of our allies, who supply 90% of the ground forces, 80% of the naval forces and 75% of the air forces in place. NATO has defense resources on the same scale as the Warsaw Pact, thus, NATO's forces should be capable of meeting the threat. While there are some Warsaw Pact strengths and NATO vulnerabilities that are cause for concern, a balance of conventional forces in which we could place high confidence is within reach. Our effort should not be to alter our strategy, but rather to make better use of NATO's defense resources.

Our forces, in concert with those of our allies, successfully support our strategy of deterring conflict by providing a credible forward defense. If we were to redeploy all our forces to the U.S., the threat to our national security would not diminish in size. However, the forces available to the U.S. to counter that threat would diminish because the U.S. could no longer count on its allies for military support.

Overseas Deployment/Allies

Chairman McClellan. At the outset, your statement indicates that our strength must be measured by forces in being, and that we cannot depend on the strength of our Allies. Yet, you later contend that we must 'continue to depend upon and to work more closely with our Allies'. How do you reconcile these two points of view?

Secretary Brehm. I stated that we can no longer depend on our allies "to buy us the time to expand our defense production base, to mobilize and deploy our

forces, to learn the lessons of the conflict from the mistakes of others, and to turn the tide of war in our favor". This statement referred to the envious position of the U.S. in past world wars. The state of modern warfare and the possibility of rapid advance provided by the high degree of mechanization of modern armies will not permit time for mobilization and redirection of our economy should war break out. Thus, we must depend on U.S. forces present in the theater or easily moved there to provide for our defense.

In Europe, U.S. active forces provide the key increment to NATO's initial defense. They are among the most capable forces in the area and without them NATO would not be able to counter Warsaw Pact aggression. Additionally, they demonstrate the U.S. resolve to defend the Alliance, even with nuclear weapons if necessary. The visibility of the U.S. commitment to NATO has provided the Allies the incentive to continue improving their own forces. While we provide the key increment, we must depend on our allies to provide most of the forces for initial defense. Without them, the U.S. could not hope to affect a forward defense strategy. And without us, the Allies could not defend themselves against the Soviet Union.

Overseas Deployments

Chairman McClellan. Considering recent development in Greece and the climate in Spain, Portugal and elsewhere, what is in the offing in regard to our overseas bases, and what impact will this have on overseas deployments?

Secretary Brehm. In dealing with the Southern European countries over the question of U.S. and NATO bases, we have attempted to convince our allies that the bases serve their own interests, not only U.S. security interests. It remains to be seen how successful our efforts will be. If we are unsuccessful, then we will be forced to alter our military posture in the areas in question by either locating our forces at alternative bases or adjusting our deployment patterns.

Commissary Stores

Chairman McClellan. Would you elaborate on the current proposal to reduce appropriated fund support to commissaries?

Secretary Brehm. Our FY 1976 President's Budget request proposes a change in the method of financing some of the costs of operating commissary stores. In an effort to reduce Defense expenditures and to increase the share of the Defense budget allocated to combat forces, we are proposing to require reimbursement for the personnel costs of commissary store operations. These additional costs will be borne by commissary store customers beginning on October 1, 1975. On that date reimbursement of fifty percent of these costs will be required. Further, our plan is that on October 1, 1976, and thereafter, one hundred percent of the personnel costs would be reimbursable by the commissary store customer. At that time almost all of the direct costs would be reimbursable by the customer, with the major exception being the cost of transporting merchandise to overseas stores. A major consideration in arriving at this decision is our belief that active duty military compensation is now generally competitive with other public as well as private sector compensation.

The proposal will require a change to the Department of Defense Appropriation Act, increasing the limitation on the use of appropriated funds for commissaries.

Chairman McClellan. Will commissaries still provide prices lower than the local economy even after the proposed change is implemented? How much lower would you estimate?

Secretary Brehm. We believe commissary store patrons will continue to obtain some savings on their purchases. While actual savings will depend on the magnitude of sales losses we encounter, it is our view that savings should be in the range of 10 to 14.5 percent. We intend to take all appropriate actions to retain savings at the highest possible levels.

Possible Closure of Commissary Stores

Chairman McClellan. Will the actions now proposed result in the closure of any commissary stores? Are any closures contemplated for other reasons?

Secretary Brehm. Commissary stores will continue to be available for eligible customers. Nothing in the DoD proposal contemplates the immediate closing of

these stores. There is a possibility that future base closures or redeployment decisions as well as economic considerations may necessitate some future consolidations and closures of stores.

USE OF FOOD STAMPS AT COMMISSARY STORES

Chairman MCCLELLAN. What is the incidence of food stamp usage in commissaries? If some patrns already must use food stamps, what is the rationale for increasing prices further?

Secretary BREHM. During the period October 1973 to September 1974, a total of $8,115,570 in food stamps were redeemed in commissary stores. This is less than 0.5 percent of our sales in commissary stores that redeem food stamps. We believe our patrons will still achieve a savings on their commissary store purchases after implementation of this proposal.

COMMISSARY STORES "CONTRACT"

Chairman MCCLELLAN. To what extent were military members provided a "contract" upon entry into the service which stipulated that the commissary privilege would always be a part of military life? Are such "guarantees" being made by recruiters today?

Secretary BREHM. There have been no contracts with military members stipulating commissary privileges be provided during their period of service. The availability of commissary stores offering substantial savings has been used over many years as one of the advantages of military service. This had led to the expectation by many military personnel that these stores and their concomitant savings would be available throughout their service and into retirement. We recognize that the Department of Defense proposal, by eliminating the government subsidy of payroll costs, will change this expectation. The substantial increases in military compensation coupled with the necessity for maximum reduction in Defense expenditures, not directly related to combat forces, resulted in the Defense proposal.

While recruiting literature contains references to commissary stores, our Service Recruiting Commands have made no guarantees regarding the availability of commissaries. Further, the Commands are aware of the DoD proposal permitting commissary stores to continue to operate but with the potential savings to military members reduced.

COMPARABILITY OF MILITARY PAY WITH CIVILIAN PAY

Chairman MCCLELLAN. Critics of the commissary proposal indicate that military pay is still lower than in the civilian sector, and that commissary privileges offer a necessary benefit. Are military and civilian pay comparable? Please describe and compare the two categories at several equivalent job levels, paying particular attention to actual disposable income.

Secretary BREHM. The 1967 Quadrennial Review of Military Compensation linked military equivalent salary, i.e., regular military compensation (RMC) with Federal general schedule pay. General schedule pay is, in turn, linked by work level with similar work levels in the private sector. Each year the Bureau of Labor Statistics (BLS) conducts a survey of pay for selected jobs which are related to general schedule pay grades, and it is used as the basis for their annual pay adjustment. Since 1967, the military has received a matching increase each time general schedule pay was adjusted. Additionally, legislation (P.L. 92–129) was enacted in November, 1971, which raised military pay to generally competitive levels reflecting the new national policy of manning the military forces on an entirely voluntary basis.

The attached table shows comparisons of the linkage pay grades in 1967 and today. The comparison uses regular military compensation data for the military, and salary for general schedule employees. General schedule salary, however, must be reduced by 6.5% in 1967 and 7% in 1974 to recognize their contribution to retirement. Military personnel do not contribute to their retirement program and this reduction is necessary to equate the two "salaries".

As you are aware, DoD is currently conducting the 1975 Quadrennial Review of Military Compensation. The competitiveness of military pay will be reviewed in detail.

COMPARISONS OF MILITARY[1] AND GENERAL SCHEDULE PAY—RATES AT THE LINKAGE POINTS, 1967–74

Linkage points	1967		October 1974	
	RMC	93.5 percent of civilian salary[2]	RMC	93 percent of civilian salary[2]
Major general (O–8) (28 yr of service)	$24,397		[3] $43,778	
GS–18		$25,296		[3] $43,092
2nd lieutenant (O–1) less than 2 yr of service	5,906		10,327	
GS–7 (step 4)		6,974		10,763
Private 1st class (E–3) less than 2 yr of service	2,972		7,155	
Average of GS–3 and WB–5		4,873		7,957

[1] Reflects regular military compensation which is the total of basic pay, quarters and subsistence allowances, and the tax advantage that accrues because the allowances are not subject to Federal income tax.
[2] This reduction accounts for the fact that civilians contributed 6.5 percent of salary in 1967 and currently contribute 7 percent of salary of retirement while military personnel make no explicit contribution.
[3] Figures shown do not reflect Executive Level V statutory limitations of $36,000 on military basic pay and General Schedule salary.

Effect of Commissary Change on Retirees

Chairman McClellan. It has also been purported that the commissary change will be particularly severe in regard to the retired population. Do you agree with this proposition? Please explain.

Secretary Brehm. Retired military personnel, as well as our other patrons, will find reduced savings on their commissary store purchases. In cases where a retiree is unemployed and receives only his retired income, it may have a greater impact on him than on some others. However, under the retired pay adjustment formula, the "real income" of retired personnel from their retired pay has been increasing in recent years. This would tend to lessen the effect of reduced savings as a result of our proposal.

QUESTIONS SUBMITTED BY SENATOR THURMOND

Volunteer Force

Senator Thurmond. Mr. Secretary, now that we have been in the all volunteer force for several years, what is your judgment as to the results from the standpoint of manpower requirements?

Secretary Brehm. At the end of December 1974 the Department of Defense completed its second year without the draft. Throughout this period we have been able to satisfy our military personnel requirements both in terms of quantity and quality. Although there has been some direct relationship between the current economic recession and the high quality accessions we have been getting in recent months, the results obtained in FY 1974, before the recession affected our recruiting, showed that we should be able to meet our peacetime accession needs on a voluntary basis throughout the foreseeable future.

Manpower Percentage of Budget

Senator Thurmond. Do you feel the manpower portion of the defense budget is taking an excessive portion of the defense budget?

Secretary Brehm. We do not feel the manpower portion of the defense budget is taking an excessive portion of the defense budget. However, we are concerned about the size of the defense budget, especially the manpower portions. Our efforts are directed to increasing the efficiency with which we use manpower and reducing the costs within the constraints imposed by our national security requirements.

The Pay Comparability Act passed by Congress in 1967 was fair and was essential to maintaining an effective career force in the military services. The increase in the pay of the lower grades passed by Congress in 1971 was necessary to achieve the national objective of an all volunteer force. The net effect was to increase the cost of manpower of the defense budget from 43% in FY 1964 to 56% in FY 1973. Considerable effort has been exerted to hold manpower costs down in the President's budget for 1976. As a result manpower costs are 53% of the FY 1976 defense budget.

Reduction of Manpower Costs

Senator Thurmond. What, if anything, can be done to reduce manpower costs?

Secretary Brehm. We are continually striving to improve the utilization of our manpower and make reductions where that is appropriate and consistent with the national security requirements. For instance, since the budget was submitted, our recruiting has improved to the point that we have terminated the enlistment bonus program for the Navy and reduced it for the Army and Marine Corps. (The Air Force recruiting was sufficiently high that they had not been using the enlistment bonus.) These reductions resulted in a cost savings of $13 million for FY 1976. We are currently reviewing the Selective Reenlistment Bonuses. Reductions will be made, but the cost savings for FY 1976 tend to be off-set by the save pay provisions of the bonus legislation. They will result in considerable savings for FY 1977–79.

Manpower Management

Senator Thurmond. It has been my feeling that the military under the draft was manpower rich and management of manpower resources was only average. Now that the situation is different, do you feel manpower management has improved?

What future manpower management improvements are being planned?

Secretary Brehm. Over the past two years the Department has undertaken a number of initiatives to improve the utilization and management of manpower. The following fact sheet describes some of the more significant current initiatives and some of those planned for the future:

FACT SHEET

DOD MANPOWER-RELATED INITIATIVES TO IMPROVE MANAGEMENT EFFICIENCY

Beginning in FY 1974, the Department undertook a series of reviews designed to uncover ways to increase military readiness and reduce costs through overhead and support reductions; through better-focused, more flexible use of compensation; and through improved manpower and personnel administration. The following is a listing of some of the more significant current initiatives, as well as some which we propose for the immediate future.

1. Management/Command Headquarters Review

The headquarters review started over a year ago and continues. To date we have identified approximately 25,600 headquarters positions for elimination or transfer to combat forces.

2. Support-to-Combat Conversions

Headquarters and support reductions will make more resources available to combat forces. For example, such reductions will enable us to field sixteen active Army divisions, three more than at end-FY 1973, with no increase in Army manpower. Similarly, during FY 1974, the Air Force utilized headquarters space savings to retain three C-130 squadrons in the active forces and, as new weapons systems are introduced, will be able to add another three tactical air wings without an increase in Air Force personnel. In Europe, we will convert 18,000 support troops to combat missions by end-FY 1976 in accordance with PL 93-365 (the Nunn Amendment), thus strengthening our conventional force posture in NATO.

3. Greater Reliance on Guard and Reserve

We are relying more on our Reserve and National Guard forces to get more combat strength for the Defense dollar. The Reserve Components now account for nearly 30% of our forces and 50% of the trained manpower available for national security emergencies.

Army. Guard and Reserve forces now constitute about 50% of Army combat forces, and closer integration of active and Reserve forces is underway. Present planning calls for the Guard to provide a brigade for each of three active divisions as the Army builds toward sixteen active divisions. These brigades will train regularly with the active divisions and will become organic parts of them upon mobilization.

Navy. The Navy has reorganized its Reserve, emphasizing hardware-oriented units. For FY 1976, these units are scheduled to include 30 destroyers, 22 minesweepers, 3 amphibious ships, 8 patrol gunboats, 8 construction battalions and a number of riverine warfare craft. In addition, there will continue to be a transfer of modern aircraft from the Active Force to the Naval Air Reserve.

Air Force. This year 56% of Air Force tactical airlift aircraft are assigned to the Air Reserve Forces (Guard and Reserve); by FY 1976 about 50% of our tactical reconnaissance force will be assigned to the Guard. We are also transferring 128 KC-135 jet tanker aircraft from the Active Air Force to the Guard and Reserve over the next four years.

4. US Military Strength Overseas

At end-FY 1968, US military strength ashore and afloat deployed outside the US and its Territories and Possessions was 1,200,000. By end-FY 1976, deployed strength will be 475,000, a reduction of 60% from end-FY 1968 and 12% (67,000) from end-FY 1973. This compares with a reduction in our total military strength of 6.7% (152,000) between end-FY 1973 and end-FY 1976.

5. Reduced Military Personnel Turnover

The successful transition to the peacetime volunteer force is reducing personnel turnover with several benefits: Training costs for new enlisted accessions will be about $115 million lower in FY 1977, than would have been the case if the draft had continued; billet assignments will have greater continuity, enhancing force readiness; individual personnel will have a greater depth of experience and training because they are in the force longer.

6. Civilian Personnel

We are simultaneously eliminating civilian positions wherever possible while converting military positions to civilian jobs when feasible. Total direct hire strength was 998,000 at end-FY 1973 and is tentatively planned to be about 985,000 at end-FY 1976 -- a net reduction of 13,000. However, the FY 1976 total includes 39,000 civilian jobs resulting from the civilianization of 48,000 military positions.

7. Officer Programs

Officer Strength. During the three-year period FY 1974-76 we expect active-duty military strength to drop about 7%. We are reducing officer strength by an even greater proportion to shrink overhead and improve the enlisted-to-officer ratio:

	Actual End-FY 73	Projected End-FY 76	Percentage Change
Officer Strength (000)	321	282	- 12%
Ratio: Enlisted-to-Officer	6.0	6.5	+ 8%

Senior Officer Grade Structure. We are also emphasizing reductions in our senior officer grade structure:

	Actual End-FY 73	Projected End-FY 76	Percentage Reduction
Generals/Admirals	1,291	1,185	8%
Colonels/Navy Captains	16,200	14,900	8%
LtCols/Commanders	36,500	32,800	10%

8. Military Compensation

Retirement Modernization. The DOD has proposed comprehensive new legislation to modernize the retirement program for active duty personnel. The DOD proposal would correct present defects and ultimately decrease the cost of the military retirement program.

Military Pay Adjustment System. The method of allocating military pay raises among the elements of Regular Military Compensation was modified this past September by PL 93-419. The estimated cost savings are as follows:*

Cost Savings of the New Method of Allocating
Military Pay Increases Among the Various Elements
of Military Compensation
($ Millions)

FY 1976	FY 1977	FY 1978	FY 1979	Total FY 76-79
-353	-589	-857	-1,158	- 2,957

*Assumes a 5.52% pay increase in FY 1975, 5% in FY 1976 and 5.5% thereafter.

Special Pay Programs. The DOD has a wide variety of special pay programs originally designed to attract and retain capable personnel, and to provide incentives for channeling qualified persons into the more arduous occupations. We have made administrative changes where we had the authority to do so, and proposed new legislation where necessary. The major results are as follows:

a. Enlistment Bonus. The expanded Enlistment Bonus, enacted by the Congress (PL 93-277), was implemented on June 1, 1974. The new law allows the Bonus to be used by all Services for any critical skill suffering from inadequate accessions and requires a minimum four-year enlistment. This additional year of service will reduce replacement training costs, thereby offsetting a portion of the cost of the bonus, and will improve readiness through reduced turnover. The planned level of FY 1976 expenditures of $75 million for the Bonus should provide an annual training cost offset in the outyears of approximately $32 million.

b. Selective Reenlistment Bonus. The Congress also authorized an improved Reenlistment Bonus program. The Selective Reenlistment Bonus provides the flexibility to offer substantial retention incentive at any problem reenlistment point within a member's first ten years of service. The amount paid depends on the severity of the retention problem in a particular skill and the amount of additional obligated service to which the member agrees. Members who reenlist in skills where no significant shortages exist receive no bonus.* Thus, the new law is not only more effective but it results in substantial outyear savings as the Regular Reenlistment Bonus is phased out:

Cost Implications of
the New Selective Reenlistment Bonus
($ Millions)

	FY 1976	FY 1977	FY 1978	FY 1979	Total FY 76-79
Budgetary Changes	+2.1	-6.8	-13.2	-77.4	-95.3

c. Proficiency Pay. Early in FY 1975, decisions were reached to terminate Superior Performance Pay and to reduce Shortage Specialty Pay by 75%. These decisions were designed to deemphaize proficiency pay in favor of the more flexible Selective Reenlistment Bonus. As a result, it is estimated that a savings of $78.3 million will accrue in FY 1976.

d. Flight Pay. The Congress enacted a modified version of the DOD-sponsored Flight Pay bill, which became the Aviation Career Incentive Act of 1974 (PI 93-294), effective June 1, 1974. When transition to the new program is completed, a reduction of the flight pay budget will occur:

*A save-pay feature still guarantees the old Reenlistment Bonus to those on active duty at the time the new law was enacted who would otherwise have been entitled to it.

Cost Implications of the New Flight Pay Program
($ Millions)

	FY 1976	FY 1977	FY 1978	FY 1979	Total FY 76-79
Budgetary Changes	+11.0	-6.3	-10.8	-10.8	-16.9

9. Reduced Flight Training Rates

Flight training is the most costly form of training conducted by the Department of Defense. We are making a concerted effort to reduce flight training rates to the lowest level consistent with high peacetime operational readiness and projected future aviator requirements:

Flight Training Rates
All Services

	Graduates		
	Actual FY 73	Projected FY 76	Percentage Reduction
Pilots	5,694	4,074	28%
Navigators/Naval Flight Officers	2,062	1,512	27%

We are also strongly emphasizing the development, procurement, and use of flight simulators which have a high potential for improved training and future cost savings.

10. Military Leave Policy

A comprehensive military leave policy was established in June 1974. Full implementation of this policy could generate annual savings on the order of $60 million by the end of FY 1976.

Recruitment Advertising Limitations

Senator Thurmond. Mr. Secretary, what are your views on the present limitations regarding recruitment advertising?

Secretary Brehm. The Department of Defense favors a balanced media approach to recruiting advertising and would prefer not to be constrained in terms of the media choices which can be employed. Inability to use paid radio and television advertising precludes development of a balanced media strategy and limits media selection for a given market communication problem. Lifting the ban on paid television and radio advertising would increase the number of media vehicle choices available and would provide increased flexibility in developing efficient advertising campaigns.

The Department of Defense recently received informal Congressional permission to conduct a test of paid radio advertising. The Army initiated a 13-week paid radio test on May 5 that will include 20 radio stations, both AM and FM, in 15 market areas. We are in the process of developing plans for a coordinated test of paid radio advertising with all Services participating. The four Service test will begin approximately September 1.

This radio testing activity by the Department of Defense should provide an adequate basis for determining the relative cost effectiveness of paid broadcast advertising in support of the All Volunteer Force. Should paid broadcast advertising prove cost effective, the results of the analysis of the tests will be used as rationale in requesting the consent of Congress for all components of the Department of Defense to employ paid broadcast recruit advertising if they so desire. Such Congressional consent would enable each Service to develop media plans without specific media prohibitions.

Military Manpower Levels

Senator Thurmond. Mr. Secretary, do you see a point in time where a certain base force manpower level will be reached?

Secretary Brehm. Military manpower levels will be relatively constant during the period FY 76–FY 80. The change in the fiscal year end-date to September 30, beginning in FY 7T, requires an end-strength increase of 15,000 to man the same size force that existed on June 30 of the old fiscal year. This is an accounting adjustment and does not represent an increase in the structure of the military services. The higher recruit input during the peak summer months increases the number of personnel in training on September 30.

In FY 77 there is an increase of 10,000 for the Navy but in the outyears, FY 78–FY 80, this increase is expected to be largely offset by other reductions. In FY 77 the other Services remain at their FY 7T level. The FY 78–FY 80 end-strength for each Service is expected to be within 1% of the FY 77 level.

Senator Thurmond. Do you feel that Congressional manipulation of these levels, however minor, would be counter-productive?

Secretary Brehm. The manpower request submitted by the Department each year is the result of a thorough, analytic process used to determine the minimum size, fiscally-constrained force needed to satisfy our defense responsibilities. It is a balanced program and any arbitrary manipulations, however minor, could be counter-productive to our efforts.

Cost of Manpower Buildups

Senator Thurmond. Mr. Secretary, in the event of a national emergency in a military manpower buildup to the Vietnam levels, what would be the cost of such a force?

Secretary Brehm. FY 1968 marked a year of peak Vietnam activity for DoD with military strengths reaching 3.5 million, and defense budget outlays rising to $78 billion. Because of wage and price increases, the volume of goods and services DoD can purchase with $78 billion today is considerably less than what was purchased in FY 1968.

Using wage and price indices developed by DoD which are similar to other economic indices used by the Departments of Commerce and Labor, the proposed FY 76 budget of $93 billion would have to be expanded to $137 billion to duplicate the purchasing power achieved in FY 1968. Stated another way, we would have

to spend $44 billion more than currently planned in FY 1976 if we were to repeat DoD's level of activity during the peak Vietnam year of FY 1968.

MILITARY PERSONNEL OVERVIEW

[CLERK'S NOTE: At the request of Senator Daniel K. Inouye, the following tables are being inserted in the record as accompaniments to Secretary Brehm's statement:]

DEPARTMENT OF DEFENSE MILITARY PERSONNEL BY PAY GRADE AS OF JUNE 30, 1974

PAY GRADE	ARMY		NAVY		MARINE CORPS		AIR FORCE		DOD TOTAL	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
0-11	1	NIL							1	NIL
10	12	NIL	9	NIL	2	NIL	14	NIL	37	NIL
9	44	.01	41	NIL	7	NIL	39	.01	131	.01
8	178	.02	106	.01	26	.01	142	.02	452	.02
7	231	.03	138	.02	36	.01	198	.03	603	.03
6	5,052	.64	3,797	.69	605	.32	6,009	.93	15,463	.72
5	11,379	1.45	7,834	1.43	1,493	.79	13,834	2.15	34,540	1.60
4	17,656	2.25	14,525	2.66	2,966	1.57	21,677	3.37	56,824	2.63
3	31,852	4.07	15,690	2.87	4,973	2.63	40,629	6.31	93,144	4.31
2	11,985	1.53	11,508	2.10	3,963	2.09	14,029	2.18	41,485	1.92
1	13,057	1.67	9,497	1.74	3,411	1.80	13,678	2.12	39,643	1.83
W-4	1,410	.18	38	NIL	170	.09	67	.01	1,685	.08
3	3,506	.45	1,641	.30	518	.27			5,665	.26
2	7,127	.91	1,978	.36	341	.18			9,446	.44
1	2,082	.26	190	.03	229	.12			2,501	.11
CADETS	2,866	.37	3,197	.58			4,412	.69	10,475	.48
E-9	3,698	.47	3,841	.70	1,322	.70	5,306	.82	14,167	.66
8	12,104	1.55	8,968	1.64	3,310	1.75	10,662	1.66	35,044	1.62
7	45,798	5.85	33,918	6.21	8,676	4.59	38,062	5.91	126,454	5.85
6	71,378	9.12	67,046	12.28	14,238	7.54	70,635	10.97	223,297	10.33
5	96,272	12.30	82,341	15.08	23,374	12.38	116,924	18.16	318,911	14.76
4	176,715	22.57	92,718	16.99	25,845	13.68	130,527	20.28	425,805	19.70
3	94,101	12.02	79,489	14.69	29,631	15.69	95,982	14.91	299,203	13.84
2	103,397	13.21	72,789	13.33	32,667	17.38	37,070	5.76	245,923	11.38
1	70,996	9.07	34,369	6.29	30,999	16.41	23,899	3.71	160,263	7.42
TOTAL	782,897	100.00	545,668	100.00	188,802	100.00	643,795	100.00	2,161,162	100.00

DEPARTMENT OF DEFENSE
DISTRIBUTION OF FULL-TIME PERMANENT
CIVILIAN POSITIONS
AS OF JUNE 30, 1974

	ARMY		NAVY		MARINE CORPS		AIR FORCE		DEF. AGENCIES		DOD TOTAL	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Executive Level I	-	-	-	-	-	-	-	-	1	-	1	-
II	1	-	1	-	-	-	1	-	2	-	5	-
III	-	-	-	-	-	-	-	-	1	-	1	-
IV	6	-	5	-	-	-	5	-	13	.02	29	-
V	1	-	-	-	-	-	1	-	11	.01	14	-
GS - 18	8	-	5	-	-	-	7	-	47	.06	67	.01
17	23	.01	30	.01	-	-	21	.01	67	.09	141	.01
16	194	.06	262	.09	4	.02	142	.05	193	.26	795	.08
15	1,646	.51	2,345	.79	27	.15	1,015	.37	1,112	1.51	6,145	.62
14	4,729	1.46	5,222	1.76	89	.49	3,062	1.13	1,694	2.30	14,796	1.50
13	13,070	4.04	12,373	4.18	232	1.28	8,969	3.30	3,574	4.85	38,218	3.90
12	20,709	6.40	16,989	5.74	365	2.02	12,874	4.74	6,522	8.84	57,459	5.84
11	22,795	7.04	17,872	6.03	727	4.01	15,438	5.68	10,462	14.18	67,294	6.84
10	2,634	.81	2,030	.69	49	.27	1,342	.49	276	.37	6,331	.64
9	22,598	6.98	15,302	5.17	864	4.77	17,898	6.59	8,899	12.06	65,561	6.67
8	3,996	1.23	2,516	.85	128	.71	4,345	1.60	673	.91	11,658	1.19
7	24,137	7.46	11,875	4.01	870	4.80	12,635	4.65	5,226	7.08	54,743	5.57
6	14,003	4.33	7,263	2.45	630	3.49	8,871	3.26	2,810	3.81	33,577	3.41
5	30,470	9.41	19,183	6.48	1,633	9.02	22,528	8.29	7,223	9.80	81,037	8.24
4	31,269	9.66	19,526	6.59	1,971	10.88	19,980	7.35	6,671	9.04	79,417	8.07
3	18,483	5.71	14,234	4.81	1,357	7.49	14,440	5.32	3,272	4.43	51,786	5.27
2	2,833	.88	3,822	1.29	132	.73	4,132	1.52	667	.90	11,586	1.18
1	101	.03	301	.10	1	.01	672	.25	89	.12	1,164	.12
Wage Board	109,849	33.94	144,302	48.72	8,941	49.36	123,247	45.35	14,179	19.22	400,518	40.72
Public Law	145	.04	713	.24	90	.50	140	.05	106	.14	1,194	.12
Direct Hire Foreign Nationals	(16,141)		(16,403)				(11,822)					
Indirect Hire Foreign Nationals	66,459		11,591				15,816					
TOTAL	323,700	100.00	296,172	100.00	18,114	100.00	271,765	100.00	73,790	100.00	983,537	100.00

DEPARTMENT OF DEFENSE
DISTRIBUTION OF FULL-TIME PERMANENT
CIVILIAN POSITIONS
AS OF JUNE 30, 1974

	ARMY		NAVY		MARINE CORPS		AIR FORCE		DEF. AGENCIES		DOD TOTAL	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
Grades Established By:												
The Secretary of Defense (10 USC 1581): Scientific and Professional, $34,607 to $36,000	145	100.00	143	20.06	1	1.11	140	100.00	90	84.91	519	43.47
20 USC 241: Teaching Positions, $8,200 to $28,287	-	-	-	-	89	98.89	-	-	-	-	89	7.45
The Secretary of the Navy: Professor and Associate Professor, $10,457 to $29,908	-	-	550	77.14	-	-	-	-	-	-	550	46.06
The Secretary of Defense:												
(22 USC 2385): FD-1 $36,000	-	-	-	-	-	-	-	-	1	.94	1	.08
FD-2 $34,373 to $36,000	-	-	-	-	-	-	-	-	4	3.77	4	.34
22 USC 2151: Mutual Security Assistant $31,203 to $36,000	-	-	-	-	-	-	-	-	8	7.55	8	.67
20 USC 901-906: Teaching Positions, $7,815 to $19,835	-	-	20	2.80	-	-	-	-	-	-	20	1.68
10 USC 867: Judge, $42,500	-	-	-	-	-	-	-	-	3	2.83	3	.25
TOTAL	145	100.00	713	100.00	90	100.00	140	100.00	106	100.00	1,194	100.00

NOTE: End Strengths for National Security Agency (NSA) not included.

CEILING TARGETS

[CLERK'S NOTE: Following the February 12th hearing, the following exchange of letters occurred regarding a target ceiling for the defense budget.

At the request of the Chairman, these letters are being inserted in the hearing record.]

[The communications follow:]

LETTER FROM SENATOR McCLELLAN

United States Senate

COMMITTEE ON APPROPRIATIONS

WASHINGTON, D.C. 20510

March 14, 1975

Dear Mr. Secretary:

Starting in fiscal year 1974, the Senate Committee on Appropriations early during the consideration of the pending fiscal year budget request set "ceiling targets" for each subcommittee. In fiscal year 1974, the Defense Subcommittee set a target reduction of $3 billion in new obligational authority -- we were able to exceed that amount. The Senate, upon the Appropriations Committee's recommendations, made a reduction of $4 billion. Again in fiscal year 1975 the target reduction, set by the Defense Subcommittee, was $3.5 billion -- we also exceeded that target, and upon the Appropriations Committee's recommendation the Senate reduction was $5.5 billion.

Pursuant to the Congressional Budget Act of 1974, these target reduction ceilings are to be a part of the report which the Committee is required to submit to the Senate Committee on the Budget on or before March 15 of each year.

The Defense Subcommittee is considering a request of $97.8 billion in new obligational authority for fiscal year 1976. The recommended target ceiling is $92.8 billion, or a reduction of $5 billion in new obligational authority.

You and each Service secretary along with his military counterpart have appeared before the Subcommittee to present the fiscal year 1976 budget requests. During each hearing session, the Committee has pointed out that there will be strong pressures within the Senate to make deep reductions from the fiscal year 1976 Defense budget.

The Committee desires to obtain the best estimates as to what effect significant Defense reductions might have on the national economy. A logical basis upon which to make these estimates is total denial of program growth within the Defense budget. Program growth of $8.8 billion has been identified within the $97.8 billion being considered by the Defense Subcommittee and $800 million of program growth within the $4.2 billion under consideration by the Military Construction Subcommittee.

It will be of great assistance to the Committee if the Department of Defense, in consonance with other Departments, would estimate the effect of denial of the aforementioned $9.6 billion in program growth on the national economy. The estimate should include the numbers of civilian jobs which would be vacated both in the Department of Defense and the private sector; which industries and vocations would share the brunt; which geographical sectors would suffer most; and the overall loss in consumer purchasing power.

An early response will facilitate the work of the Committee.

With kind regards, I am

Sincerely,

John L. McClellan
Chairman

LETTER FROM SECRETARY SCHLESINGER

THE SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

APR 4 975

Honorable John L. McClellan
Chairman, Committee on
Appropriations
United States Senate

Dear Mr. Chairman:

Your letter of March 14, 1975, requested our comments on the economic impact of a $9.6 billion reduction from the FY 1976 defense budget request for military functions. Before addressing the economic impact, I would like to comment briefly upon what such a reduction would mean in terms of the defense program trend. As you noted, there is real growth (that is, noninflationary growth after allowing for pay and price increases) of $.8 billion for the Military Construction and Family Housing Bill. For the Defense Appropriation Bill, taking account of all factors (details are presented in the first enclosure) the estimates would provide real growth of $3.8 billion. The total real growth in the two bills is thus $4.6 billion. A reduction of $9.6 billion from these estimates, then, would represent a real cut of some $5 billion in the defense budget from the depressed level of FY 1975.

The economic impact of such a cut would be severe. There would be a substantial loss of employment, beginning when the budget cuts were effected and building to a peak of about half a million jobs by the summer of 1976. The period of peak impact would continue into the spring of 1977. GNP would decline by about $18 billion, cumulative. This would include the $9.6 billion drop in defense production and an $8.4 billion drop in other areas, mostly consumption; investment would not change significantly.

The decline in GNP would produce a Federal revenue loss of about $4 billion, and the rise in unemployment would result in increased outlays for unemployment compensation of about $3 billion, both cumulative figures. There would also be increased outlays, which we cannot estimate, for welfare, food stamps, and for Federal retirement systems. The $9.6 billion defense cutback would thus be substantially offset by lost revenues and increased outlays. The deficit would not change significantly.

Practically all of the $9.6 billion defense budget cut under consideration would involve payrolls in DoD or in industry. In addition to this direct hire, there are indirect employment effects, as employees spend their income. By contrast, most nondefense Federal spending is for transfer payments (social security, medicare, medicaid, food stamps, etc.). These transfer payments involve no direct hire, and affect

employment only indirectly. Moreover, a reduction in the defense budget would have an assured economic impact, which would begin as soon as the Congress acted. Most of the nondefense job programs under consideration involve grants to states and local governments. There are obvious questions of timing, and of the extent to which such amounts create net additional new jobs as against paying people already employed or foregoing tax increases or bond issues. These are practical considerations which one must take into account in appraising the prospects for offsetting a defense cutback by increased spending for domestic programs.

There are sectors of domestic public spending (Federal, state and local) which have an employment impact, dollar for dollar, equivalent to that of defense. But we are not aware of any plan for expansion of such programs, contingent upon a reduction in the defense budget, to offset the defense employment cutback as it would occur. Also we see no reason why expansion of such programs would have to be contingent upon a defense cutback. It's unrealistic to expect that defense employment cutbacks could be offset by increases in other types of employment in the near term.

I believe that a defense budget reduction at this time would make our unemployment problem much worse than it would be if our budget were approved as submitted. Many have advocated defense budget reductions in the name of reordering our national priorities, maintaining that we could better use the resources for other purposes. If the defense budget is cut by $9.6 billion and, optimistically assuming an equivalent amount is made available elsewhere, there would still be a significant loss of production in the short term. Further, even if it were possible to offset a defense cutback, job-for-job and dollar-for-dollar, by increases in other sectors of the economy, it would still be necessary to consider whether such large-scale reductions were consistent with our national security requirements.

The $9.6 billion cutback you mention would involve a cut, in real terms, of some 6% from the depressed level of FY 1975, continuing the downtrend in our level of defense effort, in the face of a steady increase by the Soviets in defense resources. It is highly unlikely that large defense cuts at this time would help the economy and it is virtually certain that the military risk would be increased.

The second enclosure (enclosure B) presents more details on the economic impact of reductions in the Defense budget. This enclosure also responds to the specific question you raised concerning areas and sectors of impact and other points. If you require any further information in this regard, please let us know.

Sincerely,

J. R. Schlesinger

ENCLOSURE A

FY 1975 AND FY 1976 SUMMARY, DEFENSE APPROPRIATION ACT
($ Millions)

	FY 1975	FY 1976	Constant Price Change
FY 1975 Appropriation (reflects proposed supplementals and rescissions)	83,925		
Annualize FY 1975 Pay Raises and Retired Pay CPI's	1,284		
Purchase Inflation at 11.5%	4,435		
FY 1975 in FY 1976 Submission Prices	89,644	97,798	+8,154
Prior-Year Shipbuilding Program Adjustments	+909	-2,269	
Program Totals After Shipbuilding Adj.	90,553	95,529	+4,976
Adjusted Program Totals in FY 1976 Submission Prices:			
Military Retired Pay	6,522	6,885	+363
Use of Prior Balances, Shelf Sales & Lapses, Net	-738	-58	+680
Liquidation of Prior-Year Obligations	48	163	+115
All Other	84,721	88,539	+3,818
Program Totals after Shipbuilding Adjustments	90,553	95,529	+4,976

Prior-year shipbuilding adjustments. The FY 1976 request includes $2,269 million to finance funding shortages from ships approved for FY 1975 and prior years. This provides no new ships for FY 1976. It is necessary, for comparability, to add $909 million to the FY 1975 column, to reflect full financing of the ships approved for that year. After these adjustments, the ships approved for FY 1975, and those requested for FY 1976 -- both fully funded -- are reflected in the totals on a fully-comparable basis.

Military retired pay. The $363 million increase reflects growth in the retired population.

Prior balances, shelf sales, etc. The 1975 Appropriation Act made specific transfers from prior balances in certain instances, and in other cases appropriation reductions were made upon the basis that programs could be supported through sales of material not requiring replacement (shelf sales). Moreover, transfers have been reflected in FY 1975, pursuant to authority in the 1975 Appropriation Act. The FY 1976 request reflects much smaller adjustments in these areas. These items appear in the financial schedules as negative items -- that is, as reductions to the amount of appropriations requested to finance a given level of program. The $680 million increase here does not represent program growth, but a change in the availability of prior-year balances and other financing sources.

Liquidation of prior-year obligations. The FY 1976 requests are to liquidate obligations incurred pursuant to contract authority in FY 1972.

ENCLOSURE B

ECONOMIC IMPACT OF REDUCTIONS IN DEFENSE BUDGET

Overall Employment Impact

Virtually all of a $9.6-billion reduction would come from payrolls in government or industry. Excluding military retired pay, the Defense budget is about evenly divided between (a) direct military and civil service payroll and (b) purchases of goods and services from industry. On the average, about 2/3 of industry purchases are for direct compensation of private sector employees, and 1/3 goes for indirect business taxes, interest, depreciation, and profits. The latter items also involve jobs, indirectly, but they also tend to be fixed expenditures so that a change in DoD purchases tends to involve compensation almost exclusively. Thus, virtually all of a $9.6-billion reduction in the Defense budget would reduce government or industry payrolls.

On the average, each $1 billion of payroll spending for civil service employment will involve 64,000 direct, full-time, full-year jobs in FY 1976. For industry payrolls, the figure will be about 60,000 jobs per billion.

Those figures are averages, and they would not apply to changes in payroll spending. Any employer, government or private, initially changes his workforce by adjusting employment at lower-than-average rates of pay. This is obvious when employment is increasing; one builds up a workforce by recruiting more people, normally at entry rates, which are about half of average rates. The same applies during cutbacks, for three reasons. First, when the workforce is falling, employers curtail recruitment, or cease hiring altogether. Second, most employers apply the "last-hired-first-fired" principle, which means that the junior employees, generally those at the lowest rates of pay, are the first to go. Third, even where senior employees are separated, they are entitled to long notification periods; separation and severance pay; payments for unused leave; and similar items; which means that the dollar savings per person separated for the first year or two are quite low.

It is necessary to consider not only direct effects of changes in payroll spending, but multiplier effects as well. Allowing for the fact that employment changes would occur at below-average rates of pay, and for the multiplier, the overall job impact would be about 125,000 jobs per $1 billion of defense spending.

The $9.6-billion budget cut considered here would involve spending changes over a period of time. We estimate that spending would fall about $2.8 billion in FY 1976 and about $4.2 billion in the next 15 months (the transition period and FY 1977, under the new designation). The remaining $2.6 billion falloff in spending would occur after FY 1977. The impact would begin in the latter part of this year, and would reach a peak by the summer of 1976. The peak would extend to the spring of 1977, with a decline thereafter. During the peak period, the spending reduction would be felt at an annual rate of about $4 billion. As noted earlier, the employment impact (direct and indirect) is about 125,000 jobs per billion. By the summer of 1976, the budget cut considered here would affect about 500,000 jobs.

Areas and Sectors of Impact

In measuring areas and sectors of impact, it is necessary to assume that the budget reduction would fall in those areas where program

growth has been identified, without recognition of such factors as the prior-year funding deficiencies for shipbuilding and other items detailed in the first enclosure. It should be emphasized that this would not accord with our views on military need or long-run economics.

About 10% of this reduction would affect DoD's civil service payroll, and the remainder would affect purchases from industry.

Recall that about 500,000 jobs would be lost by the summer of 1976. This would include 40,000 direct civil service jobs, 360,000 jobs of people engaged in direct defense work in industry, and 100,000 jobs throughout the economy as a result of the multiplier effect.

As to the impact by states, the loss of $9.6 billion in payrolls (considering contracting, subcontracting, and direct defense civil service employment) is estimated as follows:

- Five states would probably be hit hardest -- California, Connecticut, Mississippi, Missouri, and Virginia. These states, together, would lose about $5 billion in payrolls.

- Michigan, Texas, and the state of Washington would lose about $1.5 billion in payrolls.

- Five other states would lose, collectively, about $1 billion in payrolls: Maine, Maryland, Massachusetts, New York, and Ohio.

- Of the remaining $2.1 billion in payrolls, some would involve states already named, but the amounts cannot be identified at this time. The balance would be distributed among other states.

The industries that would be hardest hit directly are aircraft (including airframes, electronics, and engines); shipbuilding; automotive (tanks and personnel carriers); and construction. The suppliers for these industries would also, of course, be hard hit. Indirectly, of course, there would be an impact throughout the economy.

The occupations hardest hit would include machinists, pattern and model-makers, sheetmetal workers, aircraft mechanics, carpenters, electricians, welders, steamfitters, pipefitters, and bricklayers. There would be a smaller numerical impact -- but a sharp impact in relative terms -- in certain professional areas: aeronautical, electrical, and mechanical engineers; physicists; and mathematicians.

Effect on Gross National Product

Cumulatively, there would be a decline of about $18 billion in GNP, with most of the impact being felt in 1976 and 1977. This would include the $9.6-billion decline in defense purchases, and an $8.4-billion drop in personal consumption expenditures as a result of the multiplier. Investment would be essentially unchanged. Thus, the U.S. would lose not only the $9.6 billion in military goods, but an additional $8.4 billion in automobiles, housing, appliances, and the kinds of goods and services that consumers buy.

A cumulative GNP loss of $18 billion would produce a loss in Federal revenues of about $4 billion. There would be added outlays for unemployment compensation of some $3 billion, and other increases in outlays associated with higher unemployment, which are difficult to estimate. These include outlays for food stamps and other welfare programs, and

some increases in outlays under various Federal retirement programs. In terms of net budgetary effect, then, a $9.6-billion defense spending cut would be offset by a $4 billion revenue loss, some $3 billion in additional outlays for unemployment compensation, and other outlay increases of the type just mentioned.

Alternatives

If our economy were at full employment, defense spending would amount to about 5% of GNP -- the lowest share in 28 years, and very nearly the lowest share since before Pearl Harbor. With the economy at full employment, the burden of defense would be very clear: we would have to give up 5% of our real buying power, 5% of the income we could otherwise use for different purposes, in order to provide for defense. The programs proposed for FY 1976 are fully warranted on national security grounds and would be so warranted even under full-employment conditions -- that is, under conditions where we would clearly have to forego other things in order to provide for defense.

But the economy is far below full-employment today. We will lose an estimated $244 billion of production in FY 1976 due to unemployment, $249 billion in FY 1977, and $235 billion in FY 1978. It is against this backdrop that we must assess a proposal to reduce the defense budget, and thereby government and industry payrolls, by such a large amount as $9.6 billion. Considering multiplier effects, as we noted, such a cut would cause a GNP decline of some $18 billion. At full employment, we could expect that a $9.6-billion reduction in defense -- whatever its military consequences -- would at least mean that we could have $9.6 billion more for other purposes. That wouldn't apply under present conditions: we would have $9.6 billion less for defense, and $8.4 billion less for other purposes.

Some insist that we could more than make up for that $18 billion in lost GNP by transferring $9.6 billion from defense to other programs. Two questions are pertinent: First, how sure can we be that we could equal or exceed that $18 billion decline in GNP by further increases in nondefense programs? Second, assuming that $9.6 billion in additional spending for certain domestic programs would create more than $18 billion in GNP growth, why is it necessary to reduce defense programs, specifically, to free up the $9.6 billion?

As to the first question, a number of allegations have been made recently to the effect that defense spending creates fewer jobs than other types of public spending. These allegations involve misuse of various data prepared by the Bureau of Labor Statistics. On the average, using comparable data and consistent methods of measurement, the number of jobs per billion of defense spending is about the same as for nondefense public spending, Federal, state, and local. We have checked this point in detail with the Bureau of Labor Statistics, and they concur in this assessment. In this connection, it is important to consider some practical aspects of defense and nondefense spending. As to defense, the $9.6-billion reduction under discussion would be virtually 100% payroll. Consider the pattern of Federal nondefense spending (excluding debt interest):

- 56% goes for Federal transfer payments to individuals. About half of this is for social security. The remainder covers medicare and medicaid, unemployment assistance, veterans benefits, Federal Employee retirement, food stamps

and other public assistance, railroad retirement, and housing payments.

- 19% is for direct payroll and industry purchases -- that is, it has an economic impact equivalent to the defense increment we are discussing.

- 23% is for grants to states and local governments. Of this, about 1/3 is then transferred to individuals, and about 2/3 goes for direct payroll and industry purchases.

- 2% is for lending, financing, and other transactions.

When one speaks, then, of offsetting the economic impact of defense cutback by further increases in other types of Federal spending, it makes an immense amount of difference what type of other spending he is talking about. Note, for example, that 56% of nondefense spending goes for transfer payments. Suppose, for example, that there were $10,000 available to spend, with a choice between (a) hiring an additional employee or (b) increasing the payments to a certain group of civil service retirees. If the latter course were chosen, there would be no additional direct employment, but some additional indirect employment as the retirees spent their additional income. In the first alternative, there would be one additional job to begin with (the employee that was hired) plus indirect employment as he spent his additional income. In the short run, the employment impact of direct hire is much greater than that of transfer payments.

About 23% of nondefense Federal spending is for grants-in-aid to state and local governments, and most of the proposals for expanded public service jobs would follow that route. Several factors should be considered. Timing is a significant factor. It's also necessary to consider how much of any additional spending would create net additional jobs, and how much would be necessary to pay people already employed, or to forego tax increases or bond issues. Cuts in the defense budget will begin having an effect upon payrolls almost immediately, and this will build to a peak by the summer of 1976.

We cannot assure ourselves that increases in spending for domestic programs will take up the slack fast enough to prevent a further increase in unemployment. Some have observed that 133,000 public service jobs can be created per billion of spending, and contrast this with a much smaller number, such as 60,000, for defense. The implication is that for every billion shifted from defense to nondefense we can increase employment some 73,000. However, these figures involve a comparison of entry rates of pay for nondefense with average rates of pay for defense. The defense figure, moreover, includes industry employment, and each billion of purchases has been discounted about 1/3 to cover depreciation, interest, taxes, and profits. If we correct for these factors -- compare entry rates with entry rates, and payroll dollars with payroll dollars -- the difference disappears. The regular military compensation (basic pay, quarters and subsistence allowance, and tax advantage) for an E-1, the entrance enlisted grade, will be $6,387 in FY 1976, counting a 5% raise next October 1. The entrance civil service compensation averages about $7,600. That amounts to about 157,000 jobs and 132,000 jobs per billion, respectively. If one is considering changes in defense programs, these are the pay rates that are important because, for reasons already discussed, changes in employment (up or down) tend to occur, initially, at approximately the entrance rates of pay.

As to the first of the two questions: -- how sure are we that we could offset defense employment cuts by increases in other programs? -- there must be some very strong doubts. The employment impact of a significant defense cutback would be large, immediate, automatic, and assured. There are many uncertainties, and many possibilities for leaks and lags, in the areas of domestic spending that some would propose to offset the defense cutbacks.

That leads to the second question. Suppose that there were a $9.6-billion package that was equivalent to defense spending in terms of economic impact, which could be implemented quickly enough to offset the defense cutback as it occurred. Why would it be necessary to cut the defense budget to place such a program into effect? Many billions have been pumped into programs, and further billions are under consideration, which do not begin to approach defense spending in terms of employment and overall economic impact. Nondefense Federal spending (excluding debt interest) was estimated at $241 billion for FY 1976 and could well reach $290 billion if the budget total approaches $400 billion. That would be an increase of $50 billion from the February 1975 estimate, and an increase of $75 billion from the FY 1975 level. These spending increases, combined with large tax reductions, could easily produce a deficit of $100 billion -- double the estimate of last month. Total U.S. public spending (Federal, state, and local, net) will probably exceed $600 billion in FY 1976, up about $110 billion from the FY 1975 level. Nondefense spending will rise by over $100 billion, an <u>increase</u> for a single year that's greater than the <u>total</u> defense budget.

Thus, there are many billions in that array of spending increases which cannot remotely match, dollar for dollar, the employment and economic impact of defense budget reductions. There are obviously programs in the domestic sector which have a significant employment and economic impact. However, considering total government spending, it is not axiomatic that the defense budget must be cut to make room for growth in such areas.

Nor can we avoid considering the serious further deterioration in our national security posture which such a sharp cutback would entail. Even if we could create new jobs in other sectors to match the numbers of workers who would be idled by a defense cutback, the programmatic question remains. Would the tasks that these people would be performing be of sufficient worth to offset the consquences of a sharp further cutback in our military strength?

If the defense budget is reduced by $9.6 billion, that will mean a real-term reduction of some 6% from the depressed level of FY 1975. It will continue the downtrend in our real level of defense effort, in the face of a steady Soviet uptrend. In a few years, these trends would lead to a Soviet edge of 2-to-1 in the real level of defense effort. Such a shift in the military balance, somewhere along that trend line, would produce a fundamental change in the international order -- a matter of the greatest consequence. The matter would be grave enough if we elected to follow such a course in the interests of our short-run economic well-being -- if we chose to devote less resources to defense so as to have more for other purposes. In the present instance, we wouldn't have even that excuse. Because if we cut the defense budget under present circumstances, we shall not have more for other purposes -- consumer spending and the rest. We shall have less. Some would advocate a $10-billion cut in the defense budget at a time when we have some $250 billion in productive capacity that we are not using. The implications of this, in terms of our capability to maintain the military balance over the years ahead, would be grave indeed.

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1976

TUESDAY, FEBRUARY 26, 1975

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

The subcommittee met at 2 p.m. in S–126, the Capitol, Hon. John L. McClellan (chairman) presiding.

Present: Senators McClellan, Young, and Inouye.

DEPARTMENT OF DEFENSE

DEFENSE RESEARCH AND ENGINEERING

STATEMENT OF DR. MALCOLM R. CURRIE, DIRECTOR, DEFENSE RESEARCH AND ENGINEERING

ACCOMPANIED BY DR. GEORGE H. HEILMEIER, ACTING DIRECTOR, DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

BUDGET REQUEST

Chairman MCCLELLAN. This afternoon the subcommittee will receive testimony in support of the fiscal year 1976 budget request by the Director in the Department of Defense charged with the top level research and development management.

The witness today is Dr. Malcolm Currie, Director of Defense Research and Engineering.

The subcommittee has asked Dr. Currie to appear so that we may get a clear understanding of the responsibility of his organization and its needs for the coming fiscal year.

BIOGRAPHICAL SKETCH

I have before me a biographical sketch on Dr. Currie, which, if there is no objection, I shall insert at this point in the record.

[The biographical sketch follows:]

DR. MALCOLM R. CURRIE, DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING

Dr. Currie is a native of Spokane, Washington and received his early schooling there. Following service in the Navy he attended the University of California, Berkeley, receiving his A.B. in Physics in 1947, and an M.S. in Electrical Engineering in 1951 and his Ph.D. in 1954.

His technical career includes university teaching, research in various fields of electronics and physics, and the development of communications, radar, electro-optical, laser and propulsion systems for space and airborne applications. A number of publications and patents resulted.

Dr. Currie's industrial management experience includes various positions to Corporate Vice President and General Manager of a large engineering division at Hughes Aircraft Company (1955–1969) and Vice President—Research and Development at Beckman Instruments (1969–1973).

Honors include Phi Beta Kappa; elected by Eta Kappa Nu as the Nation's Outstanding Young Electrical Engineer in 1958, and election to the National Academy of Engineering.

PREPARED STATEMENT

Chairman McCLELLAN. Dr. Currie, you may begin.

Dr. CURRIE. Yes, sir. I have a prepared statement which I think you have before you. I would like, if I may, to just enter this in the record and make a few informal comments to get the session going.

Chairman McCLELLAN. That will be acceptable. We will direct that your full statement be printed in the record at this point.

[The statement follows:]

I. DEFENSE RDT&E OVERVIEW

A. INTRODUCTION

Mr. Chairman and Members of the Committee:

I am privileged to appear before this Committee to offer my assistance as you begin your review of the Fiscal Year 1976 budget request for the Defense Research, Development, Test and Evaluation program. The RDT&E program is an aggregate of thousands of individual items, each designed to meet a specific defense need. The proposed program for FY 1976 will cost $10.2 billion.

In my full presentation for the record, Mr. Chairman, I will explain each item, but I would like now to present a broad perspective which I believe is essential to your consideration of the complex details of the program.

In short: This program is designed explicitly to maintain for our nation now and for the future one of its priceless assets--the technological initiative.

I will describe what I mean by the technological initiative. I will assert that we have the initiative today, but that it is increasingly perishable in the world environment which we foresee. I will outline a philosophy of research and development management and describe a broad program that I am convinced can maintain this initiative for the years ahead. And I will ask this Committee--and the full Congress--to provide the vision, the wisdom and the investment decisions that will forge our future in the bold tradition of our successful past.

For decades we have based our security and economic vitality on technology. Today we find ourselves in an uncertain world. We view with concern a growing dependence on other nations for effective operation of our economy, and we see a determined adversary led by people who understand well the role of technology, who have achieved apparent parity in raw power and who insist they can and will create a position of military and economic strength favorable to their country.

Is technology, therefore, now proved for us to be a false god, best to be abandoned? Or, is this a time for new resolve and new effort to shape an assured future?

In this increasingly competitive, often hostile and rapidly changing world, Americans seem to have only one real choice. Clearly our national well-being cannot be based on unlimited raw materials or on unlimited manpower and cheap labor. Rather it must be based on our ability to multiply and enhance the limited natural and human resources we do have. Technology thus appears to offer us our place in the sun--the means to insure our security and economic vitality.

Make no mistake about it: There will be continued rapid technological change in future decades throughout the world. This change will be a global fact of life, not a U.S. choice. Ready or not, technological advance will be pervasive and change the way we live.

Our Nation's research and development community, including Defense R&D people, can and must respond to the rapid change. We can move with vision, as we traditionally have, and keep the leadership, or we can leave the initiatives to others.

I am urging today the clear articulation of a national policy.

We must maintain the broad technological initiatives.

To do this, Defense-related research and development must be funded, led and managed so that it can continue to make its vital contribution.

1. The Future Impact of Today's Decision

The FY 1976 RDT&E programs will have a profound effect on:

- The avoidance--that is, deterrence--of future wars of all kinds;
- The capabilities and costs of future U.S. weapons in competition with adversary weapons;
- The flexibility of the United States to meet crisis and wartime contingencies;
- The efficiency of our use of scarce and valuable military personnel and defense dollars;
- The perception of the rest of the world--hostile and friendly--of America's long-term commitment to maintain technological

leadership in significant defense areas.

These are national security reasons for carrying out an effective Defense R&D program. The requested programs are proposed by the Department of Defense--and will be judged by the Congress--solely on their direct contribution to national security objectives. There is no other purpose for Defense R&D. There is no program in this request, no proposed spending, that is advanced for civil economic reasons.

But it is appropriate that the Congress and the public understand that there has been and will continue to be an enormous civil bonus from our national investment in Defense R&D. This bonus effect is much deeper than just the impetus for new industries such as jet engines, computers, and nuclear power. Defense Department needs require the exploration and mastery of ever newer frontiers of technology, and this approach provides the necessary climate and foundation for industrial world leadership.

Therefore, while it is true that our decisions on FY 1976 Defense RDT&E are solely for our future national security, these decisions will also affect the broad economic health of our industry in an increasingly competitive world environment.

2. The Decision Environment

We cannot foresee exactly the needs of our children to the end of this century. Neither can we afford to fund enough R&D to cover every plausible future contingency. What we can do effectively is deliberately create options through a limited R&D program, thus permitting those who follow us to shape their own destinies based on conditions which will exist in their own times.

Our RDT&E budget is a constrained request--very much the product of today's difficult fiscal environment and of the disturbing trends in world affairs--but it is sufficient to create a spectrum of options for the future.

Here are some of the forces which shaped this request:

o A strained national economy. This is not an ideal Defense R&D program. It was deliberately limited by today's fiscal realities, and it may be substantially diminished by inflation beyond the levels projected in our budget calculations.

o Detente. As short-term tensions between the super powers may be eased, long-range technological and economic competition will persist and intensify. Renewed emphasis must be given to resources that we apply to long-term security.

o An increasingly complex and uncertain world. Events of the last year portend further shifts in the complex interrelationships of a world of changing leadership, power status and access to raw materials. This requires that Defense R&D be broadly based and flexible so that it can produce options for unpredictable contingencies.

o The rising cost of Defense manpower, maintenance and operations. Added R&D emphasis is needed to reduce manpower, maintenance and operations costs. These categories have grown to 60 percent of the total Defense budget while "modernization investment"--the sum of R&D and procurement--has been squeezed to about 30 percent. There is a paradox for us here; manpower costs rise and curtail R&D--which has the potential to reduce manpower costs, as well as preserve military lives. The Soviet military modernization investment is estimated at more than 50 percent of their military budget.

We are clearly caught up in a fateful trade-off between the costs of near-term readiness, which is heavily manpower dependent, and investment for long-range security.

o Vladivostok. Because it limits total numbers of weapons and weapon carriers, the accord on strategic nuclear weapons at Vladivostok re-enforces bur need for technological progress. Evolution in performance of strategic systems will now be the decisive motivator on both sides as we seek further agreements. R&D clearly has the potential to change the nature of strategic deterrence. The Soviet Union is now investing massively in strategic R&D and is prepared for unprecedented deployment of modernized new systems.

B. TECHNOLOGICAL INITIATIVE AS A NATIONAL GOAL

I want to state emphatically that right now, at this point in our history, we still do have the technological initiative in most areas important to our security. This is, however, a dynamic balance capable of rapid change.

The technological initiative is the product of a broad base both of research and of leadership in translating science into practical use. It requires pioneering and aggressive innovation over the spectrum of research, engineering, production and management--all of which are necessary for improved performance, higher productivity and affordable cost in the solution of complex problems.

The findings of modern science are available to all advanced countries. Almost all of the basic work is published in the open literature and widely circulated. Soviet scientists--who are generally on a par with our own--understand thoroughly the status of science throughout the world. There is no scientific limitation to what the Soviet military establishment can do.

But good science is only the first requisite for technological initiative. The American edge lies in an ability to apply science to the development of devices and techniques for which there is a real need, which are a substantial advance over existing applications, which can be produced in quantity, and which can be afforded by the ultimate user--military or civil.

Traditionally, the United States has excelled in the practical uses of science. The reasons for this leadership are several:

o National Style. Modern America evolved from a frontier society. The frontier today lies in science and technology, and Americans remain anxious to reach out and explore. We have a competitive society, and science and technology are highly competitive. Individual initiative is our hallmark. There is a boldness, a willingness to set high goals, to risk, and to be conspicious--in a loss or a win--that has been part of our heritage and part of our education. There has evolved a basic confidence that investment in research and development, coupled to real needs in a competitive environment, will provide the edge--and it has.

o Incentives. The American society offers effective incentives for technological excellence. A successful individual receives pay and prestige. A corporation--the source of most of the technical applications--get a profit. The Department of Defense gets a battlefield edge which pays in deterrence in lives and in security. The nation receives value-added payments--in business--for effective applications of technology.

o Institutions. This country has evolved institutions for R&D in Government and the private sector which, I believe, work better than those in any other country. Defense Department people understand the value and the limitations of applied technology. They have available both in-house laboratories and Federal Contract Research Centers to act as links between the military users and the universities and industry where the science and technology largely originate. The Defense R&D establishment is closely linked to the civil R&D establishment. So the Department of Defense benefits substantially from national R&D that it does not fund, just as the civil sector reaps its bonus from the defense innovations and technological thrusts. Industry is encouraged to take substantial, but practical steps forward. This approach has paid off historically despite the risks and inevitable failures.

We have indeed failed in some instances to maintain the technological initiative. In some industries--steel, and coal for instance--technical innovations are rare in this country, and much of the initiative has passed to other industrialized countries. We must learn from these experiences.

There are few defense technology areas where the Soviets have been permitted to take the initiative although the gap is closing in many areas. In some areas, which have critical military as well as civil applications--determined Soviet efforts to buy Western technology confirms significant Soviet lags behind the United States.

The Soviet R&D Approach

I would broadly characterize the U.S. approach to Defense R&D as a search for new technology or "quantrum jumps." We seek to push back frontiers of technology, attain substantially higher plateaus of capability, and find revolutionary solutions. We foster a competitive environment which stresses innovation and is receptive to new technology and keyed for rapid change.

By constrast, the Soviet approach could be broadly characterized as "conservative incrementalism." Soviet R&D institutions and the requirements generation process that underlies them have in the past been committed essentially to step improvements of existing systems and components. When incrementalism is the dominant development strategy, risks are fewer and the personal cost of failure less.

On the civil side, Soviet R&D is severely handicapped by the national style, incentives and institutions. Civil laboratories lack quality control and modern instruments and facilities. Industry often produces shoddy and unwanted consumer goods. The managerial and technical skills of mass production are scarce. The civil sector receives little bonus from work done in the military R&D establishment.

In Soviet military R&D, no such difficulties exist. There, Soviet resources are applied with considerable effectiveness. The defense sector has its own built-in organizational handicaps, but the atmosphere is markedly different from that endured by civil scientists, engineers and managers. The military sector enjoys high priorities for instruments and facilities; success is rewarded in a most unsocialistic way--with money and privileges! Standards are rigidly enforced. Funding, judging from the scale and breadth of military R&D, is no limitation. Massive application of resources makes up for any lack of efficiency.

The weapons produced are the real test of the effectiveness of the Soviet approach to Defense R&D. I have seen some Soviet deployed systems, and their quality is good by our standards even though they often require more manpower and give less protection to their soldiers. The workmanship is high quality; the engineering is generally excellent; the systems are well conceived; and the over-all effectiveness of the weapons is impressive. The Soviet doctrine of military R&D conservatism and massive investment fits the Soviet style and has returned solid dividends.

Over the past 20 years, the Soviet government has poured immense resources into an effort to achieve military parity and go on to superiority. The effort continues to grow and the products continue to improve. We now see evidence even of some flexibility in their conservative incrementalism policy. They are moving resolutely down independent and innovative new paths. Soviet actions and product give credence to a recent Communist Party Central Committee Resolution statement that "...The development of Soviet science has special significance (today) when the scientific-technological revolution has become the most important area in the competition of the two opposed world systems."

I do not doubt that the Soviet Union--if uncontested--can in time gain the broad technological initiative but only if we decide whether by conscious national intent or by default to slacken our efforts.

I believe that the American "new technical plateau" approach to Defense R&D is superior to an approach dominated by conservative incrementalism. Our approach is an expression of our national character. We should understand it and not denigrate it. It has provided us--so far--with the broad technological initiative.

C. A CONCEPTUAL AND MANAGEMENT FRAMEWORK FOR DEFENSE R&D

I would like to describe briefly the concepts which underlie our planning and management of Defense RDT&E. These concepts can provide a framework in which to understand the thousands of individual projects making up the over-all Defense R&D program.

Defense R&D programs fall essentially into two groups having different objectives:

Group One: Creation and demonstration of options which may be useful for future military capabilities.

Group Two: Full-scale system development for potential deployment.

It is important that these activities and objectives be distinguished and that the programs in each group be reviewed with the different objectives in mind.

Group One includes the thousands of projects in the "technology base" plus creation and demonstration of subsystem and system options (in general, the Defense R&D Budget categories 6.1 through 6.3). In this group we fund work in the sciences that relates directly to our needs, and we fund the development of new techniques and devices which could form the basis for future weapons. We foster feasibility demonstrations and competitive approaches to military problems so that we can pick and choose the best of the available technologies. In this general category we also build prototype test platforms for proving out new technology--whether in electronics, propulsion, materials, aerodynamics, guidance or elsewhere. In some cases (for example, the Lightweight Fighter), these prototypes represent concepts for whole systems, brought into being in a competitive industrial environment in order to extract from industry its most creative solutions to cost-performance trade-offs. I strongly endorse hardware rather than paper competition wherever possible.

Group One programs are often risky--but payoffs from success are great. There will be--and should be--failures, but these failures come at a relatively inexpensive stage of the weapons acquisition and ownership process. These programs are highly leveraged because the potential return from success is so large compared to the investment. These programs reduce risk. They make innovative use of technology to reduce costs and make more efficient use of manpower. They also provide valid cost data. In the aggregate, the Group One programs create and preserve a broad base of technological options from which we can select with confidence those which can then be carried forward for full development and deployment.

We draw a sharp management line between Group One programs --creation and testing of technology options--and Group Two, development of full systems for potential deployment. Group Two programs embrace generally the R&D budget Category 6.4. They are characterized by the terms "full-scale system development," "operational system development," engineering development." In Group Two we build full-scale engineering models suitable for the combat environment and for test and evaluation by the military men who will use them. Each program usually involves much greater cost than the prototype and demonstration programs in Group One. This cost accrues from the much greater engineering detail, the design for conformance to full military specifications, the controlled and complete documentation necessary for eventual possible procurement and production, the design of support equipment, training requirements, and extensive test and evaluation.

Obviously it is at the point of transition of a program from Group One to Group Two that a crucial commitment begins. We need to be demanding and thorough in our review of programs at this decision point. And we are. For the full system development programs in Group Two such as B-1, AEGIS, Air Combat Fighter, UTTAS, TRIDENT, etc., we ask these hard questions: What is the projected military need for this program? What are the alternative solutions? Is this system cost-effective? What are the production and life-cycle costs? What are the cost-performance trade-offs? Is the program well-managed? Is the test program adequate? Are the cost and schedule realistic?

The decision to put a program into Group Two is made by the highest officials in the Department of Defense, meeting as the Defense Systems Acquisition Review Council. This is the so-called DSARC II milestone decision. Seventy-nine major programs are under this DSARC management review process, and 66 lesser programs are similarly approved through Program Memoranda which rigorously record the need, technical cost and schedule objectives of these programs.

I believe that the DSARC process is working and has evolved into an increasingly powerful management tool in DoD. This process is reflecting itself in the Services (e.g., the Army's ASARC). It provides a mechanism for critical examination and review which has improved considerably the quality of management and the results.

Of these two broad categories of R&D programs, Group One represents a FY 1976 investment of roughly $4 billion, supporting literally thousands of individual projects for technological options. Group Two, with only a few hundred programs, represents an investment of about $6 billion, developing systems for potential deployment as our deterrent and war fighting forces.

I invite the Congress to review the Defense RDT&E program from this two-group perspective so that we can better address together the details of the many projects and their contributions to our defense objectives.

The programs in Group One need to be reviewed in a broad sense, assessing the general level of funding, the over-all quality and adequacy of the technology efforts and competitive approaches--rather than in an element-by-element sense.

The programs in Group Two--few in numbers, high-priced and with a potentially large follow-on commitment--merit detailed consideration, especially at that crucial decision point when the commitment of a program to Group Two is made. And, of course, to go on from this decision point we need Congressional approval.

Additional Comments on Management

I believe that this approach to R&D--creating many options and then selecting only a few for full development--will provide the continued technological leadership that we seek. I recognize, however, that its success depends upon rigorous management discipline. I believe that we have both the management tools and strength to make this approach work.

The management tools I speak of are those I outlined in last year's testimony.

These management initiatives included:

- Planning by mission area
- Measurement of potential Return-on Investment
- Nurturing competition at early stages of development
- Adopting Design-to-Cost goals
- Doing test and evaluation early and rigorously
- Emphasis on improved program management.

We are working hard to make these thrusts work and I believe they are proving effective. The Service Assistant Secretaries for R&D and I have published--and distributed widely--a Statement of Principles of Defense RDT&E Management which contained these initiatives. The Statement is attached as an Appendix and I invite your attention to it. It is a brief of my philosophy, embodying the whole approach we have been discussing.

In the enormously complex weapons systems acquisition process many tough decisions are made. We make mistakes. But I believe our decisions are improving. Problems are being anticipated and averted. And we have many outstanding successes which often are not recognized.

During the past year I have initiated--with the cooperation of the Services--a number of specific activities aimed at eliminating duplication and proliferation. Among others, this effort is looking at precision weapons, missiles, navigation and communication systems, surveillance and target location systems, and night vision equipment. They are discussed in Section III of this Statement.

Formation of the Intelligence R&D Council has also contributed to the effective coordination of programs across both the Services and the intelligence community.

D. MAJOR R&D PROGRAM EMPHASIS

With this conceptual and management framework as background, I would like now to describe some major thrusts which shaped this RDT&E request in the broad areas of strategic forces, general purpose forces, and the technology base.

1. Strategic Programs

Our research and development programs for strategic systems continue to be guided by the fundamental objective of strategic forces, the prevention or deterrence of war. We want always to provide visible evidence to any would-be attacker that losses to him will far outweigh any possible gain. Our efforts are modified and focused by the fact that strategic capabilities are eroded, not only by increased adversary capabilities, but also by political change and technological advancement.

There has been speculation that the Department of Defense would accelerate programs and increase spending as a result of the Vladivostok ceilings. Such is not the case. In view of over-all fiscal constraints and the urgent need to modernize our general purpose forces, we made a conscious decision to reduce strategic research and development programs from the previously planned funding levels for FY 1976 and FY 7T.

I am not saying that we made these reductions because of Vladivostok or that those agreements will permit us to relax. On the contrary, the support of a vigorous strategic research and development program is fundamental for our continued security. What I am saying is that when we sat down to assess our request and assign priorities, strategic R&D was not spared.

Of about $2.5 billion requested for research and development in this area for FY 1976, about 60 percent is concentrated in two full-scale system development programs--TRIDENT and B-1. The remaining 40 percent of our efforts are focused in advanced development of technological options to permit us to project equivalence--both actual and perceived--in the face of a Soviet throwweight advantage, in active defense technological enhancements and in space applications for warning, guidance and communications.

Offensive Systems

The military capabilities of our offensive forces in being, constitute the central ingredient of deterrence and assure us that the risk of nuclear war today is at a low level. To sustain this level of deterrence into the future requires that we maintain a strong research and development program encompassing a broad spectrum of technology options. These options will provide us not only with improved, competitive performance for new systems, if they are required, but also serve as signals to any adversary that we have the resolve and ability to foreclose possible opportunities to change the military balance against us.

Last year, with the concurrence of Congress, we embarked on a program of "strategic R&D initiatives" to provide these options for the future. These initiatives involved improved accuracy and higher yield-to-weight ratios for ICBMs and SLBMs, advanced ICBM technologies and basing modes, advanced tankers, cruise missiles and less expensive submarines.

Today, the need for continuation of these initatives is even more evident than it was then. We will emphasize improved yield and accuracy for our ballistic missile forces, within the letter and spirit of the Vladivostok agreement, for superior Soviet throwweight will inevitably be accompanied by accuracy improvements. As the Secretary of Defense has pointed out, we should continue with our accuracy improvement programs, and improve the yield-to-weight ratio of our warheads to acquire a more efficient hard-target kill capability or to improve our over-all effectiveness against soft, point targets. This effort is pivotal to the maintenance of parity with the growing strategic offensive capabilities of the Soviet Union. Yield and accuracy improvement programs are applicable to both ICBMs and SLBMs but, because SLBM accuracy is a more difficult problem, our efforts there have been reduced somewhat from our earlier plans.

In other efforts aimed at providing strategic options, an advanced ICBM program (Missile-X) will develop technologies applicable to a follow-on to MINUTEMAN having larger throwweight and adaptable to a variety of basing modes. We will continue the development of a cruise

missile through coordinated Navy and Air Force programs using the same guidance, warhead and propulsion. This represents a deferral of a decision for full-scale systems development pending competitive demonstrations and evaluations of prototype systems.

TRIDENT and B-1 are the two major full-scale systems development programs in the strategic area. FY 1976 represents the peak R&D funding year for each of them.

The TRIDENT system, consisting of a new, much quieter submarine and a long-range missile will constitute the future backbone of our sea-based deterrent forces. The importance of this part of our strategic TRIAD is enhanced by Vladivostok. The TRIDENT I missile will be capable of backfitting into POSEIDON submarines and will give us a range at least approaching that of the Soviet SSN-8. The system can also accommodate a larger and longer-range TRIDENT II missile now in the planning stage.

The B-1, because of its high cost and past technical problems, has been a controversial program. On several occasions we have subjected the B-1 to rigorous study, comparing its cost effectiveness with that of various alternatives at different threat levels. Our most recent such effort was the Joint Strategic Bomber Study--a year-long analysis conducted under my jurisdiction and completed last fall. We have briefed the results extensively and distributed the report widely. This Committee has received copies. I believe this study places the B-1 in proper perspective. By comparing B-1 forces against a set of alternative equal-cost forces, including reengined B-52's, stretched FB-111's, and wide-bodied stand-off cruise missile carriers, the study provides fundamental, force-level, total-engagement cost-effective analyses and insights.

The study shows that the cost-effectiveness of the B-1 is directly dependent on the level of the developing Soviet threat. If that threat evolves into the late 1980's as currently projected, the inherent capabilities designed into the B-1 for survivability in an SLBM attack on bomber bases and for penetration against sophisticated air defenses make it cost-effective. At current threat levels--and levels projected at least through the early 1980s--the B-52's, with improvements, are adequate.

I conclude that the B-1--as costly as it appears--should be continued in development and in an extensive program of test and evaluation. This course of action will maintain an option for a future production decision based on demonstrated performance, cost and updated threat assessment.

Defensive Systems

There are no systems development programs under way for defensive systems. All the efforts here is in advanced technology development (Group One of the previous section). The preponderance of funding is devoted to Ballistic Missile Defense. BMD is at the same level as FY 1975 ($245 million) and about $100 million below FY 1974. We have restructured the Site Defense program as requested by the Congress and revitalized our BMD technology program to enhance deterrence--by providing the capability to actively defend a portion of the MINUTEMAN force should that be required--in case follow-on strategic arms limitations negotiations fail, and to preserve the technological initiative in BMD--thereby helping to maintain the penetrativity of our own missile forces, preserve the U.S. lead in BMD technology, and have confidence that we will not be technologically surprised.

Strategic Command, Control and Communications

It is of paramount importance that we have a command and control capability that can survive massive nuclear attack and still insure that our nuclear forces will be responsive to the National Command Authorities. The attainment of this capability is as essential to credible nuclear deterrence as is the capability of the nuclear forces themselves and this objective has the highest priority in the Department of Defense. This is why we are stressing, in addition to improvements in the existing communications network, the continued development and deployment of the Air Force Satellite Communications System (AFSATCOM), the Advanced Airborne Command Post (AABNCP) aircraft and the SANGUINE extremely low-frequency radio relay site.

Space Systems

Space systems are playing an increasingly important role by providing us with highly reliable and relatively inexpensive worldwide surveillance, communications, meteorology, geodesy, and navigation.

We will continue to emphasize research and development to improve these capabilities. In some areas, space systems are in fact so much cheaper and so much more effective than surface-based systems that we are phasing out our ground-based back-up systems. Of special significance is the NAVSTAR Global Positioning System development which I believe has the potential for revolutionary impact on both strategic and tactical warfare. The system will provide for unprecedented precision in measurement of platform position and velocity in three dimensions. It could revolutionize world navigation and weapon delivery.

2. Programs for General Purpose Forces

Last year I stated that the technology of conventional warfare is undergoing a transformation. We are on the threshold of a new era in which evolving new capabilities will profoundly influence the nature of such wars and the way they are deterred.

The United States holds the initiative in such potentially revolutionary areas as first-shot target destruction with precision guided ordnance, stand-off control of battlefield weapons, powerful new forms of surveillance, command and control, night vision and remotely piloted vehicles.

The research and development program for our general purpose forces is designed to build on these advances and to bring them to full fruition. At $3.6 billion, this program is the largest mission element in our over-all RDT&E request. In this period of intensive competition and change, I believe that this high level of investment is necessary. We need to maintain our technological lead where it already favors us and will close the gap in selected areas where we cannot allow ourselves to be behind.

Recent experience has demonstrated that our military technology --the result of past investment in research and development--can be decisive where it is skillfully employed against current Soviet technology but that new Soviet weapons which are both innovative and advanced are very effective. No single development is likely to dominate the battlefields of the foreseeable future, however. We will require an intricate orchestration of many of the emerging new developments to remain competitive with an adversary who is relatively unconstrained in numbers of weapons and manpower.

Each tactical warfare R&D program--whether it is designed to establish new options, or whether it is a full-scale systems development intended for deployment--has been reviewed rigorously from a number of viewpoints:

- o Military mission deficiencies have been examined and prioritized;
- o The demonstrated state of technology has been examined;
- o Alternatives have been established, many as competitive efforts;
- o Improvements to existing systems have been initiated where they may offer the most cost-effective approach;
- o Clear milestones in cost and performance have been established;
- o Multi-Service reviews have been conducted to eliminate needless duplication;
- o Foreign designs have been considered; and
- o Rigorous test and evaluation criteria have been established.

The final scrubbed program of R&D for our general purpose forces is described in Section VI of this Statement. I will here highlight the major objectives in several areas.

Ground Forces

Ground warfare in the future will be characterized by highly mobile and densely deployed armor and air defenses. Concentration of firepower will reach new levels of intensity. Electronic warfare will be robust and sophisticated. Precision weapons and new techniques for target acquisition and control of firepower will change the way the battle is fought and the way it can be won.

Our ground forces will be successful in this difficult new environment only if the program of research and development produces required new weapons and support systems which are superior, which work reliably in the field and which we can afford in the quantities needed. Our research and development program is designed to do just that. I believe that it is a well-planned program and that it will be successful.

The new main battle tank (XM-1) prototypes will demonstrate in 1976 whether they can achieve a new magnitude of effectiveness and survivability within the stringent cost objectives established for them. Meanwhile, the M60 series will continue to be improved. Similarly, existing attack helicopters will be improved and modified for TOW while the Advanced Attack Helicopter (AAH) demonstrates in competitive prototypes whether it can achieve its goals in cost and performance. Development of the A-10 attack aircraft is virtually complete. A new dimension in air-delivered antiarmor firepower will be achieved by these developments.

Night vision based on infrared thermal imaging is being developed for a variety of systems. Much work remains to produce this capability at reasonable cost but I foresee the day when it will be ubiquitous on the battlefield and will change warfare.

The feasibility of a variety of precision weapons is being established by prototype efforts. Notable last year was progress on the Cannon Launched Guided Projectile which is fired from existing 155mm guns and can hit a moving tank with pinpoint accuracy at a range measured in miles. HELLFIRE is another. Like other candidates, it will only be developed beyond the option stage if its operational and cost effectiveness can be firmly established. Mini-RPV's will institute a radically new capability for location of targets and guidance of weapons.

Our present air defense systems lack the mobility, firepower and all-weather capability needed in the European environment. The choice of the ROLAND II short-range air defense system for final development will correct this deficiency and will help achieve NATO standardization through a new kind of cooperative effort with our allies. For the future, SAM-D technology still remains the most attractive possibility for eventual replacement of HAWK and Nike Hercules. It will undergo rigorous testing and will be carried forward only as the tests are successful and as costs can be controlled.

Finally, we initiated new efforts last year on comprehensive improvements of our electronic warfare capability in the field Army. I request support for continuation and enhancement of this cohesive over-all program; it is important and urgent.

Tactical Air Forces

Our over-all investment in tactical air is very large, both in terms of initial acquisition and in terms of operational costs. It is imperative that we learn to apply constrained investment dollars and to use our assets more efficiently; it is equally imperative that we maintain the superiority in capability that we enjoy today.

One major thrust towards these ends is the F-16 Air Combat Fighter program which has evolved from the competitive lightweight fighter prototype effort. It represents a departure from the trend towards heavier and increasingly costly and complex fighters. It is an opportunity to strengthen our over-all force structure within affordable bounds. But the success of this program has yet to be demonstrated--it will rest on our collective management determination to hold down the cost. Whether the Navy can effectively build on a similar opportunity remains to be seen.

A second major thrust is to be more effective in our use of existing aircraft. More efficient command and control can achieve this. A system such as AWACS, although expensive in itself, can be cost-effective because it enhances significantly the effectiveness and therefore the value of billions of dollars of assets.

A third major avenue for reaching the above goals is focused on precision delivery of air-to-ground weapons through terminal guidance. A remarkable set of capabilities has been brought into being in the last several years--such as WALLEYE, MAVERICK, CONDOR, and laser-guided weapons. These are being expanded to provide all weather and night-time precision delivery at extended ranges. With cost as a driving criterion, the many technology demonstration programs currently being supported will narrow down to a few approaches which will comprise our needed future operational capability.

Because of the proliferation and sophistication of ground-based air defense, the broad area of defense suppression is receiving continued emphasis; it will be the key to effective use of tactical air over enemy territory. In addition to stand-off precision weapons, we are initiating and deliberately pacing programs for improved anti-radiation missiles, precision location and strike systems using TOA/DME guidance, advanced airborne electronic warfare capability and remotely piloted vehicles (RPVs).

Naval Forces

Our tactical naval forces must be able to maintain our sea lines of communication, project power across oceans and, in peacetime, provide presence in support of U.S. interests and policy throughout the world. These capabilities are severely challenged by aggressive Soviet naval developments in submarines, surface ships and long-range land-based naval aircraft all armed with an expanding sophisticated antiship missile capability.

I believe that the greatest danger to our sea lines of communication is from the growing Soviet nuclear attack submarine force. A coordinated long-range plan is well under way in response to this threat. We are emphasizing a spectrum of approaches which will greatly enhance our ability to detect, localize and attack submarines. New concepts for towed array and deployable surveillance systems are in development. Complementary ship-based and airborne ASW systems and promising sensor developments are moving forward.

Ship defense against Soviet antiship missiles has been a thorny problem for years and still is. For over-all fleet defense we need a system such as AEGIS with its associated SM-2 missile and its ability to control the firepower of other ships in order to counter sophisticated and intense attacks. For self-defense of individual ships we require missile and gun systems having significantly better capability than those which exist. We must progress more rapidly not only in these areas, but also in the integration of these systems in ship platforms. This process is too slow at present.

For offensive capabilities, the HARPOON antiship missile has almost completed development and will give the fleet a powerful new punch. Our nuclear attack submarines provide a formidable offensive capability and R&D in this area is being encouraged. Newer ship types, such as the Patrol Hydrofoil Missile Ship, powerfully armed with HARPOON, have higher speeds, tactical flexibility and relatively low cost. Of the other new possibilities, the Surface Effect Ship program has been slowed down to provide a stronger supporting base of technology and of operational studies before proceeding with an investment of this magnitude.

3. Technology Base Program

Our technological initiative rests ultimately on the basic and exploratory research which make up our defense-related technology base. This effort is a critical part of the Group One, "creation of technology options," programs discussed earlier. It gives rise to the fundamental new opportunities which have been the hallmark of our past leadership--achievements such as jet engines, lasers, precision weapons, satellites, billion-bit-per-second computers and communications systems.

I have been seriously concerned over the decline and erosion of our technology base effort. With the level funding it has received,

real effort has decreased 40 percent over the last decade. Many members of Congress have shared my concern and recognize its debilitating implications for the future.

In last year's testimony I stated that I would defer a request for a substantial increase in technology base funding until I strengthened the framework in which such an increase would be used. During the last year we have:

- o Enlarged and strengthened the ongoing tri-Service topical reviews of technology to increase inter-Service coordination and reduce unnecessary duplication and overlap;
- o Strengthened our relationships with the university research community; and
- o Further evolved and emphasized the Technology Coordination Paper process to allow downward or upward adjustments in appropriate areas.

I am now satisfied that our technology base efforts are organized properly, that they are managed well, and that they have renewed and cohesive direction.

As discussed in Chapter IV, we have also completed a year-long DoD Laboratory Utilization Study which has better defined the role of in-house laboratories and paved the way for achieving my objective of providing them with block-funding and greater management autonomy and responsibility. This Study also confirmed my concern--shared by many--that the Defense Department may have become excessively inward-oriented in terms of the balance between in-house and contract research in industries and universities. We have established a broad action plan, including draw down of laboratories' manpower, for redressing this balance.

I am convinced that now is the time to act. I am asking for an increase in real funding for the technology base effort.

These increases are to be accomplished without increases in the RDT&E performed by in-house organizations. I earnestly solicit your support for this action.

Finally, I want to recognize explicitly the important role of Defense Advanced Research Projects Agency (DARPA) as part of our technology base. A unique research organization, it has been a catalyst in responding rapidly to needs and opportunities and has established the lead in spectulative new areas of great national importance. A set of DARPA's new thrusts will be discussed later in this Statement.

E. FY 1976 RDT&E REQUEST IN SUMMARY

Mr. Chairman, you have before you a summary of the RDT&E request, broken down in several different ways. My detailed statement submitted for the record discusses the requested programs in detail. Also, Service spokesmen will testify in further detail about their programs.

The FY 1975 funding is $8,616 million ($8,557 million in FY 1975 Appropriations Bill and $59 million in the FY 1975 Supplemental request). The following factors contribute to the FY 1976 request of $10,236 million:

- o Approximately $200 million is comprised of items appearing in other accounts in FY 1975. These items, generally in accord with Congressional direction, have been moved to RDT&E for FY 1976. The list of items is available for the record.
- o Inflation accounts for something between $700 million and $1,000 million, depending upon the exact inflation factors used. I believe that something approaching the higher number is more probable.
- o The remainder of the difference between the FY 1975 appropriation and the FY 1976 request represents an increase of real effort of $400-800 million. This increase would reverse the trend of the last decade and establish an over-all RDT&E program for the long haul.

The budget itself is presented in terms of budget activities, and detailed line item information by budget subactivity is contained in the justification books made available to the Committee.

RDT&E Categories: The request in terms of RDT&E categories is given below:

TABLE I

($ Millions)

CATEGORY	FY 1974	FY 1975	FY 1976	FY 7T	FY 1977
Research	304.1	308.3	340.1	86.8	354.4
Exploratory Dev	1,062.4	1,080.5	1,228.8	314.4	1,321.0
Advanced Dev	1,416.1	1,697.8	2,129.9	664.6	2,962.0
Engineering Dev	2,540.0	2,929.1	3,783.4	912.0	3,516.0
Mgt & Support	1,118.7	1,179.4	1,343.3	354.1	1,417.7
Oper Systs Dev	1,753.5	1,420.4	1,411.1	351.0	1,436.4
TOTAL RDT&E	8,194.8	8,615.5	10,236.6	2,682.9	11,007.5

As discussed previously, the Group One program (comprising the budget categories of Research, Exploratory Development and Advanced Development) have been increased purposefully to enhance and revitalize our base of technology options for the future. The Group Two programs (Engineering Development, Operational Systems Development) show an increase mainly because of the peaking of B-1 and TRIDENT and the initiation of several programs such as the Air Combat Fighter. These increases are not entirely offset by decreases in systems whose development is essentially complete--such as the F-15, A-10 and HARPOON.

The Management and Support Category is being maintained at about a constant effort level. The dollar increase reflects mainly civilian salary raises.

An analysis of our request shows that over-all about 42 percent will be used for the technological base and the creation of options; the other 58 percent will be used in support of development of military hardware for production and deployment.

Broad Mission Areas: My detailed statement discusses the program in terms of mission areas; another way of analyzing the entire RDT&E program is in terms of these broad mission areas.

TABLE II

($ Millions)

MISSION AREA	FY 1974	FY 1975	FY 1976	FY 7T	FY 1977
Tactical	2,878.4	2,949.3	3,674.7	961.5	4,090.3
Strategic	1,924.4	2,141.0	2,534.7	674.4	2,453.1
Defensewide Systems	682.6	659.2	744.5	181.8	841.9
Technology Base	1,386.5	1,415.5	1,610.5	413.2	1,731.8
Adv Tech Dev	200.4	255.2	315.2	91.4	435.1
Mgt & Support	1,122.5	1,195.3	1,357.0	360.6	1,455.3
TOTAL RDT&E	8,194.8	8,615.5	10,236.6	2,682.9	11,007.5

Military Departments: To complete this summary of funding, the distribution by military departments is provided:

TABLE III

($ Millions)

DEPARTMENT	FY 1974	FY 1975	FY 1976	FY 7T	FY 1977
Army	1,942.3	1,749.4	2,189.4	585.6	2,405.9
Navy	2,704.5	3,051.6	3,517.7	903.8	3,798.1
Air Force	3,061.9	3,298.9	3,903.2	1,034.0	4,110.9
Defense Agencies	486.1	515.6	626.3	159.5	692.6
TOTAL RDT&E	8,194.8	8,615.5	10,236.6	2,682.9	11,007.5

F. CONCLUDING REMARKS

Mr. Chairman, on the eve of our Bicentennial Year, we as a nation face difficult decisions in building for ourselves an enduring future. In a changing and uncertain world we must have the perception and resolve to build on our strengths. One of those strengths is our technological initiative.

But the technological competition is very real. Both friendly and adversary nations--particularly the Soviet Union--are competing. The Soviets seek to wrest the initiative from us. The stakes in this competition are high. They involve national survival.

I have stated my belief that the U.S. has the initiative now--we lead in most areas of technology. I believe that maintaining that lead should be an essential element of our national policy. But, more than declaration is required. We must be prepared to invest accordingly.

The choices to be made are difficult ones. Social demands are pressing and are growing. The outlays for our military manpower dominate the Defense Budget. It is always tempting to fulfill near-term needs at the expense of the future. And RDT&E is our investment in the future.

Whatever these choices are, they should be made consciously by us as a nation.

I am confident that we will choose well.

II. THE TECHNOLOGY BALANCE

A. TECHNOLOGY ASSESSMENT AND NATIONAL SECURITY

As I said in Chapter I of this report, I believe that the United States has the technological initiative today where it most matters to national defense. But I believe the initiative is a perishable asset. This chapter will elaborate on those views. The evaluations and judgments I will present are based on extensive and detailed technical studies which have drawn on many sources of information, including our best intelligence data.

Evaluations of the technology balance are hard to make, for several reasons. We are dealing with economic systems and national styles so different that even if we had detailed information on expenditures for Soviet military technology, direct comparisons would have little meaning. Our military objectives differ from those of the Soviet Union. The technology balance is dynamic; we must consider not only the present force relationships and the impact of today's military R&D products on that relationship, but the opportunities for both sides to develop future R&D products. The situation is fluid. The status quo is ephemeral. While we might prefer otherwise, the acceleration of technical progress is a fact of life in the world today.

For some time, the Soviet Union has had a substantial numerical advantage over us in many significant military areas. In the past we have demonstrated that our technology could offset their numbers - both in terms of the performance of our military equipment and in our capacity to produce it quickly. Two decades ago, Soviet military R&D was weak. It depended considerably on transfer of technology from the U.S. and other nations and frequently had been reactive to U.S. technological initiatives. A critical comparative assessment of U.S. and Soviet military technology in 1950 would have been pointless--we were far ahead in all fields. Now the picture has changed. Although the Soviets still depend to some extent on technology transfer and continue to copy the military hardware of other nations, the maturation of their native technology has altered the situation fundamentally.

The Soviets have learned that a reactive policy in military technology is not enough to give them military superiority. We now see them working hard to change the technology balance by trying to gain the initiative in many areas of military R&D. We also have hard evidence of their improved military technology in the exports of the products of Soviet R&D to nations they support, as well as in the extensive deployments of new weapons in their own military forces.

The U.S. needs a steadily evolving base of innovative technology to maintain a military balance--at affordable cost--capable both of deterring major wars and deterring or winning smaller wars with our limited and expensive manpower resources. Our needs are accentuated by the emergence of new Soviet capabilities in military technology. If we let them seize the technological initiative, we would become the ones who must react and copy, and the military balance could turn against us within a decade.

So now it has become essential to assess the military-technical balance as perceptively as we possibly can and in great detail, for we may not be able to afford to compete with the Soviets where they are strong. We need to know our comparative strengths and their comparative weaknesses and exploit them. We need to know where our initiatives will pay off best. We can--and we must--stay ahead in fields that are important for maintaining a military balance on our terms. Fortunately, we have the technological resources in hand to offset the gains in military force effectiveness which the Soviets achieve when they move ahead in a particular technical area. I believe that we have significant inherent advantages over the Soviets in our approach to new technology, and in the ways we exploit it. To show how this can be, we assess the Soviet military R&D apparatus and its style, and contrast it with our own. This assessment draws partly on studies of Soviet official pronouncements and other writings, but predominantly on continuing analyses of the Soviet R&D system by

the intelligence community acting in the closest concert with the U.S. R&D community.

B. INSTITUTIONS AND STYLE

1. The Soviet System

Many aspects of the Soviet Union's military R&D system are obscure, but we know its management is highly centralized, its priorities are the highest in the Soviet economy and its guidance and control come directly from the Politburo--about half of whose members have technical backgrounds. The Politburo's executive agent is the Council of Ministers--75 percent of whom have technical backgrounds. Actual military R&D is carried out by a large system of research institutes and design bureaus managed by at least eight ministries of defense-industry. The general arrangement of the Soviet R&D system is shown in the Figure on the following page. The innocuous names of some of the ministries belie their actual management roles. More than 85 percent of their research institutes deal with the natural sciences and engineering.

Monetary incentives, as well as prestige--awards, degrees, and decorations--are used heavily to motivate Soviet designers and managers. For example, rewards frequently go the winners of competitions between rival design groups whose head-to-head competition to produce new military designs is a feature of the Soviet system. These military design groups are rated according to the number of prototypes they turn out and how many of them go into production. Unsuccessful designers generally are not penalized but remain in competition as long as they originate useful, competitive new weapons.

The Soviets emphasize continuity of effort and are geared to incremental improvement of military performance. Particularly in narrow areas of technology, they can mount sizeable efforts and accelerate their rates of technical advance over a span of time. In several areas they have moved ahead of us. Overall, however, the Soviet system seems to discourage real innovations, and despite what we perceive as large-scale development efforts, they frequently fall short of achieving what we accomplish with far less direct effort.

Soviet priorities, trends and accomplishments show that there was no hollow rhetoric in the Communist Party Central Committee Resolution on December 1973, which said: "The development of Soviet science has special significance (today) when the scientific-technological revolution has become the most important area in the competition of the two opposed world systems." The USSR has deliberately emphasized the greatest possible rate of advance in military technological programs at the expense of improvement in the civilian standard of living. It is also Soviet policy to exploit innovations achieved in civil R&D for military purposes. However, we have not yet been able to identify substantive benefits that Soviet civilian R&D has contributed to military programs. This is one of the great failures of the Soviet system--in contrast to our own.

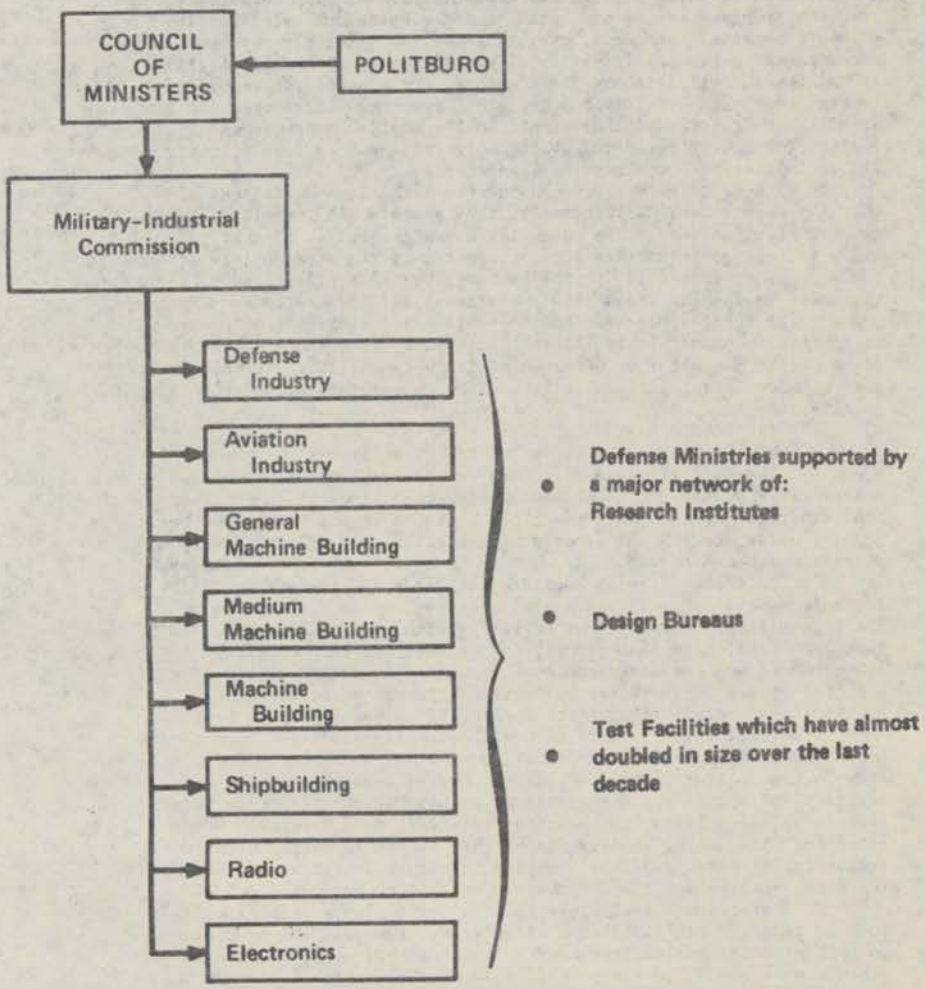
2. The U.S. System

Almost the exact opposite of the Soviet system which stresses incrementalism is the free-enterprise, competitive environment of the U.S. military R&D system which stresses innovation, and is keyed to new technology and rapid change.

The U.S. military R&D system has three main supports: our military service and government laboratories, the research and development facilities of U.S. industry and the scientific research programs of our universities. The government laboratories are an important focal point of military R&D and provide essential linkages between all components of the R&D communities and our military forces.

The research and development activities of American industry support civilian and commercial applications as well as military needs. The benefits we get from the cross-fertilization of ideas which takes place in our industrial R&D - improved production techniques as well as product innovation - go in both directions, civilian and military. They are unmatched in the Soviet Union and perhaps anywhere else. We draw on these resources through direct military research and development

THE SOVIET MILITARY RDT&E SYSTEM



contracts, and through our Independent Research and Development programs, which provide industry with the freedom to conceive and investigate longer-range possibilities on their own. The competition to exploit new technology to improve our civilian well-being thus pays off strongly in improving the effectiveness of our fighting forces, and conversely.

Scientific research by our universities is the least focused ut farthest-reaching part of our technology base. The university research programs expand our horizons and enhance our understanding of basic physical phenomena, giving us the raw materials for new concepts and better exploitation of existing approaches, in civilian and military applications. These efforts are enhanced in scope and continuity by support from DoD and other government agencies, and a significant fraction of the scientifically trained manpower and engineering talent generated by the universities goes into military R&D in industry and the service laboratories.

These three cornerstones of the Technological Balance are mutually supporting. Collectively, they sustain the overall U.S. technological posture. The essential characterization of that posture today is that opportunities are not limited by the availability of good ideas, nor, in contrast with the Soviets, by the availability of technical expertise to develop ideas into operational military hardware. Rather, --and quite fortunately--our basic problem is selecting from many attractive technical possibilities those concepts which are best in the sense of the pay-off they offer in military capability. We are, in short, money limited and I believe it is healthy to maintain our posture slightly in this direction.

C. THE TECHNOLOGY BASE

1. How We Measure Relative Technological Status

The effectiveness of modern weapon systems depend on the reservoir of scientific knowledge, engineering know-how, and production expertise we call the technology base. A strong technology base permits us to develop and produce high-quality cost-effective weapons systems which can offset sheer numbers of enemy weapons or manpower.

To try to develop absolute standards for the strength of a technology base makes little sense. Instead, we recognize that we are in a military competition, primarily with the Soviet Union, and that our standing in that competition defines our technological achievements and our deficiencies. We can measure the relative standing of our technologies by devising figures of merit which quantify the contribution of the technology to weapon system performance. We call these figures of merit technology indices. The choice of an index depends on the application of a weapon system. For example, in ballistic missile systems, we can combine guidance accuracy and weapon yield per unit of warhead weight to get an index describing the ability of the system to attack hard targets. Where interests lies in the application of that system to softer urban or industrial targets, guidance accuracy is not so important in describing technical quality and the index would be revised accordingly.

Determining technology indices for a single point in time - such as today--doesn't tell the whole story, however. We need also to look at these evaluations over an extended period to understand the dynamic picture of the technology base--not only which nation is ahead, but how long it will stay ahead. Here we get different pictures for different technologies. The pictures depend, in part, on how new the technology is, on the opportunities for further growth, and, most important, on how much emphasis is being placed on its advancement.

In some cases, particularly for systems employing several key technologies, it is difficult or impossible to define truly meaningful indices of technological quality. But we can get qualitative indications of status and pace by noting the dates at which new technical features or capabilities are achieved.

There are other techniques. For example, a different kind of index is obtained by measuring the span between the time the scientific basis for a new military system first becomes known, and when that concept first appears in operational equipment. This measure gives an estimate of the quality of technical expertise combined with the will to be innovative and to nurture new technology.

To make competent technology assessments, available data must be analyzed by technical experts at several levels. For example, materials and fabrication methods are two key technologies for a jet engine: engines are, in turn, key technology for fighter aircraft. To understand where and why we, or the Soviets, lead in a particular area, we must examine the quality of design concepts, materials, and production techniques at the component, the subsystem, and the full system levels.

While we have made encouraging progress in our assessment methodology, you should not infer that we have perfected the art of assessing the Technological Balance. You should also recognize that we have had to confine our most careful and extensive investigations to those areas where we have sufficient data on Soviet technology, and which seem to be the most critical to the military balance.

2. Some Specific Technology Assessments

Let me now define three broad assessment categories into which we can group many Soviet technology efforts and thereby assist the assessment process. First, there is the category where the Soviet Union itself has signalled serious deficiencies by aggressive attempts to transfer technologies from the U.S., other Western nations, and Japan. Our interest in making technical assessments in such areas is aroused by these signals, and the signals themselves are powerful indicators.

Wherever we have leads of several years to a decade, and where our leads seem to be increasing, it is important to note that large civilian markets exist in the U.S. We should note also, however, that all these technologies had their roots in the U.S. military R&D program. Clearly the extent of these leads is due to a healthy relationship between the demand for civilian and military technologies and their combined impact on quality products.

The next category of assessment contains technologies on which we have been able to make rather detailed comparisons because we have enough intelligence data. These technologies have primarily military applications, and the Soviets have not been as overt in trying to acquire our knowledge in areas where we are ahead. We have confidence in our findings, but recognize the need for re-investigation and periodic updating of our assessments. This category includes a wide range of basic and applied technologies which exhibit different dynamic trends.

In summary, we do have the technological initiative in most areas where there is a basis for assessment and where that initiative is truly important to us. We have pronounced leads in some technologies of great future growth potential. They can be valuable opportunities if we exploit them, but serious problems if we fail to maintain the initiatives.

D. DEPLOYED SYSTEMS

The critical outputs of military RDT&E are military weapons systems. The ultimate measure of the impact of RDT&E is the war-fighting capability of the military forces. Another whole perspective on the technology balance appears when the pace of introduction of new systems into the military forces is considered.

One example comes from the Middle East war of October 1973. The Soviets provided the Arab side ten weapon systems not deployed a decade earlier. Notable among these were:

o The SA-6, a sophisticated surface-to-air missile system which achieved initial operational capability in 1970;

o The Sukhoi Su-20 variable-geometry-wing supersonic attack aircraft which became operational in 1971; and

o The T-62 tank, which became operational in 1965, and was six years newer than the newest tank on the Israeli side.

The Israelis also had ten weapon systems not operational a decade earlier; most of these were air-to-ground precision-guided weapons:

o WALLEYE, a 1967 TV-guided glide bomb;

o HOBO, a 1968 electro-optical guided bomb;

o MAVERICK, a 1973 electro-optically guided weapon;

o SHRIKE, a 1964 anti-radiation missile and air-to-air weapons;

o AIM-9D and AIM-9G, 1964 and 1973 versions of the SIDEWINDER;

o AIM-7E-2, a 1964 version of the SPARROW: and

o SHAFRIR, a 1969 Israeli development based on SIDEWINDER.

Both the U.S. and the Soviets made relatively new technology available in this conflict. But the RDT&E investment by the U.S. in the new systems provided was perhaps less than half the corresponding Soviet investment. Given that disparity and the substantial numerical advantages of the Arab forces, the outcome of this conflict has strong implications about the worth of U.S. military RDT&E.

Let me illustrate the thrusts and trends of our RDT&E effort relative to the Soviets by a few examples of military systems each nation has deployed recently.

In the last decade, we have developed and deployed five strategic missile systems, including the SRAM air-to-ground weapon, as shown on the following page. During the same period, the Soviets showed us 14 new offensive strategic missile systems. More important over half their RDT&E effort for strategic offensive systems during the last decade has appeared in the past three years. The pace of the Soviet RDT&E effort for strategic offensive systems in those three years is more than double their pace during the preceding seven years.

The foremost - and unquestionably the most important - conclusion from our assessment in this area is that the Soviet Union shows every sign of continuing to concentrate a major portion of its military RDT&E on strategic weapons, both offensive and defensive. Soviet success in enhancing their strategic forces and in creating a base for further improvements, is more pronounced than for any other area of military R&D specialization.

This acceleration of pace is also apparent elsewhere - especially in Soviet general purpose naval forces - where about half of the USSR's total military RDT&E in the last decade was spent during the last four years.

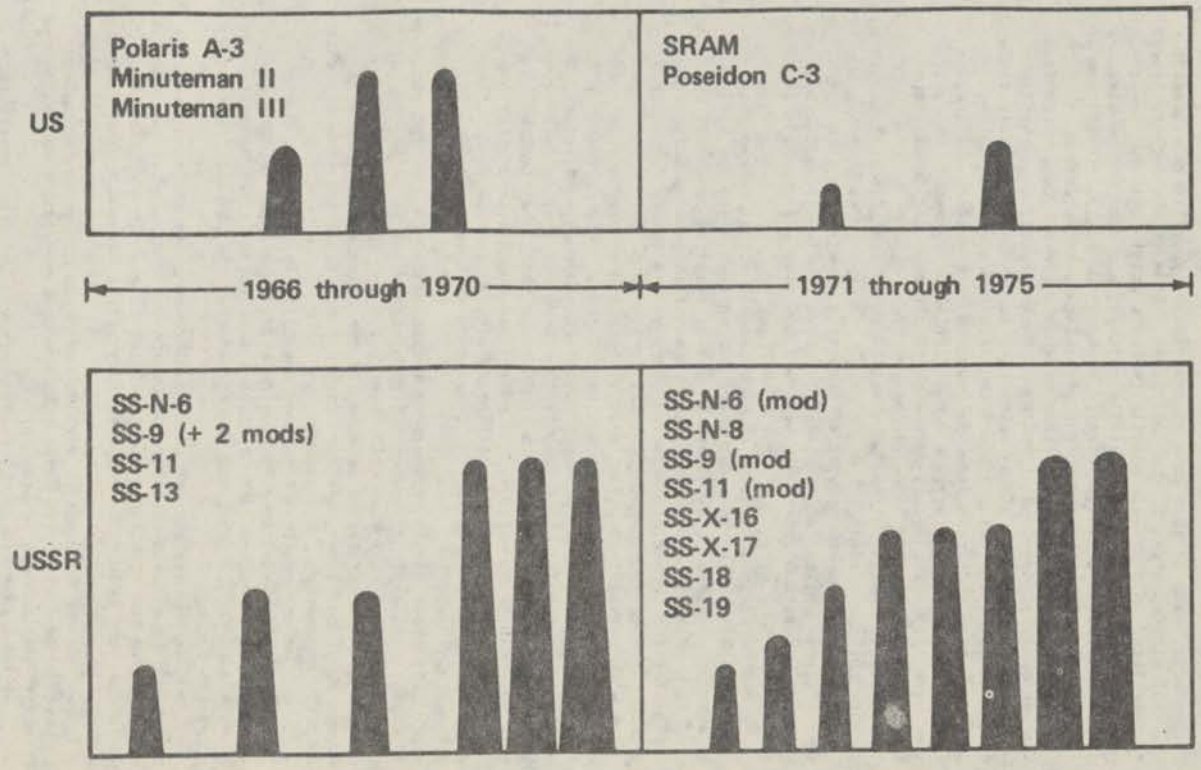
E. THE FUTURE: ENIGMAS AND OPPORTUNITIES

Our evaluations tell us that from a purely scientific standpoint the U.S. and the Soviet Union are more or less equally capable of supporting the creation of new military technology. But the competition is not simply scientific. Because of our ability to translate science and technology into application and production, we believe we currently hold the technological initiative on an overall basis. I would be remiss, however, if I failed to note that there are gaps and unknowns in our understanding of Soviet military RDT&E activities and intents.

Our concern for these enigmas is profound. Can the Soviets develop some exotic technology for application to actual weapon systems, and - if so - will our own technological resources be adequate to counter or offset them? These enigmas in toto may represent a significant percentage of the Soviet military RDT&E budget.

A DECADE OF STRATEGIC OFFENSIVE MISSILE RDT&E

(Missiles are shown in approximate relative size)



Furthermore, many of them have an apparent or possible relationship to vital mission areas of our own forces. Some of the enigmas appear to be related to strategic missiles; others may be oriented toward new approaches to ballistic missile defense, and some may be directed against our fleet ballistic missile submarines. Still others seem to represent possible threats to our general purpose forces.

We do not know whether these enigmas represent departures from the basic Soviet development policy of technological conservatism - or whether Soviets are simply attempting to cover all possible technological bets, including options that are inconceivable to us. We have seen them undertake sizeable programs in the past, and abandon the projects after having made a substantial investment. However, they have also surprised us in the past, although not in ways that immediately jeopardized our defense posture.

We can - and I believe we should - avoid technological surprise, through three actions:

o Continue our program of detection, monitoring, and assessment of these enigmas and how they fit into the technological balance which we understand relatively well and where we clearly have the initiative.

o Maintain a vigorous and focused R&D effort to generate technological options in areas where our vulnerability may be uncertain, and where the potential risk of surprise is great.

o Maintain a persistent and coherent program of RDT&E for exploiting the technological areas where we are strong, so as to retain the overall technological initiative.

With regard to the last point, there are - in principle - two ways we can hold on to our technological leads. One of these is to try to deny the Soviets access to our technology, by controlling its export, for example. We certainly should do our best to delay the transfer of basic technology to the Soviets, but delay is the best we can hope to achieve. In some areas, such attempts may be futile if other nations are developing similar technologies. The delay tactic is best suited to areas where we have a practically unique lead.

The other way to protect our technological lead is to continue to advance and exploit our technological base. In so doing, we can show the Soviets that they will never catch up, that the military balance will be maintained because the technological balance will always be in our favor. We have many opportunities for pursuing this positive approach. For example:

o We can continue to extend the military utility of our precision guided munitions, employing existing and new technologies to achieve all-weather, day or night attack capabilities against heavily defended targets, and we can transfer this capability to our strategic forces.

o We can exploit our lead in micro-computer and mini-computer technology to realize distributed command-and-control systems, which will improve the timeliness and precision of execution of command decisions, and reduce the vulnerability of the command system to enemy attack.

o We can continue to advance our leads in space technology to give us more effective navigation and communication systems for the strategic and general purpose forces.

We have long passed the point where we can exploit every technological opportunity that presents itself, but by careful selection of those opportunities that really make a difference, I believe that we can keep the technological balance tipped in our favor -- and thereby maintain the military balance as a deterrent to aggression at a cost we can afford.

III. MANAGEMENT OF R&D AND SYSTEMS ACQUISITION

A. INTRODUCTION

I now would like to elaborate on my opening comments on management--expanding on the themes I mentioned and discussing some of the specifics of the management process.

The management of the RDT&E program is a highly leveraged activity, where relatively small investments can result in large returns. This leveraging occurs because the RDT&E program, which is only a small fraction of the total Defense Department budget, directly influences the magnitude and effectiveness of much larger future expenditures.

The high leverage that RDT&E investments have on the Defense posture and Defense budget can be understood by looking at the relative costs of the various phases associated with acquiring and owning our military equipment. Figure 1 on page III-2 illustrates the life cycle of a typical weapon system and how the costs are distributed over the early development phase, engineering development for production, procurement, and operation and support. There are variations from program to program but this figure is representative. Clearly, the bulk of the cost is in production, and the operation and support phases. Yet, the magnitude of the last two phases is determined to a large degree by the relatively small early phases--the RDT&E program. Typically we have spent less than 15 percent of the total system life cycle cost by the time we commit to production and less than 3 percent of the total at the point when we make the key decision to move into full-scale engineering development.

The quality of early R&D can lever later costs significantly downward or upward. "Gold-plated" and over-specified R&D will increase production costs. R&D not focused on reliability and simplicity of operation will escalate the operation and support costs, and our overall ability to field and maintain adequate forces will diminish. Finally, if R&D is inadequate, the military balance can tip against us.

Correctly used, this highly leveraged R&D enables us to

(1) Buy designs that are affordable in both acquisition and operation and support costs--early focus on total life-cycle costs can yield large future dividends;

(2) Have programs of sufficient breadth to keep options open--availability of options allows us the flexibility to choose the most cost-effective systems to deploy in response to future threats or to capitalize on enemy weaknesses;

(3) Design products that meet the military need but with balance between cost and performance--a properly emphasized program allows system choices which have adequate military effectiveness without costly overdesign;

(4) Lessen the chance of technological surprise that can occur from unexpected developments in the threat--technological surprises cost a disproportionate amount in last minute crash programs to close a suddenly perceived critical technology gap.

The key management issue for the typical system in Figure 1 on the following page is that of deciding to enter into full-scale development, leading to production and deployment. This decision basically determines the future costs and capabilities of our forces. I would like us now to stand on the line which represents this decision point and look both ways, critically examining the activities on each side of this line.

Prior to this decision point we are investing in options--creating and expanding a technical base and investigating alternatives for systems. Basically, we are preparing ourselves to make a decision based on the results of these activities and the current assessment of the threat. After this decision point, we have greatly reduced our options and substantially increased our commitment of funds. Moreover, major alterations in our course of action become increasingly more difficult as time goes by.

If we aggregate the yearly costs of all the RDT&E programs on each side of the line, their relative sizes are as shown in Figure 2 on the following page. There are literally thousands of efforts that never pass

FIGURE 1: DISTRIBUTION OF COSTS THROUGH THE LIFE CYCLE OF A TYPICAL WEAPON SYSTEM

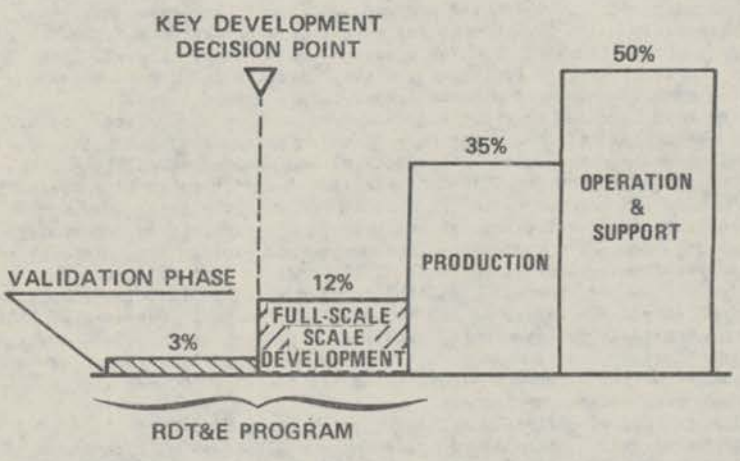
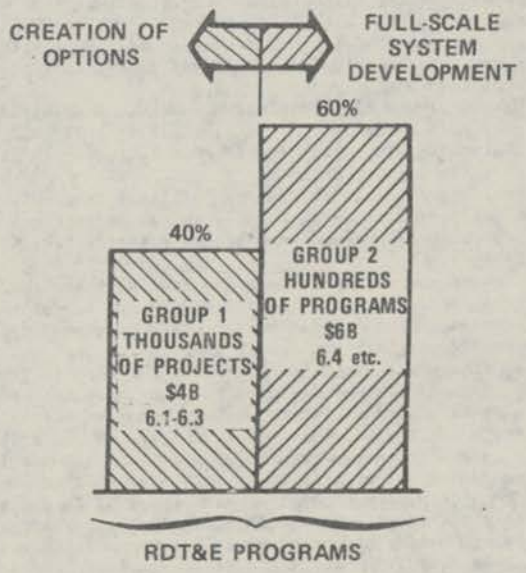


FIGURE 2: RELATIVE DISTRIBUTION OF ALL RDT&E FUNDS



the full-scale development decision point, so there are many more programs on the left side. Those of you who are familiar with our accounting system will recognize that the programs on the left side--which I have called Group One in the Overview--are predominantly those we term research, exploratory development and advanced development (6.1, 6.2, and 6.3) while the right side, Group Two, is primarily engineering development, management and support and operational systems development (6.4, and other). The dividing line is usually rather clear. But sometimes the line is fuzzy; although they have many properties of Group Two, I put the Army's SAM-D and XM-1 Tank programs on the left because we are not yet fully committed to full-scale development. However, exact bookkeeping is not required; it is the concept that is important.

These aggregations provide us with two broad categories of programs--creation of options and full-scale developments. From a management point of view the two categories are very different. Our management approach must vary, depending on which way we look from the dividing line. For Group One, the management thrust is to encourage innovation and initiative and for Group Two, it is to provide hard-nosed disciplines such as a full assessment of the capabilities with respect to the projected threat, an understanding of how the potential system will interoperate with other systems, confident estimates of costs for production and operation, and rigorous test and evaluation.

The reason for developing this theme is not to create a new bookkeeping or classification system (there is enough complexity in the current ones). The purpose is to draw the distinction between these two significantly different parts of our program and suggest that the Congress focus with us on the activities associated with initiating and managing Group Two programs, where actions are taken which can commit us to the large life-cycle costs associated with deployed systems. I am also suggesting that the Congress may wish to judge Group One programs more on the basis of their overall quality and adequacy for option creation rather than on an excessively detailed program-by-program basis. I believe that the dialogue between Congress and the DoD can be most useful and productive by adopting this methodology.

In the following discussion, I will describe our approaches to the management of the two major R&D categories. I will also discuss areas of management emphasis, such as the DSARC process, our design-to-cost philosophy, and independent cost analyses. There are specific sections on our efforts to improve the quality of our defense industry and its relationship with the DoD, and our efforts to reduce the proliferation of equipment having similar functions and performance. I will also elaborate on the key role that Independent Research and Development (IR&D) of our defense contractors plays in the creation of options.

B. MANAGEMENT OF THE CREATION OF OPTIONS

The introduction to this statement emphasizes the need to maintain the technological initiative, both in the creation of technology options and in the development and deployment of military hardware. The cost and quality of hardware we can deploy depends directly on the R&D options we have evolved.

1. Technology Base

The management of the activities associated with options has a considerably different character than that associated with the development of systems for deployment. To create options we pursue basic research, explore the application of new technologies, experiment on systems and subsystems and build prototypes. It is here--in this fertile R&D environment--that new system ideas are born and here that many ideas must die. Some programs will die because they are failures; this is the high risk part of hardware evolution. Others will die because the threat did not materialize or because some other approach proved better; we can afford to carry forward only the most promising.

The management challenge is to assure that we have a full spectrum of choices--that our applicable technology is superior to our adversaries. We must create an environment in which new ideas and techniques are encouraged without a rigid tie to a specific deployment. We can afford some parallel developments and can pursue long shots. This is the lower cost end of our business. In the technology base sector, program sizes are typically a few thousand to a few million dollars as opposed to the hundreds of millions associated with procurement and operation. Yet in the encouragement of these activities we must not be profligate. We cannot permit hobby shops where programs continue to be pursued because they are merely interesting or technically challenging. The quality of the work and the future applicability of it to satisfying our military needs must always be demonstrable. We must identify the promising approaches and push them--and efficiently weed out unproductive activities without stifling the creativity we are seeking to nourish.

There are three major components of this activity. The first two are directly sponsored by the government--one is done internally (in-house)--the other is done externally (contract). The third component is the independent research and development of our contractors, much of which is indirectly funded by the government through the allowance of these costs (within limits) to be spread over the company's government contracts. These three activities provide the necessary full spectrum from basic research to prototype. In the first two components the civilian and military government personnel exercise the initiative and imagination--in the third case it is the contractor. This collective and coupled activity has allowed us to keep the technological initiative over the years. The work often overlaps and is sometimes duplicative. In many cases more than one Service or contractor may be working in the same area. All this provides healthy competition if appropriately balanced. The great diversity of activity gives reasonable assurance that we do not have blind spots in our spectrum of efforts--an excellent check and balance system.

More specifics on the actual make-up of these programs will be given in appropriate sections, including the key role played by the Defense Advanced Research Projects Agency (DARPA) in the creation of options. Here, however, I want to mention some of these options and our approach to managing them.

Sufficient funds are the dominant requirement for providing an adequate level of activity in the technology base. The temptation to mortgage the future for the present is great. Funds associated with work that is not likely to satisfy immediate needs are frequently sought for application to today's problems. This is true with research and development in general, and in the technology base in particular. We try to protect the minimum level of funding associated with the technology base to insure that we will nurture the creation of options. Within this technology base, many programs are essentially level funded, simply pursuing a promising or necessary technological area at a prudent level. However, when careful analyses of changing military needs or advancing state-of-the-art dictate that some programs should proceed at a more rapid pace, we propose increased funding. This evaluation process also frequently results in our cutting back or eliminating programs. By this funding approach we hope to insure a total level of activity which will provide momentum for advances in technology while remaining affordable.

To reverse the prior years trend of decreases in the technology base funding, the DoD has made a conscious decision to provide a three-to-five percent increase, over and beyond inflation, above last year's budget. Due to the impact of abnormal inflation however, the real increases proposed, while meaningful, are slightly lower.

The need to cultivate creativity and innovation notwithstanding, an entity as diverse and expensive (about $1.5 billion) as the Technology Base requires management--but enlightened management. These programs need coordination--not detailed direction. Our techniques, while thorough, must be nurturing rather than repressive.

The Technology Coordinating Paper (TCP) is a major tool for Technology Base management. I have spoken to you previously on TCPs. The idea was conceived four years ago but has been implemented more vigorously the past two years. TCPs are now in existence for virtually all technology areas--and they are working well. They bring users, researchers and managers together, introducing an awareness of the DoD-wide structure of technology efforts, giving perspective and cohesiveness to their programs, and encouraging an ordered approach to allocating resources.

Another effective procedure is our topical review of technology sub-areas. We periodically cover all programs of the three Services in depth. The review is structured like a forum, with all Services and OSD participating, so that presentations are made by technologists to their peers. The topical review has proven effective in maintaining high technical quality of programs and assuring good transfer of technical information between Services.

In areas where more frequent or even continuous review is necessary, we have constituted formal committees to provide coordination and program monitoring. Some of those have become well-known in the scientific and engineering community. The Joint Medical Research Conference, the Joint Service Advisory Committee on Computers in Education and Training, and the Advisory Group on Electron Devices are three examples.

In addition to standing committees, ad hoc groups are often formed to examine matters of particular interest. Noteworthy last year was a detailed study of the DoD laboratory structure in which each of the Services evaluated its own laboratories and made recommendations for changes which were then evaluated by a special team organized by my staff. The results of this study are far-reaching and, I believe, constructive--a detailed discussion is available in Chapter IV, Technology Base.

While these formal methods for management are useful, I consider the prime ingredient in the process to be the personal knowledge of each of my staff specialists of the people and programs in his domain. This familiarity, based on day-to-day interaction with Service staffs and the laboratory engineers, is mandatory for the type of enlightened supervision I seek.

2. Systems Experiments and Prototypes

There is a significant increase in expenditures in the rest of our program for creation of options--that is, in the systems experiments and in the building of prototypes. This is a conscious management action. Part of the increase comes from the decision to hold programs in advanced development for a longer time--attempting to insure both that they are ready for full-scale development and that there is a firm need. The other part is to encourage the conscious creation of options, providing the base to move rapidly into development in response to evolving threats or to take advantage of promising new technology. A considerable portion of the strategic research and development program is focused on the need to be responsive to the evolving threat. The Advanced Medium STOL Transport (AMST) program is typical of activities pursuing promising new developments. These and similar programs are expensive--as high as several hundred million dollars--but they are much less expensive than commitment to production. We are not committed to go into full-scale engineering development, or to field hardware, in any of these "systems options" programs.

The AMST is a competitive prototype program, as was the Light-weight Fighter Program (LWF). These provide for feasibility demonstration and evaluation of alternative approaches to satisfying the same general requirements. Competitive prototype programs reduce risk and provide a hard base for prediction of weapon system cost, performance and schedule. The LWF program is a particularly good example as it is

now making the transition to full-scale development as the Air Combat Fighter (ACF). For a fraction of the cost of the full-scale development program ($125 million versus about $700 million), we proved the designs and were able to make a selection based on hard engineering test data. Neither the LWF nor the AMST program had hard requirements at the start--only a perception of the potential payoffs of new design approaches and appreciation of the military potential.

The XM-1 tank program is somewhat different. While there is an established military requirement, several alternatives which meet the requirement are under consideration. Two contractors are developing competing prototypes. A promising German development (a modified Leopard II) will most likely enter the competition. An additional alternative is to upgrade the current tank.

The management challenges in these programs are significant. Filtering out unsuccessful candidates or terminating technically weak programs is particularly difficult for programs that have momentum. Program management must be highly professional. Program review must be objective, competent and cold-blooded. The decision process must be rigorously applied.

While not all inclusive, I have covered the essentials of the management thrusts associated with creation of options. I would urge the Congress to review these programs in a broad sense, assessing the general quality and adequacy of the total program. To decide against pursuing the development of options would incur unacceptable dependence on the success of the relatively few programs we do choose to pursue. Furthermore, such an approach would permit adversaries to effectively concentrate their development resources on counters to our future systems. We therefore need and urge your support for this approach.

C. MANAGEMENT OF FULL-SCALE SYSTEM DEVELOPMENTS

I have previously pointed out why the management viewpoint for our full-scale developments should differ from that used for the creation of R&D options. Full-scale development programs are much fewer in number but larger in cost and, when deployed, constitute our military capability--both for deterrence and for war-fighting should deterrence fail.

The decision to begin the full-scale development of a system for deployment is the pivotal one in the management of our RDT&E resources. It deserves and receives maximum management attention within the DoD. At this point we essentially determine the future cost and capability of our forces. Prior to this point we have been creating and demonstrating new concepts. At this point we select the most promising approaches from our base of demonstrated technology and alternative solutions, based on their progress and the currently projected threat. From this point on the number of options is significantly reduced and all of the activities associated with deployment of military hardware are initiated. All of its "ilities" (reliability, maintainability, etc.), extensive data requirements, thorough test and evaluation, and other costly but necessary requirements are imposed. Development of support equipment is begun. Force structure planning, logistic support and training are initiated. In short, we become extensively committed--financially and organizationally. Although we can still terminate the program or alter it if unforeseen circumstances dictate, the difficulty associated with change increases rapidly as development progresses.

It is this development decision, and, to a lesser degree, the management of the activities subsequent to this decision, which I believe merit the most detailed involvement by the Congress and which should receive the majority of our combined management attention. It is here we must reassess the threat, the cost-effectiveness of the system, the real alternatives, and the force level needs--and make those crucial decisions which truly drive the cost and effectiveness of our military forces.

The formal management techniques--including some recent initiatives--in the DoD are mainly focused on this decision point and on the subsequent decision to go into production. You are generally familiar with those mechanisms--they include the DSARC process, mission area reviews, design-to-cost, independent cost estimating, activities to control proliferation, and others. In the following sections I discuss many of these in detail, but I want to highlight key aspects here.

1. Defense Systems Acquisition Review Council (DSARC)

The high-level Defense Systems Acquisition Review Council (DSARC), which reviews and recommends action to the Secretary of Defense on all major programs at each key milestone, is the cornerstone of our management concept. Associated with the DSARC is the Decision Coordinating Paper (DCP). A decision document setting forth the alternatives and major program issues, it becomes virtually a contract between the developing Service and the Secretary of Defense. For important, but less costly programs, the Program Memorandum (PM) accomplishes a similar function but with lower level management participation.

The DSARC process--and it is important to realize it is a process rather than merely a set of decision points--has served us well and is improving. The process is continuous and when it is working well the decision points are passed smoothly: issues are clarified and resolved prior to the review points. Of course, there are program restructurings or cancellations at the decision points, but the process should not be judged solely by what happens at these formal sessions. The very existence of the DSARC, the DCP and the PM has a substantial impact. The program planning, the documentation of commitments (technical, fiscal and schedule) and other disciplines exert a continuous salutary influence on all the programs involved in this process.

2. Mission Areas

An important input for the R&D decision process comes from reviewing all programs on a mission area basis. We have developed more than 30 Mission Area Summaries which succinctly assemble together the various programs that contribute to a particular military mission. These summaries consolidate information on the operational deficiencies, the threat, and programs underway to alleviate needs, and furnish force structure and cost data. We are thus able to consider management decisions for programs in context with all other alternatives and in light of the projected threat. For example, considering equipment to aid the penetrativity of tactical air offensive missions, the Defense Suppression Mission Area Summary ties together all systems under development which assess the defensive threat, locate enemy jammers, detect and jam hostile surface-to-air missile radars, and destroy enemy defenses. In this manner we are able to strike a proper balance among programs and systems which contribute to specific missions.

3. Specifications and Standards Policies

Close coordination between the Research and Development (R&D) and Installations and Logistics (I&L) activities in the Defense Department is now being given increased emphasis, to insure that our policies on Military Specifications and Standards are appropriate and will not result in unwarranted costs for government equipment.

4. Independent Cost Estimating

Controlling the costs of owning and operating military hardware has been one of our major management problems in the past. Lack of reliable cost estimates at program initiation

and lack of a discipline which forces hard tradeoffs between requirements and affordability are two of the principal causes. There are now independent cost estimating activities in both the Services and the Office of the Secretary of Defense (the Cost Analysis Improvement Group, CAIG). They are charged with the responsibility for evaluating or making cost estimates independent from the Program Office and the contractors. As this method is extended to more programs, I believe our financial planning will become more sound and increase in credibility.

5. Design-to-Cost

You are doubtless somewhat familiar with Design-to-Cost, a management tool we are developing to prevent unwarranted cost growth in our systems acquisition programs. The purpose of this management initiative is to force tradeoffs between costs, performance and schedule. Many of our past cost growth problems have arisen from the tendency to treat performance specifications as inviolate and schedules as mandatory. Design-to-Cost puts a spotlight on both unit cost and life-cycle cost. Results to date are encouraging. I have high expectations for a tremendous payoff in the future. Both the A-10 and ACF programs should demonstrate that adequate military performance at affordable costs is indeed obtainable.

I will be returning to some of these management techniques in the next section when I discuss our management initiatives in greater detail. While these tools strongly influence the full-scale developments, they are applied across the full spectrum of RDT&E activities.

D. MANAGEMENT INITIATIVES

Our management tools have evolved through the years. They take the form of formal and informal review procedures, management policies, and new thrusts in key areas. I choose to think of current areas of emphasis as Management Initiatives. Of these the DSARC process, the Design-to-Cost concept, efforts to improve program management, status reporting to Congress, Independent Cost Analyses, Policies for Specifications and Standards, and Management of Proliferation are appropriate for further discussion because of their pronounced influence on our development programs.

1. The DSARC Process

The Defense Systems Acquisition Review Council (DSARC) was covered briefly in the previous section, where its effectiveness as a continuous process was emphasized. In this section the further management attributes of the DSARC are discussed.

The discipline of DSARC is imposed on all major Defense acquisition programs (over $50 million in RDT&E, $200 million in procurement, or of special interest). The process includes a number of formal reviews, in which the thrust of the meeting is dependent on the particular phase of the program being reviewed.

The first major milestone (DSARC I) focuses on the issue of whether to proceed into advanced development. Here the questions asked about the program address the reality of the military need, the potential of the proposed program to fill that need, the technical risk inherent in the development, and the status of alternative solutions. While approval at DSARC I is a necessary condition to proceed toward DSARC II, it is not automatically a sufficient one. Interim reviews and conditions are frequently imposed.

The second major milestone (DSARC II) focuses on the issue of whether to proceed to full engineering development. Here the questions asked are more closely related to an ultimate system. While they still critically examine the need, they also address the quality of the cost and performance data that has been developed, the adequacy of the test and evaluation programs, and the maturity of the technology.

By the third major milestone (DSARC III), when the issue of whether to go into production is addressed, the questions focus on force structure requirements, production readiness, producibility, logistics support, and training and manpower needs. Test and evaluation results are carefully analyzed.

Interspersed among the above reviews can be other formal meetings of the DSARC, or less formal Program Reviews. There are also continuous support activities bridging the intervals between reviews. Taken in the aggregate, these disciplines make up a consistent pervasive management process of growing effectiveness. This DCP/DSARC process is now formalized in the DoD Instruction 5000.2

During Calendar Year 1974 the DSARC conducted 34 reviews of weapon system programs. These included 21 milestone reviews: the remaining were reviews of program status and/or specific problems.

We see a considerable influence on our major programs due to the DSARC process. The DSARC members and the Service key officials are devoting greater personal attention to DSARC preparation. The quality of programs which are now being presented for DSARC consideration are markedly better than those which were reviewed during the preceding equivalent time period. Costs, requirements, alternatives, and management concepts are now more critically evaluated in the Services prior to reaching the DSARC. The Army has even established its own similar review--the ASARC.

There were several instances where the DSARC has recommended modifications to previously planned programs. The Air Force's Air-Launched Cruise Missile (ALCM) Program was held in Advanced Development, directed to be phased with the Navy Submarine-Launched Cruise Missile (SLCM), and required to seek commonality of engine, guidance, and warhead with the SLCM program. The pace of the EF-111 program was slowed, delaying completion of the advanced development phase by one year. The Army's SAM-D program was directed to reduce the engineering development phase activity to a minimum, essentially moving back into advanced development until the critical demonstration of the guidance concept had been accomplished. The Navy's recommendation for the stretching of the S-3 aircraft to provide a Carrier Onboard Delivery (COD) capability was rejected with the suggestion that other alternatives be considered.

These and other recommendations were accepted by the Secretary of Defense and formed the basis for direction to the Services. In my opinion each action was a prudent management step, minimizing our financial exposure until a higher level of confidence in the programs could be established.

In other instances, the DSARC more closely endorsed the previously planned programs. Among these, the Air Force F-15 fighter, the TRIDENT submarine, and the A-10 attack aircraft were approved for production. The SHORAD system was approved for full-scale development. Approval for advanced development was given for the CONUS OTH-B radar program and the UHF Space Segment of the Defense Satellite Communications System (DSCS III). In these cases, program issues were resolved prior to the formal reviews.

2. Design-to-Cost (DTC)

DTC is a promising approach to controlling the cost of our military equipment--by specifying the acceptable (and affordable) cost of hardware, just as we specify performance. Although we have already had considerable dialogue with Congress as well as with industry on DTC, and have also mentioned it in the previous section, it is an evolving management initiative and dynamic activity--worthy of further discussion.

The over-all objective of Design-to-Cost is to achieve the proper balance among life-cycle cost, performance, and schedule. At present the cost data base on operating and support costs is not sufficient for accurate estimates of total life-cycle costs. Therefore, in the initial phases of Design-to-Cost, we will concentrate on establishing firm goals for average unit production costs, and utilize best available estimates to evaluate operating and support costs. We are augmenting this approach by establishing DCP thresholds for reliability and maintainability, which strongly influence the support costs.

In April 1974, we prepared an extensive report on Design-to-Cost in response to a request by Senator Eagleton. Copies of this report were provided to this Committee and it was also made a part of the Congressional Record. Since then, the Design-to-Cost concept has been significantly expanded. We now require Design-to-Cost goals for all major programs, and have extended the concept to subsystems and other-than-major systems. We have also strengthened the management and accounting of support costs in order to fill in the cost data gap which prevents us from establishing life-cycle cost goals. These policies will be formalized in a new DoD Directive to be issued shortly.

Current status of Design-to-Cost in Major Weapons Systems is shown in the following table which covers the 79 programs currently in the DCP/DSARC system. The programs which have been assigned Design-to-Cost objectives have firm average unit production cost goals, in specific fiscal year dollars, for a stated production quantity. Maximum benefits from DTC are expected in the programs which have not yet entered the production phase. Note that some of these programs have already passed into production--beyond where Design-to-Cost could be fully effective. Even these programs will receive constant review and will be managed in accordance with Design-to-Cost concepts, in that individual projects or subsystems within these major programs will have cost goals.

The Design-to-Cost concept is being implemented effectively by program managers and producing positive effects on many of our newer programs. Design-to-Cost clauses now appear in Requests for Proposals and Contracts, usually in the form of incentives or awards for meeting goals. For example, in both the Army UTTAS and the Navy CH-53 helicopter programs, such incentives were included in the contracts for prototype development. The Navy Low Cost Electronic Warfare Suite is setting an excellent DTC example in conducting comprehensive functional and performance tradeoffs.

3. Program Management

A basic ingredient in any successful major development program is strong, competent program management. Industrial program managers are carefully selected, especially on major programs. The proper choice is critical to the success of a program. And <u>good</u> program managers are hard to find.

The impact of the choice of the program manager on DoD programs is equally critical. We have had some very successful program managers. But all too often we have not been as careful as we should in this selection process. It was not recognized that a man with a distinguished combat record might not necessarily make a good program manager.

In recognition of the importance of these jobs, we have taken two principal steps to improve the quality of our program managers. First we have taken administrative actions to make this a more attractive career, and second, we are emphasizing the formal training of program managers to provide them the proper tools to work the problems.

We have recently issued a DoD Directive (5000.23) which formalizes the policy for selection, training, and career development of our program managers. The primary goal of the effort is to have the

DESIGN TO COST STATUS

29 JANUARY 1975

CATEGORY	PROGRAM PHASING				TOTAL
	I	II		III	
	CONCEPT FORMULATION	VALIDATION	FULL-SCALE DEVELOPMENT	PRODUCTION	
Major Programs in DCP/DSARC	11	25	24	19	79
Total Programs Reviewed for DTC		25	24	3	52
Programs with DTC Goals Established		8	13	3	24
Programs with Partial Application		2	3		5
Programs Under Review		2	8		10
Programs to have DTC Goal Established by DSARC-II		13			13

DoD components develop career fields in system acquisition management and establish career opportunities to attract, develop, retain, and reward outstanding officers and civilians in this field.

Professional education, training and experience are considered the key to progressive career growth of program managers. To help sustain this growth the Defense Systems Management School (DSMS) provides a basic program management course, executive refresher courses and selected courses in applicable subjects. We expect that eventually all program managers of major defense systems will have attended one or more DSMS courses.

4. Selected Acquisition Reporting (SAR)

When the DoD and Congress approve the full-scale development of a major weapon system, the Service (and the DoD) essentially commits to develop and procure a specified quantity of a system for a defined cost. To provide progress reports on these commitments in major programs, the Services prepare a quarterly SAR (Selected Acquisition Report), delineating the current cost, schedule, and technical information. SARs provide the DoD, appropriate Congressional committees, OMB and the GAO with a standardized tracking system, permitting actual achievements to be assessed against program objectives. When changes occur from one reporting period to another, an explanation is provided in the report.

The objective of these reports is to disseminate essential information on key programs--particularly identifying any deviations from program baselines that may occur. To be useful, the reports should be timely, accurate, and complete.

We have recognized that there is room for improvement in the SARs. Accordingly, a DoD Review Group was established last year under the chairmanship of the Office of the ASD (Comptroller), to review the SAR system and recommend changes. This group was specifically asked to consider changes recommended by Congress and the GAO. As a result of the work of the group, a revision to the SAR instructions is in process and expected to be issued early in 1975. Staff members of the appropriate Congressional committees as well as GAO have been briefed on the proposed revision.

Some of the changes planned include expediting the submission of SARs to Congress, establishing an automatic mechanism for initiating SARs (at time of DSARC II approval), adding the Design-to-Cost goal to the report, and clarifying the guidelines for developing and reporting out-year escalation estimates in the SAR.

A fuller discussion of the SAR reporting system will be held when Mr. McClary meets with your Committee. I want to assure you that my office, the Services, and their system program offices are working to make these reports fully responsive to your needs.

5. Cost Realism, Control and Reduction

In attempting to control major Defense Systems costs, an effective approach is to establish realistic cost goals and then impose a discipline to hold to these goals. Both steps in this approach are difficult and complex but they are a sine qua non of costs control in big programs.

To establish cost goals we need to be able to establish costs accurately. The costs of manhours and material which constitute the basic elements for the prices DoD pays for its goods and operating expenses are closely tied to rapid changes in the prevailing economic conditions of our nation. We must avoid high, ultra-conservative estimates as well as low, optimistic estimates in determining expected costs for program alternatives. Our key source for independent assessment and evaluation of costs is the OSD Cost Analysis Improvement Group (CAIG). Over the last year the CAIG has continued to provide this type of cost assessment for each program which has come under DSARC review, as well as for a number of other activities.

The CAIG review of program costs has not only provided improved visibility of Service estimates but has helped us understand differences

between program manager and independent estimates when they arise. The CAIG prepares its own independent estimates of program costs if an additional estimate is required.

In the recently completed Air Force Air Combat Fighter evaluations, the CAIG analysts worked closely with Air Force analysts during source selection, giving added confidence to the cost estimates used in the decision process.

Based on the advice of the CAIG, the DSARC has improved the reasonableness of early cost estimates, assuring that the Secretary of Defense is aware of all cost implications, including such items as prudent contingency reserves. In the past these contingencies have not always been included due to overoptimism. I believe the DCP/DSARC process in conjunction with the CAIG has been able to temper much of this overoptimism in our current programs.

With the appreciation that total life-cycle costs are vital to decision-making, the CAIG has been increasing its activity in the area of operating and support costs. The CAIG-prepared "Operating and Support Cost Development Guide for Aircraft Systems" was issued by the DSARC in May 1974. Guides for other hardware classes are planned.

With respect to operating and support costs, the DSARC will soon include much more stringent requirements for reporting reliability and maintainability goals and related support costs throughout the life of each program. This action will focus increased management attention on these life-cycle costs.

To hold to cost goals, once established, requires dedicated efforts by the program managers. They must use the entire arsenal of management tools available, such as Design-to-Cost, trade-offs between modification of existing equipment and developing new hardware, emphasis of high reliability components to minimize support costs, and introduction of competition where appropriate. Ruthless trading among costs, performance, and schedules must be done. Furthermore, to insure that these tools are effectively applied and that they are achieving the desired results, managers must have access to actual and projected cost reports which are accurate, timely and informative.

To summarize, the truism that "effective management is a continuous process of setting high standards and striving to achieve them" is particularly applicable to the management of cost. I intend to maintain pressure on this area.

6. Policies for Specifications and Standards

Military specifications and standards sometimes contain unrealistic, obsolete or marginal requirements which lead to excessive costs. The Assistant Secretary of Defense for Installations and Logistics and I are addressing this problem through operation of the Defense Materiel Specifications and Standards Board. This Board will formulate recommendations to the Secretary of Defense on proposed revisions to standardization policies. Together, we are also attempting to come to grips with the specifications and standards problems in another way. We have established a Defense Science Board Task Group on the Improvement of Specifications and Standards. Preliminary recommendations to alleviate problems are due in March of this year, with a more complete set of recommendations about nine months thereafter.

7. Management of Proliferation

Whenever we create a new piece of military equipment, we begin an expensive cycle--engineering design, documentation, production tooling and test equipment, factory and Service training, establishment of maintenance depots, etc. When the new hardware fills an important military need, these costs are justifiable, but only if there is no other equipment which can accomplish the job. If other equipment, perhaps with modifications, can be adequate, duplication of many of these costs can be avoided and the potential for savings is substantial. The question of adequacy is often a tough issue to assess. While we strive to make these assessments objectively, it is very difficult to resolve the marginal cases.

The problem of insufficient commonality is a pervasive one. It occurs within the Services, between Services, and between Allies (for example, within NATO). It is not only a very expensive problem, but it can have a major impact on military effectiveness, especially in wartime. General Goodpaster has observed that a 30 percent increase in NATO force effectiveness could be realized if Allies would implement the recommendations for standardization now under consideration. There are clear benefits in having common hardware, at least to the extent of being able to interface and exchange equipment. The achievement of commonality (or control of proliferation) is an area of special interest to Congress and a major task for the OSD and the Services.

Congressional concern has been expressed in recent requests for a study of missile proliferation, a semi-annual report on commonality within NATO and others. Within DoD a number of special reviews have been in progress and several actions taken: I will highlight some of these here.

Duplication of efforts in development is sometimes warranted, even advantageous, in order to decrease costs through competition, keep options open, or pursue long shots. Duplication is permitted, and in some instances encouraged, up to the point of initiating full-scale development and sometimes--when there are sufficient potential benefits to warrant the expense--right up to the procurement decision. For example, we previously conducted parallel developments for the AWACS radar, up to the full-scale development decision. A highly visible recent example of duplicate development was in the Light-Weight Fighter Program. In both areas the duplication was highly beneficial.

Nevertheless, there are some problems associated with duplication that require special management attention. First, even deliberate duplication must be controlled and adequately coordinated. Second, there is occasionally a tendency for duplicative programs to continue beyond the point where the benefits justify the expenditures--sometimes all the way to actual deployment of duplicate weapons systems. Such approaches are commonly justified on the grounds of unique Service "requirements." We have found this tendency particularly prominent with avionics equipment such as airborne communications and navigation developments. The problem, however, is not confined to avionics alone.

Generally speaking, duplication is not a danger in the major systems acquisition programs. The high visibility afforded by the DSARC management process adequately controls parallel developments. Duplication is more of a problem with the smaller value developments which are pursued with fewer formal controls. Even when individual programs within a Service are carefully laid out, Service predilections sometimes prevent the process of inter-Service coordination from working.

In these cases DDR&E must exercise leadership to resolve differences and work to establish best courses of action. Responsibility for implementing proper safeguards against unwarranted duplication is not a new DDR&E function. However, we have been giving it special emphasis this past year, with some noteworthy results.

All the Services share needs for similar capabilities in navigation. We therefore established, with the cooperation of the DSARC principals, a DoD Positioning and Navigation Review Committee which conducted a detailed inter-Service review of over fifty separate navigation-related programs. While an extensive list of initial recommendations and decisions has resulted from this review, the most significant accomplishment in my view has been the greatly enhanced exchange of information between the Services. The Service participants have gained a fuller appreciation for their counterparts' programs and requirements. We see the Services taking greater initiative, independent of specific OSD direction, to harmonize their programs to achieve operational and cost benefits through cooperation.

Success in the Positioning and Navigation area has led us to support similar inter-Service reviews of military data link developments and SIGINT gathering systems. These activities are now receiving attention within OSD and the Services.

The preceding examples are omnibus areas in which we have arbitrarily collected large numbers of loosely related activities for a detailed examination. In the last year we have also focused reviews on the following more specific areas:

- o Air-to-air missiles
- o Air-to-ground missiles
- o Forward looking infrared sensors (FLIRS)
- o Air deliverable mines
- o Laser seekers
- o Tactical target location systems

These reviews sometimes result in redirection of individual parallel programs to achieve modified--hopefully optimum--consolidation. Sometimes specific efforts are terminated. In all cases the reviews result in improved communications and understanding between the agencies involved, lowering the risk of future inefficiencies. Frequently the potential for enhanced effectiveness through increased cooperation warrants the establishment of a joint Service program, managed by people furnished from more than one of the Services. We currently have some 45 joint programs, and have a number of others under consideration for joint management.

To my mind the NAVSTAR Global Positioning System is a notable example of what can be done with a joint program. The introduction and use of NAVSTAR by all the Services is expected to reduce net DoD navigation costs by a significant percentage. With NAVSTAR, a large number of other DoD requirements for navigation systems will be superseded. Requirements, and therefore costs, for non-RF navigational aids (e.g., inertial and Doppler) should be significantly reduced. Furthermore, the existence of NAVSTAR will enhance the performance of weapons and simplify their design.

I will now mention two subjects very much allied to the concept of joint programs. These are:

(1) Single-Service Programs that have multi-Service interests, and
(2) Joint Operational Testing Programs.

The single-Service programs having a multi-Service interest are those where another Service is interested in using a variant of the system for another mission, or using a subsystem or component for another weapon. The benefits are economy in RDT&E, procurement and logistic support. Examples of these programs are:

- o UTTAS (Utility Tactical Transport Aircraft System). The Navy will utilize the basic Army aircraft in its LAMPS ASW Aircraft System.
- o The Navy HARPOON missile is being considered not only for Navy ship, submarine, hydrofoil and aircraft platforms but also for use by the Air Force on B-52 aircraft.
- o The Navy ALQ-99 Jammer Pods modified for improved reliability are to be used in the Air Force EF-111A tactical support jammer.
- o The Navy's S-3A ASW aircraft engine, the TF-34, is being used by the Air Force in the A-10 Close Air Support Aircraft, and the Army/NASA rotor system research aircraft.

There are 10 Joint Operational Test Programs under the direction of Lieutenant General A. Starbird, the Deputy Director for Test and Evaluation. These offer advantages and benefits such as assured coordination and collaboration between interested Services, elimination of duplicate testing, better utilization of test facilities, and early and improved development of interoperability and operational tactics.

E. INDEPENDENT RESEARCH AND DEVELOPMENT (IR&D)

I will now address our Independent Research and Development activities.

Maintaining the technological initiative requires exploitation of a broad spectrum of technical disciplines and use of a variety of management approaches. Our directly-sponsored research and development is performed both by government and by industry through contracting for specified tasks. These planned programs cover the R&D needs we have identified. But these programs sometimes suffer from a lack of the flexibility and responsiveness which are required if rapid technological evolution and the creativity of our technological community are to be fully utilized. The government budget cycle and review process often delay the timely pursuit of new approaches and tend to stifle the creativity so important to the technological initiative. We must have a mechanism which can circumvent bureaucratic inertia.

To alleviate these problems and to take advantage of the self-starting and innovative talent of our industry, the DoD sponsors Independent Research and Development (IR&D). It permits a closely controlled amount of the relevant R&D activities undertaken by Defense contractors to be recovered as an allowable business expense on their government contracts. This allowance is small, typically one-to-three percent of the contract value, but the payoff has been substantial. This small investment allows the DoD to tap the creativity of the country's best engineers and scientists in fostering independent approaches. It encourages the competitive drive of our industries. And, it provides us with a process which is uncoupled from the more rigid constraints and inertia of our directly sponsored activity. It is vital to our progress. Fundamental research and engineering technology from IR&D programs often open new avenues and tends to influence system designs. The technological superiority of many of our systems can be directly traced to approaches spawned in IR&D.

Support of Independent Research and Development enhances another essential element of our DoD R&D program--competition. One of our key objectives is to provide for competition in our development and procurement processes. The IR&D program fosters this competition by encouraging our contractors to develop their ideas and capabilities across the board. This greatly enhances the vitality and productivity of the R&D process. I know of no other contractual mechanism which could be so effective in nurturing the competitive environment. Without it we could rapidly become enmeshed in a sole-source trap where many contractors, who had achieved an initial contract, could maintain a lead in technical expertise.

IR&D has been sometimes portrayed as a subsidy for contractors. This is simply not true. We do not subsidize contractors. We are paying for services rendered much as we pay for them in directly-funded R&D. The only appropriate question should be whether we are making productive use of these expenditures. I have found the Independent Research and Development is at least as productive as our directly sponsored activities and often more innovative.

Another concern I have heard is that IR&D activities may not be attuned to our needs. My experience is quite to the contrary. We should realize that the success of these corporations is strongly a function of how wisely these funds are expended, since outputs from IR&D tend to determine how much future business the company does with DoD. Therefore, the work generally gets top management level attention and is assigned to the more productive technologists. The Department of Defense in this way reaps the direct benefits of independent assessment and profit motivation.

We are continually striving to improve our administration of the IR&D program and maintain an intimate coupling to the needs of the DoD. The GAO in its review of the Defense IR&D program has endorsed certain aspects of our policies in their interim report issued in April 1974. The GAO is in the process of completing its study and we will give full consideration to their recommendations. Meanwhile, we have recently reviewed and released revised guidance concernin, the negotiation of advanced agreements and the preparation of contractor technical plans for IR&D. We are also broadening the coverage of the IR&D Data Bank to afford full dissemination of industry's IR&D program. This broader exchange of data will increase the benefits from IR&D and shorten the cycle between accomplishment of these research and technology activities and their application to our problems.

I solicit your strong support for this program. It provides a key contribution to the maintenance of our technical superiority.

F. DEFENSE CONTRACTOR RELATIONS

There is a fundamental problem that we in DoD must address in order to achieve the most defense per tax dollar. As the Defense Budget becomes an ever smaller fraction of the Gross National Product (down from 9.4 percent to 5.8 percent since 1968), companies willing to do business with the government in certain critical areas of development and production are increasingly hard to find. Some of the traditional buyer-seller relationships, developed over the years both as departmental policies and public laws, are no longer appropriate in particular areas of the defense market. The American taxpayers have the right to expect the DoD to contract for products and services in the most economical way. For us to re-examine the rules and policies of Defense-contractor relations is, therefore, in the national interest. Seeking relief or amelioration from those rules and policies which are overly restrictive or counterproductive to obtaining the most defense per dollar is appropriate.

For example, aircraft jet engines have historically been developed and proven in operation by the Military Services before these same engines were adopted for commercial use. But times have changed. New high technology engines were commercially developed for the wide-bodied jet aircraft. I expect the DoD will be using off-the-shelf or uprated versions of commercially developed jet engines in some of our systems in the future. We must carefully review all of our new defense systems for the possible use of commercially developed equipment on the objective basis of the most defense per dollar. Government controls in contracting for goods and services required for Defense must be limited to the minimum necessary for protecting the taxpayer. This is an obligation that DoD has to the American people and one that I personally am highly conscious of.

Deputy Secretary Clements, concerned about the problem of DoD-contractor relations, last year established a steering committee for improving these relations. I was appointed to chair this Committee. It is made up of the Assistant Secretaries of Defense, the Under Secretaries of the Services, the Joint Logistics Commanders, and the Assistant Secretaries of the Services for Installations and Logistics and Research and Development. Simply stated, our goal is to promote and maintain an atmosphere of healthy, vigorous competition for Defense businesses which are capable and willing to perform for the government. We must adequately reward excellent performance and penalize poor performance. It is important that the Congress be informed and understand what we are trying to accomplish. I am sure there are critical areas where we will need your support.

Secretary Clements recently summarized to the Comptroller General the 10 actions that are under way by this Committee. In precis, they are:

Action 1: Contractor Weighted Average Share (CWAS). Fixed price contracts require less government surveillance than cost-reimbursable contracts. A CWAS rating system helps determine where costly government monitoring activities can be relaxed. Appropriate administration of CWAS is to be emphasized.

Action 2: Financial Policies and Procedures. Examine the current status and trends in the financial conditions of Defense contractors, investigating possible change in the rate of progress payments and the use of economic escalation clauses in contracts and subcontracts.

Action 3: Industry, Military Department and Defense Agency Feedback. Develop a quick response program to handle suggestions for changes in regulatory materials which could reduce the cost of procurements.

Action 4: DoD Personnel at Contractor Locations. Visit a cross section of 10 contractors and gather data on where relaxation or exemption from contractual procedures and regulations may be warranted. Revise the Armed Services Procurement Regulations (ASPR), as required.

Action 5: Legislative Package. Within six months, review and examine statutes for restrictive thresholds to assure that the cost of monitoring the thresholds is not disproportionate to the potential benefits.

Action 6: Contract claims. Take immediate and positive action toward settling the large backlog of major shipbuilding contract claims against the Defense Department.

Action 7: Defense Contract Audit Agency (DCAA). Evaluate DCAA's organization structure and over-all manpower requirements. Determine what manpower reductions can be achieved.

Action 8: Communications Program. Initiate a communications program, internal to the DoD and Defense Industry, to relate management procedures to DoD and industry officials and to respond promptly to requests from the press and public about DoD policies and programs in this area.

Action 9: Technical Leveling and "Buy-ins". Find ways to avoid technical leveling and "buy-ins" in negotiated competitive procurements.

Action 10: Cost Accounting Standards. Seek ways to reduce the administrative impact of Cost Accounting Standards and relieve contractors of unnecessary restraints on their accounting practices.

As we pursue these areas, we will undoubtedly perceive additional actions which can improve our defense industry and its relationship with the DoD. With the emphasis currently being applied to these activities, we expect to see substantial improvement in the near future.

G. SUMMARY

In this section on management, I have discussed how and why today's RDT&E program exerts high leverage on our future Defense expenditures and capabilities. While it is natural under our economic pressures to reduce current expenditures of all types, we must seize today's opportunities to apply R&D leverage while it is most effective. To defer exploitation of our national technological resources could be irresponsible with respect to our future security.

I have introduced this year the distinction between R&D activities directed toward the Creation of Options (Group One), and those programs which have been selected for Full-Scale Development (Group Two). While management attention is important in both groups, the focus on each should be different. I invite the Congress to consider the Group One efforts in

a broad, over-all context, and work with us to insure they are adequate, relevant and properly emphasized. On the other hand, because the transition to full-scale development is the beginning of serious commitments which lead to procurement and operations and support, I invite the Congress to focus primarily on the technical and cost details of Group Two R&D programs.

I have briefly summarized the type of management tools we have developed to assist us in these aims, and a number of management initiatives which we have recently implemented to increase our return on investment in RDT&E. One of your colleagues, Senator Proxmire, has noted that he feels the Department of Defense is one of the best-managed Federal agencies. We feel that we have earned this assessment, but as in any business, there is always room to improve. I want to earn the confidence of all of you and your constituents--confidence that the Defense RDT&E budget is being well managed and represents a sound, vital investment in our security.

IV-1. THE TECHNOLOGY BASE

A. INTRODUCTION

In my opening statement I described the two basic segments of the RDT&E program. The first is devoted to creating and preserving options for possible application to Defense requirements. The predominant portion of this segment is generally referred to as the "technology base." The technology base includes the budget categories of Research (6.1), Exploratory Development (6.2), and certain programs in Advanced Development (6.3) which are devoted to demonstrating the most promising technological advances for possible inclusion in later system developments.

Research and technology are our insurance policies for the future security of the nation. They have given us some notable firsts, including initiatives in nuclear weapons, ICBMs, and nuclear submarines. They have given us a host of new tactical weapons, including night-vision and thermal-imaging devices to deny the enemy the cover of darkness, smoke, haze and fog. They have given us new sensor, guidance and communications technology which have in turn given us the so-called "smart" weapons which allow us to strike targets with great precision. And they have provided the revolution in battlefield medical care that did much to minimize the suffering and maximize the recovery of our personnel in Korea and Southeast Asia.

In recent years our technology base has also helped slow the escalation in the cost of defense. A major emphasis has been placed on making military systems operate better, last longer and be less expensive. To verify that this emphasis was producing results, the Army recently did a study of the projected economic impact of its technology base program. The Army was able to identify sufficient cost avoidance from the output of only six technology base projects, which reached fruition in that year, to return the entire annual cost of the Army technology base effort--about $300 million.

Also from the technology base flows much of our capability to interpret technical intelligence data and to assess our technological stance vis-a-vis that of potential adversaries.

National security arguments are in themselves the only proper justification of a strong technology base program in Defense, but we should not forget that Defense technology has supported the critical early development of many technologies that are now part of our everyday experience and important elements of our economic strength.

- Jet aircraft and the aluminum and titanium industries that make them possible.
- The radar, communications and computer control that make up the air traffic control system.
- Microwave ovens, made technically and economically feasible by radar development.

- Helicopters that provide short-haul transportation, monitor city traffic flow and carry critically injured patients to hospitals.
- The emergency trauma treatments that save lives at these hospitals.
- Fiberglass for boats, bathtubs and patio roofs.
- Computers to help you do your job (and computers to send you bills).
- Transistors and integrated circuits for inexpensive pocket calculators.

Secretary Schlesinger and I consider the technology base essential to an effective deterrent to war over the long term. Without this effort, U.S. military capability in the rapidly advancing world of today would soon become second or third best. Secretary Schlesinger in a speech last November said "Increasingly it is this (technology base), rather than simple production capacity, that so brilliantly serves the national purpose. I would suggest that we bend every effort to sustain the health and vigor of the scientific and technological base." He also pointed out that our technological achievements have played a significant role in arms limitation agreements.

In view of the fundamental importance of the Defense technology base, I am gravely concerned about the trends in the level of support for this program over the past decade. Since FY 1964, the funding, in terms of constant dollars, has decreased about 40 percent. This would be a serious situation even if the technology base's relative importance to our Defense posture had remained constant; the gravity of the situation is compounded because in today's environment we must look to technological advantage to compensate for the limitations on the number of modern weapons that we can afford to buy and operate or that we are allowed by treaty agreement. To reverse this trend we are requesting $340.1 million for research and $1,228.8 million for exploratory development in FY 1976. This request is an increase of 9 percent over the request submitted last year (and 13 percent above present FY 1975 program). It is an initial step toward revitalizing our technology base and tangible evidence of a renewed commitment by Defense and Congress to technological superiority.

In the remainder of this chapter I will describe the general nature of the technology base, give you an assessment of its accomplishments, discuss some of its problems and, in particular, describe several of the improvements we have made or intend to make in its management. Because of the Congressional interest in the Federal Contract Research Centers, I am devoting a separate section to that topic.

1. Technology Base Characteristics

The technology base is characterized by its diversity, encompassing all of the many disciplines of science and engineering. At present there are some 20,000 separately identifiable work units being conducted under approximately 200 program elements. In order to manage and coordinate this diverse effort, we aggregate the work into 13 technology management areas. These areas and their associated funding levels for FY 1976 are shown in Table I.

The technology base program is conducted by in-house laboratories, industry, certain of the Federal Contract Research Centers (FCRCs), and universities. Each type of performer has unique characteristics. By assigning work units to the most appropriate group, the DoD maximizes the productivity of the funds expended. In addition, the distribution of the work among all of the performers, and the interactions generated thereby, have the synergistic effect which results from a team approach. The research and exploratory development effort has about 43 percent of its effort in DoD in-house facilities, 41 percent in industry, 13 percent in universities and the remainder in Federal Contract Research Centers and other institutions. The appropriateness of this division of effort is addressed in Section D. FEDERAL CONTRACT RESEARCH CENTERS (FCRCs).

2. Management Overview

The Military Departments and Defense Agencies are responsible for the initial formulation and the execution of their own technology base programs. Over-all management and coordination of their efforts is performed by me through a Deputy Director (Research and Advanced Technology) and a staff of 20 senior technical personnel whose professional backgrounds match the technology management areas. All have advanced education, and their previous experience is divided among industry, in-house laboratories and other categories, such as universities and FCRCs.

Table I

Technology Base Management Areas

(Military Departments)

Technology	Scope ($ Million)
Electronics	384
Weapons	241
Materials	123
Structures	56
Aeronautical Vehicles	114
Aeronautical Propulsion	78
Missiles and Space Propulsion	53
Surface Vehicles	81
Environmental Science	104
Biomedical Research	107
Human Resources	63
Chemical Warfare/Biological Defense	25
Environmental Quality (Problems Peculiar to DoD)	25
Other Exploratory Development (i.e., Civil Engineer)	25
Other Research (i.e., Mathematics, Physics, Energy Conversion)	79

The DDR&E interactions with the Military Departments are both formal and informal. Principal formal interactions are the programming and budgeting process wherein the DDR&E staff reviews, analyzes and recommends changes to the program and budget proposals submitted by the Military Departments.

One of the most effective formal mechanisms is the topical review procedure whereby tri-Service in-depth reviews of selected technology sub-areas are conducted each year, covering the entire program at least every three years. These reviews emphasize the technical aspects of the program without regard to budgetary structure. Each Service working in the area under review presents in-depth descriptions of its work to representatives from the other Services and OSD. Each presentation is followed by intensive question and answer sessions. Thus these reviews also assure effective transfer of technical information between the Services. Further information on topical reviews is given in succeeding pages of this section. In specific technical areas where a more continuous review is necessary, formally constituted committees provided coordination and program monitoring. Examples include:

- Joint Army/Navy/NASA/Air Force (JANNAF) Committee on Rocket Propulsion.
- Joint Service Program on Advanced Propulsion for VSTOL.
- Joint Medical Research Conference.
- Joint Technical Coordinating Group (JTCP) on Munitions Effectiveness.

- Supporting Research and Technology Panel of the DoD/NASA Aeronautics & Astronautics Coordinating Board (AACB).
- DARPA/Joint Service Advisory Committee on Computers in Education & Training.
- Joint Service Explosives Program (JSEXP).
- (Tri-Service/DDR&E) Advisory Group on Electronic Devices.

While formal mechanisms are necessary and effective, an essential ingredient of management is the close familiarity of each DDR&E staff specialist with the personnel and programs of the Military Departments in his area. This familiarity is based on day-to-day direct interaction with the Military Department staffs and their laboratories on individual program questions and technical consultations.

As a result of increased emphasis on the management and coordination functions over the past four years, a stronger, more integrated and efficient technology base program has emerged.

3. Coordination of the DoD Technology Base with the Technological Community.

The Independent Research and Development Program (IR&D) of the defense industry is a vital adjunct to the defense technology base program. A significant amount of technology effort is conducted within this program with major payoffs in areas such as aircraft propulsion, materials, and electronics. In many cases, small in-house Defense laboratory programs conducted jointly with industry serve as the lever or steering mechanism to influence the course of much larger efforts in that industry. The mutual reinforcement of this process is appreciated and nurtured. A detailed discussion of IR&D is contained in Chapter III.

The Defense technology base program is coordinated with those of our allies through the NATO Defense Research Group and the Technical Cooperation Program (U.S., UK, Australia, Canada, and New Zealand) in which my staff and I are deeply involved. In these international groups an objective is to reduce unwarranted duplication by distributing responsibility for various technical investigations and integrating and sharing their results.

The "civil" technology base program of the rest of the Federal Government, industry, and the universities is larger in the aggregate than the DoD program. This program is especially strong in areas such as medicine and the life sciences, electronics, materials, and the basic sciences. Our in-house Defense laboratories serve as the defense community's "window" on the civilian community, allowing us to take advantage of that technology in the civil sector which is adaptable to Defense needs. Conversely, much of Defense technology has had civilian applications.

4. DoD and the University Research Community

The easy interaction between science and government--particularly the continual movement of scientific and technical people in and out of government--has been a source of enormous national strength.

The natural link-up was carefully nurtured for years by university and Defense people cooperating in a variety of ways to bring the knowledge and views of academic science to Defense research and planning. However, the close relationship faltered in the 1960s. A number of disputes, fed by the war in Southeast Asia, soured the situation in many ways. Some established scientists turned away from Defense-related research, and a whole generation of new scientists entered their profession without understanding the historic relationship or without much opportunity to participate in the shrinking programs. As a result, the Department of Defense lost much of the important close interaction with university science, and the university scientific community lost much of the stimulation which comes from the challenge of the Defense mission.

I am exerting every effort to reverse the trend in relationships with the universities and to maintain the contributions from science that are essential to deterrence of war, the development of competitive Defense systems and the economic progress of the country.

B. TECHNOLOGY BASE CONCERNS AND MANAGEMENT INITIATIVES

Technology Base efforts are relevant to the Defense mission. The word relevant has many connotations. We believe that the word has been misinterpreted. Some have concluded that relevant means applied, particularly in the research category. This is not so. Research can be both basic and relevant. To us, relevance means an investment strategy which maximizes the impact of the technology base on present and future Defense system developments.

To meet our management goal of strengthening the technology base, we have initiated a long-range program to improve the over-all technology base management and build quality from the bottom up instead of driving it from the top down. The major features of this long-range program are:

- o Better program structuring, to cope with the requirements for work integration, and to deal with problems of unwarranted duplication, and lack of responsiveness and relevance to military needs.
- o Improved means for performance evaluation and increased accountability for results, especially on the part of the Service laboratories and their directors.
- o An explicit program to demonstrate to potential users the fruits of technology base work, and establish their readiness and worth for application.
- o A restructuring of the laboratories, laboratory management and technology base program management of the Military Departments.

1. Improved Program Structuring

We have taken several steps to improve the structuring of the technology base program by the Military Departments. We have stimulated the Military Departments through the Laboratory Utilization Study (Section B. 4.) to re-examine their internal planning processes to ensure that program planning is done in careful detail by people best trained to do so, and to insure that the approval chain is kept as short and competently staffed as possible. The combination of high competence and few levels of approval is vital to obtaining a quality program without stifling innovative ideas.

I have spoken to you in previous posture statements about the Technology Coordinating Paper (TCP), an idea which was conceived four years ago but which has been implemented with increased vigor the past two years. There is a TCP now in existence for all technology areas. The TCPs identify:

- o Areas of scientific endeavor and specific engineering advances needed to solve current problems and to meet future military requirements.
- o Programs underway or planned by each Service to fill these needs.
- o Important gaps in the technology, if any, which exist at presently projected funding levels.
- o Ways in which the technology area can be strengthened.

TCPs are written by a team composed of both bench-level and R&D management personnel of the Military Departments and chaired by the DDR&E staff specialist in the area concerned. A principal benefit derived from the preparation of a TCP is the convocation of users, researchers and managers to jointly discuss the work underway and planned and to establish priorities for allocation of resources. This procedure has been very successful in increasing joint planning by the Military Departments.

The TCP has now been institutionalized and we intend to continue to use it as a major tool to increase the number of areas in which joint Service/OSD planning is conducted.

2. Improved Program Coordination, Evaluation and Accountability

We are continuing to improve our processes for the coordination and evaluation of technology base efforts and the proper placement of accountability for its execution. For the third successive year,

we have sponsored tri-Service topical reviews in which all work efforts in a given sub-area of technology are jointly reviewed by a tri-Service peer group. Over the past two years, probably $600-800 million of the technology base program has been given this type of review. Reviews on another $300-400 million are planned for this year.

Through our formal and informal review procedures, which continue to attack problems at the detail level, we have produced substantial changes in the program structure and content in the last few years with some notable successes.

- o In connection with the Services, my office has restructured $72 million of the electronics program, reorienting work to areas that are more potentially productive.
- o Under my guidance and direction, the Army has assumed lead-Service responsibility for the development of all materials and structures technology in armor materials, gun barrel materials and materials for the protection of personnel against laser radiation. Navy and Air Force work in these areas has been terminated, thus partially compensating for fund shortages in other critical mission areas.
- o As a result of our action, the Navy and Air Force have established a coordinated development plan for advanced technology demonstration aircraft engines. The two Services will conduct joint demonstration programs with components developed in their respective exploratory development programs.
- o A recent topical review of the use of computers in education and training surfaced the need for a more detailed, integrated plan across DoD. A DARPA/Joint Services Training Technology Advisory Group has identified the priority areas of R&D to be incorporated in an integrated plan. We will also draw on HEW-supported work.
- o Service interdependency in the night vision area has become a reality, and modularity and commanality of equipment across Service lines is now a working policy.

We are strongly encouraging the Military Departments to be interdependent in certain technology areas. Interdependence means that one or more of the Military Departments will cease work in a given area, relying upon another Service to provide the information and technology required. The Joint Logistics Commanders of the Services have established a committee to identify technology areas in which greater interdependency appears to be profitable. The committee is made up of the Directors of the Laboratories of the three Military Departments. It has been operating for about a year, has identified 17 technology sub-areas as candidates for increased interdependency, and is currently staffing completed proposals for action in six of these areas. As an example, the tri-Service agreement in night vision appoints the Army's Night Vision Laboratory to monitor and coordinate the Defense-wide technology base work in this area. The agreement restricts some night vision efforts to a single Service while for others parallel activity is authorized.

3. Advanced Technology Demonstration (ATD) Programs

One of the classic questions of research and development is when to commit new concepts and ideas to the more costly engineering development phase where the risks of premature or misdirected introduction of new technology are high. We believe that we can reduce these risks through the mechanism of Advanced Technology Demonstration (ATD) programs.

Advanced Technology Demonstration programs should contribute significantly to creating and preserving options. In Advanced Technology Demonstration programs, "breadboard" or "brassboard" models embodying significant new technological advances are evaluated under realistic

tests. ATDs are similar to early pre-engineering development testing of a new system design, but motivated by perceived technological opportunity rather than formal military requirements. Examples of Advanced Technology Demonstration programs are illustrative of the approach.

- Inertial navigation systems for aircraft now cost a minimum of about $100,000. The laser gyro employed in a "strap-down" (no gimbals) configuration has the potential of achieving a platform cost of $35,000. An Advanced Technology Demonstration is planned in FY 1976-77 to demonstrate a laser platform. It is a joint Service program with Navy as lead Service.
- Under a joint AF/Navy technology base program, a low-cost short-range radar seeker for air-to-air missile applications was developed. An ATD program based on the seeker will be initiated in FY 1976 by redesigning the brassboard captive flight test model for compatibility with the weight and volume constraints of a Sidewinder missile airframe. Feasibility demonstration flight testing will be completed in FY 1977.

We have held preliminary discussions with the Services on how to judiciously increase the number and scope of ATDs. They have prepared candidate lists of existing projects that might be considered ATDs. We have critiqued the Service lists and have made additional suggestions for new ATD projects. This iterative process will continue until we reach agreement on candidate ATDs.

The present number of candidate projects is 102. Of these, 74 are projects already in being. Twenty-eight are proposed for future funding. The total projected funding for completion of all these projects is $650 million, in which $128 million will be expended in FY 1976. The projects range in size from a few hundred thousand dollars to several with total cost, over several years, in the $30-50 million class. Most of the ATD candidates are in the $1-10 million category. Some examples underway or under consideration are:

Tilt Rotor Research Aircraft
Constant Recoil Gun
Superconductive Ship Propulsion
Small Waterplane Area Twin Hull Ship
Advanced Fighter Technology Integration
Low Volume Ramjet Missile Propulsion System
Composite Structures for Aircraft Applications
Charge Coupled Device Camera
MICRON-Electrostatic Gyro Inertial Platform
Bubble Memory Tape Recorder Replacement
DAIS-Digital Avionics Information System
A-7 Fiber Optics Program

The planned ATD program should not require any new budget categories nor--of itself--any major reassignments or monitoring responsibility for present program elements or projects. When our selection process is complete, we will move programs, dollars, and people to fulfill ATD program goals.

4. Restructuring of Service Laboratories and Laboratory Management Organizations.

In concert with actions to improve the technical content and organization of the technology base program, I have undertaken a major effort to enhance the performance of its major participants. About 40 percent of the technology base program is executed by the in-house laboratories and they exercise various degrees of management control over a substantial fraction of the remainder. They also are major participants in the balance of the RDT&E program as well as being a mainstay of support to the operating commands. Because their importance to the DoD RDT&E process is difficult to overstate, we believe significant attention to their structure and management is warranted. We have

given priority attention to the in-house system development laboratories this year. Next year, similar in-depth investigations of the human resources and medical in-house laboratories and of DoD's Federally Contracted Reserach Centers (FCRCs) are planned. The latter action is described more fully in Section D.

The investigation of the in-house laboratories has been done as a joint OSD/Military Department undertaking and has become known as the Laboratory Utilization Study (LUS). This study concerned itself with five principal questions concerning the laboratories: (1) Are they really needed? (2) Is the division of effort of the technology base activities between the major participants--the in-house laboratories, industry and the universities--proper? (3) If they are needed, is the size of the laboratory complex appropriate and, if not, what would be the impact of reductions in size? (4) Can we develop systems for the future control of the size of the laboratory in-house effort that would be more responsive to DoD budget trends and quality of individual laboratory performance? and (5) Could we make changes to the management and organization of the laboratories and their headquarters management structures that would improve their contributions to DoD and help offset the disruptive effects of any reduction in their size?

A report detailing results of the LUS study is in preparation, but a summary of the conclusions is included below.

a. Need for the In-House Laboratories

The study encompassed 47 laboratories in the three Services that employ approximately 58,000 people, most of them civilians. The question of need was approached from the first principle: Could the Services operate without the in-house laboratories? Because of the unique combination of technical expertise, access to privileged military and industrial information, familiarity with mission area problems and impartiality which in-house laboratories alone possess, the answer was found to be a strong "No." One of the most important roles which in-house laboratories should play is providing technical input to the important military planning function, a role which requires the above attributes for effectiveness. In addition, the accessibility of the laboratory personnel to the Services makes the in-house laboratories a vital source of short-time and quick-reaction technical support. On a more mundane level--but an increasingly important one--the laboratories provide resources needed by the military in areas where industrial interest or capability is lacking. Finally, the very existence of the in-house laboratories as an alternative source of technology stimulates industry to perform at its best. Clearly, if they are doing or can do these jobs, we need the in-house laboratories.

Personal visits by my staff during the past year to most of the laboratories confirm that, at their best, the laboratory personnel are highly qualified, are engaged in work that is necessary, appropriate and vital, and maintain and intelligently exploit some unique facilities.

That some laboratories do some outstanding work and all are fully manned does not mean that there is no room for improvement in their performance or that it would be impossible to operate with a somewhat smaller complex. We could maintain the present laboratory performance with fewer people if the best qualified people could be retained despite age or seniority. This is not possible under current Civil Service reduction-in-force regulations. Any reductions will inevitably prove disruptive, at least in the short-term, because some of the more productive personnel lacking veterans preference or seniority, will be forced out. If a reduction is necessary, effective ways to offset these disruptive effects must be found.

b. Recommended Improvements in Laboratory Structure and Management

Numerous previous studies have identified the basic attributes of good laboratories. They are (1) an important job to do, (2) good leadership, and (3) sufficient freedom from bureaucratic restrictions to allow the good leadership to accomplish the laboratory mission effectively.

To translate these attributes into management structures, a detailed set of principles was evolved through discussion with leaders in the technical and military communities. These principles were then used to evaluate changes in their laboratory structures proposed by the Services themselves.

The Army, through its Army Materiel Acquisition Review Committee (AMARC) study, proposed substantial consolidations of its labora ories to improve program coordination, eliminate ambiguous mission and technology responsibilities, and reduce overhead. It also proposed restructuring of its reporting chain to reduce the layers of management between the laboratories and the decision-makers.

The Air Force will realign its laboratories to improve their support of the weapons acquisition process while continuing with their generally effective management of the technology base program. A major new feature will be the establishment of a Command, Control and Communications laboratory to meet evolving Air Force needs.

Improvement of the structure and operation of the technology base in the Navy has been deferred for continued study.

All Services have recognized (and my staff will help in addressing) common problems of (a) instituting necessary but not redundant or conflicting controls on the size of the laboratories' in-house programs, and (b) changing personnel and procurement rules and regulations to better fit the R&D laboratory environment.

c. The In-House-to-Contract Ratio

Funding for DoD research and exploratory development has been essentially flat for the last decade. Meanwhile, inflation has driven up by about 40 percent the salaries of the personnel doing research and exploratory development activities in the DoD laboratories. Since the number of people in the in-house laboratories has decreased only about 10 percent, the in-house costs have escalated so that support for research and development in industry and the universities has had to be reduced. This situation raises serious concern for the balance between in-house activities and the industrial and academic activities. Since each of these contributors bring special strengths to the program, a proper balance must be restored and maintained. Restoring this balance requires either an increase in the budget in this area or a reduction in in-house manpower expenses. Since the imbalance becomes progressively worse with time, the issue needs addressing now.

My staff has examined the in-house-to-contract ratio in budget category 6.1, and in each of eight technology areas in budget category 6.2. Our conclusions are that we have become excessively in-house oriented in the Army in materials and structures, electronics, conventional weapons and research: in the Navy in electronics and conventional weapons: and in the Air Force in research. No areas were explicitly identified as having insufficient in-house involvement, although the Air Force dependence on industrial contracting may eventually have to be lessened in some cases due to decreasing industrial interest in some facets of the program.

If the burden is not to be shifted elsewhere, readjustment of the in-house excesses can only be done by reducing the number of personnel in these technical areas while retaining the associated funds. We have directed the Services to terminate sufficient low priority efforts to reduce the number of personnel in the in-house laboratories by a total of approximately three thousand during FY 1976. The savings therefrom are to be applied to new starts in the contract program.

d. The Size of the Laboratory Complex

As part of the Laboratory Utilization Study, an examination of the trends in the growth of the in-house laboratory program relative to the size of the DoD budget, and an examination of the content of some of the work in the laboratories were made. We found that the laboratory share of the budget has increased without any compelling justification. We also found that a modest reduction in the size of the in-house laboratories, beyond that required to adjust the in-house/contract radio

in the Technology Base, could produce some savings. To estimate the size of the reduction that would balance expected savings with adverse impact, we examined the laboratory complexes of each of the three Services, making manpower assessments at various levels of reduction. The possibility of reorganizing into single laboratories serving multiple Services in certain areas was also considered. Separate consideration was given to the possibility of a tri-Service Contract Research Program, as discussed in Section B.5.

Implementing the recommendations of the AMARC Study should ultimately produce substantial reductions in personnel in the Army, primarily by the large-scale consolidations of the Armaments Center and the Harry Diamond Development Center. A drawdown could also be taken in Navy laboratories, either by closing certain laboratories and consolidating the work in those remaining, or by selective program elimination or reduction. The Air Force laboratory system is already quite small and will be decreased by about 10 percent in FY 1975 and 1976.

An examination of the possibility of multi-Service laboratories shows that, if the foregoing reductions were taken first, little additional manpower savings would accrue from multi-Service consolidations. Furthermore, as long as certain weapons are acquired separately by each of the Services, the technical support for this acquisition process is needed. Even under very long drawdown conditions, each Service would prefer to keep some technical capability. However, certain streamlining is possible and is being looked at under the Joint Logistics Commanders' Study, described previously.

As a result of all the foregoing considerations, we have directed a decrease of six thousand people in FY 1976 from the DoD RDT&E establishment. The three thousand person reduction discussed in Section B.4.c. is to be part of this overall decrease.

5. The Contract Research Programs

During the past year, we considered the advisability of a single tri-Service 6.1 Contract Research Program (CRP) in place of the three separate ones now operated by the Army Research Office (ARO), the Office of Naval Research (ONR), and the Air Force Office of Scientific Research (AFOSR).

The major arguments for the proposition are:

(1) By consolidating management, fewer total people might be required:

(2) Unnecessary technical duplication could be more easily avoided.

The principal arguments against the proposition are:

(1) There is no existing organization in the Office of the Secretary of Defense properly organized and staffed to operate such a program.

(2) It is the nature of research that extremely high payoffs are achieved from a small fraction of undertakings. It is extraordinarily difficult to perceive the most effective path to success. Duplication in research programs, therefore, is not bad, and in fact should be encouraged in areas having potentially high payoff.

(3) Preservation of individual Service affiliation with the three Contract Research Programs permits closer ties to Service needs.

(4) All new ideas must receive a thorough and careful consideration for potential funding. The existence of multiple sources of funding provides insurance against a revolutionary idea being frustrated by the inevitable occasional misjudgements of a single organization.

The total contract research program management of the three Services now involves about 560 people who manage approximately $100 million of contract research. These people are directly involved in the day-to-day contract supervision and monitoring function and would be required to operate the program irrespective of whether it were consolidated on a tri-Service basis. The contract supervision and monitoring function involves little cost beyond the salaries of the contract monitors themselves. The expense of setting up a new organization or adding to an existing one to manage a single program would offset any consolidation savings for many years.

The arguments involving duplication are offsetting.

The arguments that close ties to the Service should be preserved is not as compelling for research as it would be in the case of development programs. The very nature of research is broad applicability and less specific coupling to particular Services. Very specific needs for research sometimes grow out of specific Service activities but such research is usually handled through the laboratories rather than the Contract Research Programs.

The basis for the decision thus appears to hinge primarily on the validity of the argument that funding pluralism insures against gaps. Here again, a careful distinction must be drawn between research and development programs. The cost of undertaking parallel development efforts are higher and the likelihood of an unforeseen high payoff less than is the case for research programs, especially in the more fundamental research programs of the Contract Research Programs. Thus, we conclude that in the long run, the existence of more than one contract research program is desirable to provide a plurality of sources of research funding. To make the alternative sources truly viable, we have directed that the contract research programs of the Army and Air Force be increased to a level closer to that of the Navy.

C. TECHNICAL PROGRAM DYNAMICS

The diversity of the technology base makes it very difficult to describe the technical program concisely. Consequently, I will address only the major dynamics of the technology base, citing some detailed examples of the major thrusts and areas being explored.

1. Technology Base Emphasis

We are emphasizing two major categories of work in the technology base program: (1) R&D aimed primarily at reducing acquisition costs, improving operating economy, and improving the availability of manpower and systems; and (2) R&D aimed primarily at improving the performance of manpower and systems. The constituent parts of these thrusts and some programmatic examples are given below:

a. Reduce Acquisition Cost

We must assure that adequate materials will be available to permit the necessary production of devices, components and systems. This problem is becoming increasingly severe as a result of the scarcity and cost of raw materials and shortages due to the impact of new environmental regulations.

- Titanium sponge of a quality suitable for manufacturing aircraft parts is largely imported and costs are rising markedly. We are increasing our work on composites to provide alternate structural materials, and pursuing research into means for economically refining titanium from domestic sources.
- We are developing engines that will operate on wider ranges of fuels, making possible the use of fuels that may be locally available.
- To respond to tightening environmental standards, we are investigating ways to clean up the manufacturing process associated with various military explosives.

We are looking for means to achieve significantly lowered first cost of systems, even at the cost of performance compromises, if the compromises are not extreme.

- We have developed alternate explosive fills for bombs and shells which provide approximately 90 percent of the blast and shock capability of the highest performance fill, but can be manufactured with existing facilities and will be cheaper in production.

- We have adopted a modular approach to our new Forward Looking Infrared (FLIR) equipment that will make it possible to use common components in a wide variety of applications at a slight sacrifice in equipment size but with a savings of over $100 million in the next Army FLIR purchase.
- We are working on new techniques to reduce the cost of the shoulder-fired weapons against armored units by application of commercial pipe or paper tube launchers and cheaper rocket propellants. We anticipate a 35 percent savings in the projected cost of the advanced LAW system due to these developments.
- We are pursuing in cooperative Army-Navy-NASA programs two approaches to vastly simpler and better helicopter rotor assemblies.

Our efforts toward obtaining lower life-cycle costs are many faceted.

- We are continuing our development efforts toward extended life nuclear reactor cores. The objective is to obtain a core life equal to the service life of a nuclear submarine to obviate the need for cutting the submarine hull in order to change cores. We have already increased the life from only a few years to 13 years.
- Elastomeric bearings have been developed consisting of rubber and metal joined together in thin alternate layers. Army-developed elastomeric bearings for helicopter rotors should virtually eliminate the need for replacing bearings resulting in savings in maintenance of more than $40 million per year.

In addition, we have numerous examples of R&D aimed at other means for saving money.

- Intelligence information processing techniques developed by the Air Force have enabled us to reduce the SAC intelligence support activity for an annual savings of $6.7 million.
- Schottky field-effect transistors have demonstrated performance exceeding that of low noise traveling-wave tube amplifiers used in radar and communications systems. Due to the long life of solid state devices, the replacement of tubes with devices of this type could save the DoD several million dollars each year in tube replace costs.
- A new heat-treatable aluminum alloy has been developed with excellent toughness and fatigue properties and exceptional resistance to exfoliation, corrosion, and stress corrosion cracking. We have estimated savings over life of the aircraft of $.8 million from substitution of this material just in the bulkhead of the A6 aircraft alone.
- The Air Force has developed a kit to quickly produce custom-fitted, shock absorbing, aircraft helmet liners. This foam-in-place method reduced the cost below conventional replacement of liners by 70 percent, resulting in expected savings of $6.2 million for FY 1974-1976.
- Using advanced solid state techniques (Complementary Metal Oxide Semiconductor/Metal Nitride Oxide Semiconductors), a radiation-hardened computer for missile applications with twice the performance of its predecessors will be fabricated at one-fourth the cost. This represents a cost savings of almost $300,000 per system.

b. Improve the Performance of Manpower and Systems

The most exciting work in the technology base is that which promises truly revolutionary concepts.

- The Navy has developed and has under test a model of a Small Waterplane Area Twin Hull (SWATH) ship that appears to offer the speed/endurance profile of catamarans but with superior sea-keeping capability.
- A class of electronic devices known as transferred electron devices (TEDs) has been developed and is being evolved to provide new signal processing efficiency.
- Superconducting electrical equipment is being developed that shows promise of greatly reducing the size and weight of ship propulsion machinery, making possible lighter, faster, more effective Naval ships and submarines.
- Charge coupled devices (CCD) are one of the newest technologies in the field of semiconductors. DoD has for several years supported the development of CCD night vision sensors with considerable success. CCD can also be used as a memory device for information and signal processing. We are exploiting the unique features of memory CCD to process complex signals in noise, e.g., processing of sonar or radar signals for ASW systems.

In fact, most of the technology base programs are not aimed at exploring revolutionary concepts but are directed towards achieving incremental improvements in areas of well recognized and important need for improved military capability.

- Computer software costs the DoD over $2 billion each year. It is too often behind schedule: difficult to verify, transfer and document; and too costly. An aggressive tri-Service appraisal of possible R&D thrusts in this area has been initiated.
- We are working at making our re-entry vehicles and high speed tactical missiles more resistant to erosion from adverse weather both by (1) developing new materials and (2) making it cheaper and easier to test erosion effects. By doing basic research on the nature of the hydrometeors that accompany rain, snow, and ice storms, their effects can be modelled in the laboratory.
- New aircraft structures--flaps, ailerons, major wing components, helicopter rotors--made of advanced fiber composite materials show great promise of sharply increasing the load-carrying capacity of aircraft, while at the same time reducing both aircraft weight and cost.
- Advanced aircraft engine technology in continuing development will further reduce engine size and complexity, while improving both fuel consumption and engine reliability.

The Services have identified several specific needs for higher performance that, if achievable, would obviously add new and important capabilities.

- A classical example has been the well recognized need for a better capability to conduct night warfare. This need has driven and continues to drive a wide spectrum of evolutionary work in night-vision and thermal-imaging devices.

- We are approaching the point where aircraft performance is more limited by pilot stress then by vehicle considerations. This has led to an aggressive program for finding ways to improve the pilot's stress tolerance, with one notable outgrowth being the tilt-back, high-acceleration seat.

Service operational experience has surfaced special characteristics that would be highly desirable in specific weapon systems, some of which require evolutionary development and some of which require revolutionary changes.

- We could better protect our personnel firing anti-tank and anti-aircraft weapons if we could reduce or eliminate the smoke from the rocket motors used in these systems. We are working to do so.
- We have a continuing need for increasing the depth limit of our divers for exploratory and salvage operations under the ocean. Research and development in both diving equipment and the physiology of diving have extended our depth capabilities from 250 to 850 feet.

2. Areas Being Deemphasized

In order to make room for important new thrusts within the resources available, we must reduce or discontinue some of our efforts. Such decisions are more difficult to implement than those concerned with new starts. Established fields of endeavor have acquired "constituencies" that have considerable inertia. To help us identify areas for reduction or elimination, we have asked the Defense Science Board to conduct a study during the summer of 1975. In the meantime, we have taken some steps to reduce work.

- New developments and new systems can produce substantial changes in requirements for other systems, obviating the need for some work. For example, the NAVSTAR Global Position System (GPS) will provide a means for frequent updating of inertial navigation systems, reducing our need for continuing work on lower drift-rate systems of this kind.
- A source of potential reduction in effort lies in areas where the technology is mature--that is, familiar to many and being diversely exploited. For example, the development of new seekers for guided missiles may be proliferating beyond an acceptable point. We are taking steps on a tri-Service basis to bring organization to this field with an anticipated reduction in the number of separate projects being pursued.
- There are areas where program reductions are indicated, based upon a combination of adequate engineering development capability in industry and a current lack of new ideas sufficient to justify further technology base work. Some work in the fields of radar and communication systems is in this category.
- There are also examples where substantial in-house efforts have become unproductive, although active work in the area is still necessary. The development of small arms is a case in point. In these cases the present in-house activities should be reduced to make room for new blood, with hope of infusing some new ideas into the work.

Finally, there are areas in which we are pleased to be discontinuing technology base work because the technology has been successfully transitioned to engineering development or production. Examples of such items are the helmet sights for aircraft, the second generation night vision equipments, and the equipments developed for dissipation of thermal fog.

D. FEDERAL CONTRACT RESEARCH CENTERS (FCRCs)

Federal Contract Research Centers (FCRCs) are a special form of nonprofit institutions that perform approximately three percent of the Department of Defense RDT&E program. We rely on the FCRCs for analyses and evaluations to assist in our planning, for system engineering and technical direction on many of our systems, and for research and technology development. While there is not a clearly defined distinction between FCRCs and other nonprofits, FCRCs tend to have the following characteristics.

- o They exist primarily to perform work for the Department of Defense.
- o They have no commercial affiliations and undertake little or no work for private industry.
- o They are usually funded by sole-source, annual contracts which implies a DoD attitude of responsibility for their continuance and stability.
- o They have continuous privileged access to data of the government and industry in their fields of work (in exchange for which they accept stringent limitations upon their scope of activities and range of customers).

1. Present FCRCs

The Department of Defense has gradually reduced the number of FCRCs under its sponsorship to the present nine:

- o Aerospace Corporation
- o Analytic Services Inc. (ANSER)
- o Applied Physics Laboratory (Johns Hopkins University)
- o Applied Research Laboratory (Pennsylvania State University)
- o Center for Naval Analyses (CNA)
- o Institute for Defense Analyses (IDA)
- o M.I.T. Lincoln Laboratory
- o MITRE Corporation
- o Rand Corporation.

I am fully aware of the concern that Congress has expressed in past years with regard to FCRCs and have held discussions with the Congressional staffs concerning actions planned in relation to FCRCs. I have directed my staff to do a comprehensive review and study of Defense-sponsored FCRCs to assess their continued utility, their management procedures and other aspects of their operation. The results of this effort will be available in the latter part of CY-1975.

2. FCRC Classification

To clarify the major functions FCRCs perform for the Department of Defense, they can be put into three categories:

a. System Engineering and Technical Direction (SE/TD) Institutions

MITRE Corporation and Aerospace Corporation were established in 1958 and 1960 to support the Electronic System Division and the Space and Missile Systems Organization of the Air Force, respectively. They were organized to fill the gap in

in-house organizations with extensive experience in large system development, integration and verification. Although the Air Force is the responsible agent for both these organizations, their services are sought and used by other Military Departments.

The Mitre Corporation's DoD effort involves approximately 1400 people. They have performed major roles in the system engineering and technical direction of almost all major Air Force command, control and communications systems during the 1960s and 1970s.

The Aerospace Corporation's DoD effort involves approximately 2200 people whose major function has been the system engineering and technical direction of the strategic missile, space and space-related efforts for the DoD during the 1960s and 1970s.

b. Studies and Analyses Institutions

Four institutions (Rand Corporation, The Institute for Defense Analyses, Analytical Services, Inc., and The Center for Naval Analyses) were established to provide objective analyses of critical Defense problems. This study and analysis support is provided by imaginative, innovative and competent staffs whose outputs give viewpoints that are independent and frequently different from those of the military staffs. These FCRCs have expertise to address the continuing problems of their sponsors in such fields as resource analysis and allocation, logistics, force structure, training, manpower, strategic policy, etc.

The Rand Corporation's DoD effort numbers approximately 550 people. Rand efforts are directed toward long range issues and their effect on defense policy. The major users are the Air Force and the Defense Advanced Research Projects Agency (DARPA).

The Institute for Defense Analyses has approximately 350 people involved in DoD work that can best be characterized as the coupling of highly skilled scientific and professional personnel to military problems and issues of concern to the DDR&E, DARPA and other Defense offices.

The Center for Naval Analyses has a DoD effort of approximately 360 people principally supporting the Office of the Chief of Naval Operations. About 50 of the professionals in this group are assigned to Navy Operating Commands. Force planning, force employment, resource management, etc., are typical topics for investigation by this institution.

Analytical Services, Inc., is a relatively small organization of approximately 85 people which conducts independent studies and analyses for the Air Force staff.

c. Laboratory FCRCs

These institutions are affiliated with and in some sense are extensions of universities. They were formed in the 1940s and early 1950s to undertake particularly demanding tasks involving technologies that were still confined to the universities at that time.

MIT Lincoln Laboratory has approximately 1700 people involved in defense work. Lincoln pioneered in digital computers and air defense technology and is now engaged in fields such as missile reentry, space communications, complex measurements, lasers, radars and other aspects of electronics.

The Applied Physics Laboratory (Johns Hopkins University) has approximately 2110 people engaged in defense work primarily for the Navy in the areas of missile systems, satellite navigation and satellite tracking systems.

The Applied Research Laboratory (Pennsylvania State University) has approximately 330 people involved in work for the Navy in the area of underwater systems, particularly torpedoes, and the related disciplines of acoustics, hydrodynamics, controls, structures and propulsion.

d. The Continuing Need

While FCRCs have changed their roles over the years, they have maintained leadership in areas of prime concern to their sponsors. Space and missile systems are still a major portion of our defense effort and the Aerospace Corporation is still required to support the many major programs in these important fields. The pioneering of Lincoln Laboratory in re-entry technology, missile discrimination, and space communications has placed the Department of Defense in a position of world leadership in these areas. The Department of Defense will continue to require the support of the finest studies and analyses people in the country. The FCRCs have demonstrated the flexibility and viability to provide a reliable adjunct to in-house DoD organizations. For at least the near future, we see no possibility of acquiring these special services elsewhere.

3. Recent FCRC Accomplishments

- Lincoln Laboratory completed the design of Experimental Satellites 8 & 9 (Survivable Satellite Communications System) and is now fabricating, testing and integrating hardware for a launch this year.
- Rand Corporation made an assessment of United States vis-a-vis Soviet Union technology progress in selected areas, providing clearer understanding in an area of national importance.
- Analytical Services, Inc., conducted a study on nuclear warhead fratricide in multiround attacks to provide more realistic planning considerations.
- The critical question of the Airborne Warning and Control System (AWACS) survivability in an European scenario was raised during the past year. An intensive effort by the Mitre Corporation developed conclusions that it was survivable. The results of Mitre's work have been widely used in NATO and the United States.
- The Aerospace Corporation developed a special program to test the operation of the Defense Support Program software against a complete spectrum of significant events. This test program has been accepted as the basis for determining operational readiness of the software.
- The Applied Research Laboratory (Pennsylvania State University) developed and demonstrated a new concept in torpedo propulsion.
- The Applied Physics Laboratory (Johns Hopkins University) developed a method of controlling a navigation satellite so that its orbit will not have to be updated by a ground station for months.
- The Center for Naval Analyses conducted in-theater analyses relating to the United States and Soviet naval activity during the recent Middle East War.

4. FCRC Funding

Funding concepts for the FCRCs have remained unchanged for a number of years. Some of the FCRCs originally received the bulk of their funding from single program elements identified with each organization. The motivation was to take maximum advantage of their high technical competence by leaving the detailed program planning to the organization itself, subject to approval by the sponsors. This funding concept is similar to those used by the Army and Air Force in funding in-house laboratory technology base work.

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Over the years these "line items" have been held to fixed dollar amounts or reduced through various Service and Congressional action. The amount of work that can be undertaken has declined--falling short of Service and Defense Agency needs. This has led, with Congressional approval, to funding the FCRCs also for specific tasks on a basis similar to the industrial funding of the in-house laboratories of the Navy. The levels of FCRC funding in this latter category are indicated in Table II.

The total allowable internal operating expenses of the FCRCs as a group is set each year by Congress with DoD given freedom to apportion this total among the FCRCs. The individual line items for each FRC are also approved by the Congress. Although line items are now a smaller fraction of the FCRC funding and the work done therein is negotiated in more detail with the sponsoring Service, the line item funding still provides them most of the latitude they need to operate a vigorous program. This source of funding is important to the spirit of the FCRCs and has been instrumental in many of their most successful programs.

5. A New Look at the DoD-FCRC Relationships

The advantages of FCRCs are formidable but I am not willing to maintain the status quo unless that turns out to be in the best interest of the Department of Defense. The study that I have commissioned for CY-1975 will explore a number of aspects concerning the sponsorship of FCRCs and their operation. I have directed my Deputy Director (Research and Advanced Technology) to go deeply into the viability of the basic FCRC concept and to address whether there is and will be a continuing need for the kind of services they provide. For practical purposes, this review will have to be conducted in light of the contributions and uses of each FCRC. Where we see a continuing need, we will evolve a long-range plan for management and control.

E. EPILOGUE

The technology base program is vital. Its over-all quality is high and its contributions to DoD, and to the civilian economy as well, are substantial. Its planning has improved markedly in recent years and its execution is being improved through aggressive but understanding management. I recognize that there is always room for further improvement and have indicated some steps that we will be taking during the year to continue our objective of giving the U.S. a well-organized, innovative technology base, well tied to DoD needs.

We cannot do the job alone, however. We need and earnestly desire the critical assistance of the Congress. We seek increased dialogue on any and all aspects of this program. The technology base thrives on new ideas and perceptions and, consequently, communications with interested members of Congress as well as with the public at large are to be encouraged. Part of the reason for urging more dialogue is that morale is an important factor in any creative undertaking. People who are doing good and vital work need to be told. Those that aren't need to be weeded out. We would like to hear from those who are critical of the technology base, explore the basis for their criticisms, correct impressions that are not valid, and capitalize upon those that are to further improve the program and the system.

In order to reverse the trend toward more in-house work, driven by inflation and the essentially constant in-house personnel force, we will have to reduce in-house personnel. Where possible, we will accomplish the reductions through attrition, but we may have to resort to reductions-in-force. The effect of these reductions, unless they are done very selectively by eliminating weak work areas in their entirety, is extremely disruptive. Such a course of action will tend to concentrate the reductions unevenly across the laboratories, with some significantly impacted and others largely untouched. This uneven geographical distribution will concentrate the economic impacts rather than spreading them equally but the alternatives of no reduction is unrealistic and that of across-the-board reductions technically disastrous.

Table II

FCRCs
Line Versus Non-Line Funding
(Thousands)
FY 1975

1 January 1975

FCRC	LINE	NON-LINE	TOTAL
Aerospace Corporation	11,500	66,651	78,151
Analytical Services, Inc.	1,500	854	2,354
Lincoln Laboratory	15,750	33,296	49,046
MITRE	7,450	35,247	42,697
RAND	9,000	7,390	16,390
Applied Physics Laboratory (Johns Hopkins)	---	49,782	49,782
Applied Research Laboratory (Penna. State)	---	7,140	7,140
Center for Naval Analyses	7,622	2,278	9,900
Institute for Defense Analyses	---	10,400	10,400

For the technology base to be productive it must be dynamic, i.e., we must have the capability to make new starts and to stop work with diminishing returns and must we exercise this capability. The Services have been historically reluctant to make changes, especially in any way that would materially change the funding at the program element level where changes would be visible to Congress. They fear that any increase is vulnerable to being cut, while any offsetting decrease makes the decreased program suspect and, therefore, also vulnerable to being cut. It is important that this not happen. We recognize there are needs for budget adjustments and that it is the responsibility of the Congress to determine the magnitude of such adjustments and to provide guidance relative to their application. We ask only to be consulted on the details of such adjustments to assure that our efforts to maximize productivity are not frustrated.

IV-2. CHEMICAL WARFARE AND BIOLOGICAL RESEARCH PROGRAMS

A. NATIONAL POLICY

The present U.S. policy on chemical warfare and biological research is based on Presidential decisions of 25 November 1969 and 14 February 1970. On 25 November 1969, the President renounced the use of lethal biological agents and all other methods of biological warfare and announced that the United States would confine its biological research to defensive measures such as immunization. He also reaffirmed the U.S. policy of no first-use of lethal chemical weapons and extended this no-first-use policy to cover the use of incapacitating chemical agents. On 14 February 1970, the renunciation of biological agents and weapons was extended to include

toxins. More recently, on 16 December 1974, the Senate gave its advice and consent to the ratification of the Geneva Protocol of 1925 and the Biological Warfare Convention of 1972. The Geneva Protocol prohibits the use in war of asphyxiating, poisonous or other gases. The Administration also renounced first-use of herbicides in war except use, under regulations applicable to their domestic use, for control of vegetation within U.S. bases and installations or around their immediate defensive perimeters, and first-use of riot control agents in war except in defensive military modes to save lives. The President signed these ratification documents on 22 January 1975. Since the United States has always adhered to the principles of the Geneva Protocol and had previously renounced all forms of biological warfare, no drastic changes are required in our research and development programs.

B. THREAT

The Warsaw Pact represents a serious potential threat to U.S. Forces in Europe and elsewhere. We believe that the Pact Forces, because of their research and development programs, weapons systems, production capability, training exercises, and military doctrine, are well-equipped and trained to operate in a toxic environment, either of their own creation or if used against them. It became clear during the October 1973 War in the Middle East that the USSR had provided the Arabs with extensive CW defensive equipment. There were, on the other hand, no indications that any offensive chemical capability was provided.

C. CURRENT PROGRAMS

Vulnerability analyses of our capabilities to meet this threat have identified deficiencies in our defensive posture. Our plan to meet these deficiencies is to (1) continue the efforts in the technology base, investigating defensive techniques for both chemical and biological materials and (2) pursue promising concepts through to development. We are focusing our efforts on development of adequate warning and defensive equipment, encouraging our Allies to follow a similar course. Our present programs are largely under single component management, by the U.S. Army. The Air Force has established a joint liaison office with the Army in order to utilize the basic technology developed by the Army to meet Air Force requirements. The Navy also participates in this joint effort.

Our biological research program is a defensive effort oriented primarily toward medical research for the development of vaccines, prophylactic and therapeutic drugs and other protective measures. We are developing a biological detection and warning system to alert our Forces when they have been attacked by biological agents so that proper protective measures may be taken.

Our chemical warfare program supports national policy to deter the use of chemical weapons by other Nations, and provide a retaliatory capability if deterrence fails. The emphasis is on providing the capability to warn of, withstand, and recover from the effects of a chemical attack against our forces.

A new delivery system, referred to as the binary concept, has been developed to overcome the safety, storage, and transportation problems associated with lethal chemical agents. In the binary concept, two relatively low toxicity compounds are produced, packaged, stored, and shipped separately. Only when actually fired in a dissemination system do the two compounds mix, forming the chemical agent. The lethal agent formed is exactly the same as that presently available. This is not a new agent, merely a new delivery system designed to overcome many of the safety problems associated with the earlier items and to update our retaliatory capability if deterrence fails.

In the technology base, we are investigating improved means of prophylaxis and therapy to protect against chemical agents. We are developing point-source detection and alarm systems, area scanning alarms, decontamination methods, protective clothing, masks, and other devices required for the physical protection of personnel and equipment. The screening programs to identify potential candidates for new agents continue. We are developing production methods and investigating new concepts for dispensing binary agents.

In the advanced technology area, where effort is end-item oriented, we have selected those items which show the most promise for improving the defensive posture of U.S./NATO Forces. We will continue development of area scanning alarms to provide advance warning of chemical attack and an active means of defending against such an attack. In the biological defense area we will develop efficient, cost-effective detection and warning devices together with vaccines and therapy for viral diseases. Concurrently, we will continue the development of binary weapons including the present artillery rounds and an air-delivered munition needed to modernize our retaliatory capability.

Proposed funding for FY 1976 to perform the above efforts is divided as follows: Sixty-three percent of the funding is devoted to defensive programs and fifty-three percent toward development of an adequate technology base.

	$ in Millions	
	Technology Base	Advanced Technology
General Research	7.3	0
Defensive Programs	16.0	14.1
Deterrent Programs	2.0	7.7
Test and Evaluation	0	0.8
Subtotal	25.3	22.6
TOTAL	47.9	

There are areas where new technology is still needed to improve our defensive posture. We need to develop protective clothing and support equipment that does not degrade the performance of the individual soldier and to build reliable, cost-effective, large area alarms for both biological and chemical agent detection and warning devices. Manufacturing and process technology and logistics technology refinements are ancillary developments needed to field optimal defensive equipment. We have designs but no installed equipment to prove the defensive hardware developed for ships, tanks, and facility defense.

IV-3. THE HIGH ENERGY LASER PROGRAM

A. INTRODUCTION

Scientists who had been studying the properties and motions of high temperature gases in order to understand ICBM re-entry phenomena and rocket engine technology opened the door to high-power laser technology. They found that the way to attain the necessary power levels was the rapid removal of the waste energy from the laser. This led to the development of gas lasers using high-speed flows through the laser cavity. This discovery is another example of how research in one area of interest can lead to a major contribution to another, seemingly unrelated, area.

About six years ago our exploratory development program, under the sponsorship of the Advanced Research Projects Agency (ARPA), produced the first gas laser. DARPA continues to play a substantial role in this program, developing technology for future laser applications, which have not matured sufficiently to be included in the Service programs.

B. PROGRAM STRUCTURE AND FUNDING

All three Services and DARPA have on-going high-energy laser efforts. It is rather unique to find an RDT&E program which is not managed by a single Service. But, because of the wide diversity of potential applications in each of the Service's mission areas for this relatively new field of technology, we have determined that it will be more effective in the long run to have these separate programs.

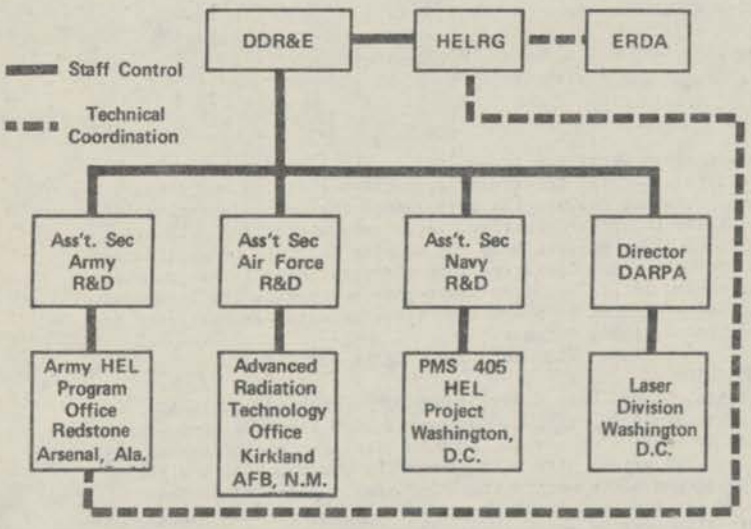
As a result of the separate programs in the Services and DARPA, we have taken a much stronger coordination and guidance role in my office than is normal in DoD RDT&E programs to insure that the goals are met in the most efficient manner with a minimum of unnecessary duplication. We do this in three ways: (1) by direct contact between my staff and the program managers from each of the DoD components; (2) through the normal planning, programming and budgeting cycle; and (3) through a special

advisory body called the High Energy Laser Review Group (HELRG) which was constituted in September 1973 and reports directly to me. This group has been meeting quarterly. It is chaired by one of my Assistant Directors who has an intimate knowledge of laser technology, includes the four laser program managers, and also includes four scientists and engineers chosen from the scientific community for their knowledge in this field.

C. CONCLUSION

I feel that our high energy laser technology has potential for adding a dimension to our defense posture. I also feel that our progress is yielding, and will continue to yield, important spin-offs in nonmilitary applications. High-power electric lasers are being used for commercial metalworking. Lasers may also be used to enrich uranium for nuclear reactors, for electric power generation plants, and in developing controlled thermonuclear fusion devices.

HIGH ENERGY LASER R&D PROGRAM MANAGEMENT



IV-4. DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

A. THE DARPA ROLE

The Defense Advanced Research Projects Agency has a position of special importance in the overall Defense RDT&E Program. I consider it to be the "corporate research laboratory" of the Department of Defense. It generates major new thrusts in military capability by undertaking speculative high risks but extremely high pay-off programs which address problems of national importance. It provides DoD with flexibility, with a road map into the future and with a high sense of technological initiative which impacts all areas of importance to our future national security.

In order to maintain its flexibility and means to address new issues in a timely fashion, DARPA is kept to a small staff of 55 technical people who work closely with the Service laboratories for technical monitoring and contracting, as well as planning and evaluation of sponsored research. This close liaison with the military is of great value for assuring that the results of DARPA investigations have the maximum impact on Service programs at the earliest possible time.

DARPA is organized and managed to reap the greatest possible return on our investment of R&D funds. This is done principally by the mechanism of transferring management responsibility for the further

development of new ideas as soon as practicable. Within DARPA, each basic research component is coupled to a corresponding exploratory development effort which exploits promising research results of the high priority research issues to be investigated. As an example of this type of interaction, I should mention the basic research on the properties and design characteristics of brittle materials. When the basic knowledge of the behavior of ceramics under dynamic loading was developed, DARPA proceeded to exploit the new capabilities in practical applications to light weight armor and turbine power plants for tanks, trucks, and similar vehicles. These new engines will operate at a very high temperature which implies greatly improved efficiency, smaller size, and lighter weight. Also, ceramic engines will be inexpensive to produce and maintain. This technology therefore offers a high return from what was in the beginning a speculative research effort.

When ideas have been examined for their technical feasiblity and military utility in DARPA's exploratory development program, the successful results are transferred to the appropriate Service for further development along Service peculiar lines. When a particular technology, has been developed far enough to assure that militarily relevant developments can be achieved, the responsibility for detailed design and optimization for particular weapon applications becomes the responsibility of one of the military services. The result of this process is that DARPA does not stay in any particular field for long periods. The average length of a DARPA project is three to five years: enough to create a body of viable knowledge in the field which can then be exploited by the Services.

The DARPA approach works very well, as evidenced by past contributions. DARPA launched some of the first U.S. satellites, created the scientific base for ballistic missile reentry and defense, and developed the technology of monitoring nuclear weapons testing. These activities lie at the root of our national ability to negotiate weapons test ban treaties and strategic arms limitations. The understanding of plasmma physics which grew out of DARPA's reenty physics research provided the scientific capabilities which led to the development of high energy lasers, and the radar technology developed in those early years serves the country well in countless other applications, so you see that the "side effects" of exploratory research can and do have very far-reaching importance.

B. NEW ASSIGNMENTS

For the coming fiscal year I am requesting about a two percent increase in real terms in the DARPA budget. In total, I am requesting $226.6 million for FY 1976, $56.7 million for 197T and $259.7 million for FY 1977. The two percent addition, which is over and above inflation, is necessary to permit DARPA to carry out several new assignments which are of critical importance to the national defense posture. Let me describe for you some of these new assignments:

1. Undersea Surveillance

In the area of submarine detection and tracking by long-range acoustic systems, I have directed DARPA to initiate a new effort to establish and quantify the limits of attainable detection sensitivity and localization accuracy. As a result of the latest SALT agreement at Vladivostok, this area of ASW capability has assumed even greater importance. DARPA, in conjunction with the Navy, has recently demonstrated important new capabilities which not only are greatly increasing our present capability to find and track submarines, but which also indicate that further significant gains can be made. An extension of the data processing capabilities at DARPA's Acoustic Research Center will be involved, as well as further expansion of the Center's data derived from SOSUS and portable hydrophone arrays. The progress to date is impressive. For example, a reduction of submarine location error has been achieved, and the derived understandings, as well as the operational capabilities of implemented techniques are of great value.

2. Computer Memory

I have recently concluded that the progress and direction of computer memory development in this country are not sufficient to meet long-range Defense requirements in this area. The present commercial trend toward microprocessors will not serve our projected needs in areas such as simulation and intelligence information processing. There are several revolutionary scientific concepts to be exploited which, if successful, could lead to breakthroughs in mass memory technology. Emerging technologies make it possible now to conduct the relevant research to measure and exploit phenomena at the molecular scale. In addition, it will be necessary to devise new concepts which will deal with the organization and systems aspects of using these new technologies. I have assigned to DARPA the responsibility of doing the research to provide for the advanced computer memory needs of the 1985-95 time frame. The impact of successful research in this area could be very large, bringing to the DoD new capabilities in intelligence analysis, command and control, automatic data handling, real time signal analysis, scientific modeling and calculation, as well as helping to create the university and industrial base necessary to maintain the U.S. preeminance in this important area. I have also asked DARPA to take the lead in organizing the technical thrust of a laser technology program.

C. MAJOR FY 1976 THRUSTS

The DARPA program is continually evolving to keep abreast of new scientific developments or opportunities and to measure for us their likely military potential. As we move through the budget cycle, I review and approve the program of research three times each year, making fresh assignments such as I have just mentioned, as well as receiving DARPA's own recommendations of project assignments. Here are examples of the new thrusts which are keeping DARPA in the forefront of Defense Research and Development.

o DARPA has pioneered the development and application of mini-RPV technology, proving the utility of these small airplanes and exciting a strong military interest in the subject. Since the Services are taking over development of the reconnaissance and laser target designation Mini-RPVs, the DARPA program will now focus on decoys and standoff weapon applications of the small, low-cost airborne system technology. The basic Mini-RPV aircraft technology which makes low cost, long endurance loiterable strike systems potentially feasible has many promising applications. Such systems might be used as deployable mines, as low-cost decoys, as low-speed drones, or as strap-ons, using wing-engine components, to give existing missiles a loiter capability.

o Manned strategic aircraft are a significant threat addressed by DARPA's experimental program to evaluate two new approaches to worldwide detection and tracking.

o The U.S. is heavily dependent on imports of many critical materials and this situation is expected to intensify in the future. Furthermore, new technology can have a profound impact on the projected use rate of certain materials. Therefore, DARPA is embarking on an investigation on substitution and synthesis of critical materials which are in short supply for DoD applications study. There appears to be many opportunities to capitalize on research in this area: the successful DARPA work on turbine engines, substituting readily available ceramic materials for scarce, expensive superalloy, is an outstanding example. DARPA will extend this effort with further research on fabrication and other applications of ceramics.

o Uncertainties in the geodetic and gravitational parameters of the earth contribute significantly to the total CEP of ballistic missiles. DARPA is addressing this problem by developing instruments and techniques to refine our knowledge of the shape of the earth and the local anomolies of the gravitational field. The geoid is being refined by satellite radar altimetry. A satellite-to-satellite tracking system is also being developed to improve knowledge

of the gravity field. Finally, a new concept in direct gravity gradient measurement instrumentation is under development.

o Technological advances have greatly increased the cost-effectiveness of computers for non-numerical data processing. However, DoD software--because military command and control operations are much more complex and interdependent than pure mathematical calculations--is extremely complex and now costs much more than the hardware on which it runs. Software tools to facilitate effective software production will be addressed by a new joint DARPA-Air Force project in Software Production Technology. This effort is specifically designed to permit widely available sharing of programs, methods, and protocols to ensure that major proven software programs will be available when needed.

D. SOME FY 1975 RESULTS

To show you why I view DARPA's portion of the Technology Base Research and Development effort as a long-range asset to national security, and to give you some examples of the return on our investments in this area I have selected a few recent important accomplishments of the DARPA program to discuss with you. They show high promise for the future, but they also demonstrate that the DARPA work results in successful applications of modern technology in Defense operations.

o DARPA has successfully developed and tested a family of Mini-RPVs, including the antiradiation RPV called Axillary, the STAR vehicle for Navy use to extend a ship's surveillance horizon, and the AEQUARE vehicle which folds into a missile case for rocket deployment from the ground or an aircraft. This aircraft deployment extends the operating range of small RPVs from 50 to several hundred kilometers. Through cooperative programs with the Army, Navy, and Air Force in FY 1975, the basic Mini-RPV technology demonstrated by DARPA in FYs 1973 and 1974 was transitioned into Service-oriented applications.

o Successful research on the chemistry and fabrication of a special type of glass has lead to the construction of laboratory versions of a storage battery ten times as powerful for its weight as conventional lead-acid cells. In this new concept, the glass plays the part of the acid electrolyte while the lead plates are replaced by sodium and sulfur.

o Seismic research under DARPA's VELA project provided basic technical inputs to the recent Test Ban negotiations in Moscow which resulted in an agreement to limit underground nuclear weapon tests. Without the availability of this body of technical data, it would have been impossible to assess the verification potential for such a treaty.

o In the area of automatic computer programming, DARPA has developed a system for transferring and utilizing a data base on a new computer. The method is to describe the data base and its data structures in a high-level data base description language and to give the description to a program that automatically programs for the new machine. The data itself can then be transferred to the new machine. This new capability in software sharing will directly impact the multi-billion dollar costs of software generation in the DoD.

o In the past year ARPA has completed its examination of DoD-related issues of expanded technology exchanges with the Soviet Union, and developed new methods for analysis of the impact of Soviet acquisition of U.S. technology.

In this brief overview I have summarized activities of the Defense Advanced Research Projects Agency. DARPA is a unique research organization and it bears a corresponding heavy responsibility. DARPA has made many highly important contributions to the Department of Defense in the past and it will continue to play a critical role in developing and evaluating defense options. I depend on DARPA to provide the fresh and unbiased foresight and the technical evaluation of the future which are so critical to national security.

V. STRATEGIC PROGRAMS

A. INTRODUCTION

The purpose of our strategic R&D program is to ensure that our future strategic capability will continue to provide deterrence. We want always to have strategic forces sufficient to deter any nuclear attack--or coercion by the threat of nuclear attack--on the United States or its allies.

As illustrated by the dramatic changes in Soviet strategic forces during the past year, the strategic environment is constantly evolving. Although arms limitation agreements already signed and those currently in process have produced fundamental changes in our assessment of the future strategic environment by imposing constraints on Soviet and U.S. strategic forces, the great and growing disparity in missile throwweight between our two countries is disquieting. Soviet strategic programs have a growing momentum both in quality and in number. We see evidence that the Soviets are about to deploy an entire set of advanced technology strategic forces. They are continuing flight tests of several sophisticated MIRV configurations, have all their new land based systems ready to go operational, have flown their new submarine missile on a 4,200 nmi trajectory, and continue development of other strategic weapons systems across a broad spectrum including intercontinental bombers, massive over-the-horizon radars, and new ABM components. So, while steps have been made toward a new era of mutual restraints and arms limitation, I believe that we should continue to pursue promising technological options in our strategic programs both in order to preserve our capabilities and to encourage the Soviets to negotiate future arms limitations by convincing them of the futility of attempting to surpass us.

To preserve the essential equivalence of our strategic forces in the face of this impressive Soviet momentum is our continuing challenge. The course we have chosen in our RDT&E programs is to undertake deployment of only a very few systems while keeping open a broad spectrum of viable options for other systems, exploiting our technological advantages whenever possible and not necessarily trying to compete with the Soviet Union in areas where they might have an advantage. In strategic systems programs this approach means that we may balance the pronounced missile throwweight advantage of the Soviets not by trying to build up our own throwweight through only brute force approaches but investigating how, through technology, we can maximize the effectiveness of our lesser payloads. We may do it by introducing more flexibility into our system through better response and control, by obtaining guaranteed survivability by going mobile, or by enhancing our destructive power while simultaneously adding to its precision through improving accuracy. We must keep in mind, however, as I reported to you last year, that our technological lead is ephemeral and we cannot, in the long term, expect our technology to counterbalance their throwweight advantage.

Of all the strategic options open to us, accuracy seems the most broadly applicable, and is receiving the most attention. Accuracy is the crucial tool needed for executing limited options: it allows high probability of kill while minimizing collateral damage. Accuracy is a most powerful driver of destructive force. Improved accuracy has an exponential effect on the destructive power of a weapon against hard targets.

The Secretary and I have discussed our accuracy programs with you before. We are pursuing a family of them including improved inertial systems and terminal systems. I consider all of these approaches

potentially viable, but we must gather much more cost and performance data through vigorous feasibility demonstration programs before we can make deployment decisions.

1. SALT Considerations

a. Major Vladivostok Provisions

Since my last report to you a major event has occurred -- the signing of the Vladivostok Agreement. While many specific questions remain to be addressed in follow-on negotiations, there were significant broad agreements reached at Vladivostok concerning the framework for a SALT II Agreement.

It was specifically agreed that the aggregated number of ICBM launchers, SLBM launchers and heavy bombers will be limited to 2,400, with a limit of 1,320 on the number of MIRVed missiles. Within these limits there will be freedom to mix the specific delivery vehicle launcher components. Further, the agreement will ban additional silos and limit to 15 percent any increase in the dimensions of ICBM silos which existed in June 1972.

b. Implications

The agreement represents a major breakthrough in that an upper limit on strategic delivery vehicles has been agreed to. The MIRV and aggregate limits are sufficiently high, however, to allow the Soviets to continue with the major portions of their ICBM modernization programs. This could force the United States to accept a large asymmetry in throwweight or require us to intensify deployments of new systems at significantly increased cost, to keep that asymmetry at an acceptable level.

c. Impact on U.S. RDT&E

Major development programs (TRIDENT and B-1) can continue as well as those for the cruise missile and advanced ICBM. Improvements in ballistic missile yield and accuracy assume increased importance--a reservoir of high technology which will permit us to continue to counterbalance the significant Soviet throwweight advantage. The agreement permits the Soviet threat to our land based missile force to continue to increase: thus, we need to continue RDT&E options to preserve the deterrent value of this force. The MIRV limit of 1,320 presents us with a special subset of problems. Within the limit, should we develop improved capability for TRIDENT where survivability is better than for ICBMs but equivalent accuracy is more difficult to attain? Or, should we develop an improved ICBM with greater throwweight for fixed silo and/or mobile applications, and reduce MIRVs in other systems? These are illustrative major questions which thread through this statement but for which we do not yet have conclusive answers.

2. Strategic Initiatives

Before discussing specific strategic programs, I would like to briefly review the strategic initiatives which were submitted to the Congress last year. These efforts were, and remain, option developments to provide us with a ready posture to respond quickly if necessary, but there is no commitment to produce or deploy them, except for the Mk-12A, a higher yield warhead for MINUTEMAN III. Authorization for initial procurement of the Mk-12A is being requested for FY 1977.

Advanced ICBM - The pace of this program has been significantly reduced as a result of our judgement concerning the time scale of the threat to land based ICBMs and the overall constraint in fiscal resources.

Cruise Missile - A careful assessment of requirements and the available technology has resulted in some reorientation of this effort with some savings in FY 1976 versus our earlier forecast.

Ballistic Missile Yield and Accuracy - Programs for improving the yield and accuracy of ICBMs and SLBMs are continuing. We have, however, reduced the pace of the effort with respect to SLBM accuracy in recognition of the very difficult issue of choosing the most appropriate technical solutions to this problem.

Advanced Tanker - Our recently completed Bomber Study has convinced us that the tanker problem (for strategic forces) is not as serious as some had expected. This program has therefore been reduced for FY 1976.

Improved SSBN - The Congress disallowed our request in FY 1976 and our reassessment indicates that we had proposed too ambitious an effort. Accordingly, our request in this area for FY 1976 has been reoriented to a subsystem technology program at a level significantly below the forecast last year.

B. OFFENSIVE SYSTEMS

Our offensive systems are often described as retaliatory systems, but this places too little emphasis on their basic function of deterrence. They are able to retaliate under all conceivable attacks on them and inflict damage which would be clearly unacceptable to any aggressor. Thus, by being able to retaliate, they serve to deter such attacks, and need never be employed in retaliation.

In the past, emphasis has been placed on deterring an all-out strike "from the blue," by a promise of assured destruction in response. But the assured destruction capability by itself may actually increase the possibility of a limited attack, in that a massive response to a limited attack is not credible, and hence not an adequate deterrent to such an attack. Thus, in addition to continued attention to the survivability and penetrativity of our offensive forces in an all-out exchange, we have recently started to emphasize those force characteristics needed to provide deterrence across a broad spectrum of potential aggressions.

We continue to depend on the TRIAD of submarine-launched ballistic missiles (SLBMs), land-based intercontinental ballistic missiles (ICBMs) and bombers in order to present an attacker with such a diversity of survival modes and penetration modes that he cannot plan any attack which will significantly reduce our overall force effectiveness.

At the end of each of the program discussions which follow funding requested for FY 1976 is shown parenthetically.

1. Sea-Based Ballistic Missiles

The sea-based portion of our strategic deterrent force currently consists of 41 Fleet Ballistic Missile submarines (SSBNs) and their POLARIS/POSEIDON missiles. The 31 newest SSBNs of our fleet are being modified to carry the POSEIDON missile. Phase-out of the older POLARIS A-2 missiles is now complete and we have at sea only the POLARIS A-3 and the POSEIDON C-3 missiles. We believe that our sea-based force is currently an invulnerable and particularly effective deterrent. We dedicate ourselves to whatever effort is necessary to keep it that way.

The Soviet Union continues to increase its already high level of effort to improve anti-submarine warfare (ASW) capabilities. Consequently, their ASW potential will inevitably improve in waters where our alert missile submarines must now operate because of limited missile range. As I mentioned in the past, it is impossible to predict when a significant threat to the survivability of our SSBNs will arise. There are simply no reliable indicators we can use. It is therefore our goal to design our future systems in a manner which

makes them as insensitive as possible to threat specifics. We believe that any foreseeable advances made by the Soviets in ASW capability can be mitigated by providing longer-range missiles which greatly increase available operating areas for our ships, and by vigorously pursuing broad programs in ship technology in an effort to realize reduced detectability and improved effectiveness.

a. TRIDENT

In order to deal with the uncertainty over future Soviet ASW capability and the long lead times for intelligence and for developing and deploying a new strategic weapon system, we have been developing TRIDENT. The TRIDENT submarine and TRIDENT I long-range missile programs -- now on a schedule to permit an initial operational capability (IOC) in FY 1979 -- provide us the major improvements in operating area and missile performance we seek. We are requesting $83.8 million in RDT&E to continue orderly development of TRIDENT submarine systems. Production of the TRIDENT submarine has been approved. A lead ship construction contract was awarded in mid-1974. We are also requesting $735.5 million for continuing development of the TRIDENT I (C-4) missile and the associated weapons subsystems.

We now have very high confidence that the C-4 will meet or exceed its 4,000-mile range specification. Its characteristics will permit CONUS basing of our submarines without sacrifice of alert rate and will permit more than a four-fold increase in available operating area. TRIDENT I is also being developed to be compatible with the current POSEIDON SSBNs, and the plan is proceeding to backfit the TRIDENT I missile into POSEIDON SSBNs, commencing in FY 1979, thereby providing increased operating areas for these ships as well as for TRIDENT submarines.

One of the options being provided under the TRIDENT program is a maneuvering reentry vehicle. The Soviets are continuing major development efforts in ballistic missile defense. We feel that a hedge is needed against the possible rapid appearance of a deployed system having an ABM capability, or of a system whose capabilities are ambiguous. Such a hedge is provided by a simple maneuvering RV. This maneuverer is designed strictly to follow an erratic flight path to evade an interceptor missile. It is funded at $45.6 million within the TRIDENT program. (FY 1976 $819.3 million).

b. FBM Systems

For the Fleet Ballistic Missile (FBM) Systems program element, we are requesting in FY 1976 a total of $65.8 million, somewhat increased over last year. Within that element we are continuing the development of improvements to SSBN sonar and navigation subsystems, with the objective of increasing submarine survivability ($14.8 million). Funds for advanced development efforts to provide the technology required for significantly improved accuracy are also included in this program element ($51.0 million). This is a reduction from what we had previously planned for this effort. The reasons for the reduction are twofold: (1) With the confident expectation of high accuracy trajectory measurement of NAVSTAR, we are now planning for NAVSTAR support for this effort rather than on a separate dedicated satellite system. (2) The inherently more difficult tasks of achieving high accuracy with SLBM systems and the lower available yields for existing and near term SLBMs make it advisable to proceed at a more deliberate pace in examining the spectrum of possible technological options to improve SLBM accuracy (FY 1976 $65.8 million).

2. Land-Based Ballistic Missiles.

Given the apparently imminent Soviet deployment of MIRV capability and the accuracy potential inherent in ICBMs, there is little question that our present land-based missiles deployed in fixed silos could be in jeopardy by the mid-1980s. The severity of this threat definitely has increased in the last year, and my concern has consequently deepened. The Soviets' uncertainty about the actual hardness of our silos and the fact that we could in principle launch our ICBMs upon unequivocal warning should continue to deter them from attacking our ICBMs. However, we prefer that deterrence not be based on fallible calculations and political judgements about an appropriate response mode. Thus, although a high confidence strike against our silo-based forces is difficult to achieve, it is not impossible, and we cannot overlook the potential vulnerability of our land-based missiles. As long as the Soviet throwweight might become great enough to support this capability, we need to continue a set of viable options. We also need options to retain essential equivalence should the Soviets embark on a massive MIRV deployment. Three distinct courses of action are available to us: (1) to improve our present MINUTEMAN force; (2) to continue a paced development of the technology for new land-based missiles, and (3) to continue Site Defense development to provide a viable active defense option.

a. MINUTEMAN.

We propose to continue our programs to improve MINUTEMAN by upgrading the hardness of the silos and developing selected improvements in missile accuracy and payload yield in order to obtain a more versatile capability than is available to us at present. These improvements will give a greater destructive capability to the missile force remaining after a Soviet first strike and will provide the capability to place at risk a wider range of selected targets. Thus, we are continuing to support, as an initial counter to Soviet qualitative improvements, the selective improvement of the quality of the present MINUTEMAN.

Our FY 1976 RDT&E request for MINUTEMAN is $122.7 million. Of this $33.8 is for force modernization development which includes upgrading the hardness of the silos and the Command Data Buffer to provide rapid remote targeting of MINUTEMAN III. In February of this year, we completed the full upgrade of a 200 missile-wing concurrently with the deployment of MINUTEMAN III and Command Data Buffer. Our development effort for additional wings is continuing to support the completion of the upgrade program.

We are continuing to improve the accuracy of the MINUTEMAN III in FY 1976 with the expenditure of $40.6 million. The effort involves improvements in the targeting tapes (through alignment and calibration procedures) that provide the input to the guidance system to allow it to control the missile flight. This improved software will be appropriately flight tested to provide confidence in improved accuracy.

In conjunction with the Energy Research & Development Administration, we are developing a higher yield reentry vehicle for the MINUTEMAN III. This effort requires $36.3 million in FY 1976. By miniaturizing the present MINUTEMAN III Mark 12 arming and fuzing system, more space and weight are available for a higher yield warhead without changing the physical characteristics of the Mark 12. The new reentry vehicle, the Mark 12A, since it retains the weight and shape of the present reentry vehicle, will require a minimum of flight tests prior to deployment. We expect the yield of the new warhead to be greater than that of the present reentry vehicle.

When all MINUTEMAN flight tests were concentrated at Vandenberg AFB on the West Coast in 1970, we were unable to perform down range tracking as we could at the Eastern Test Range. We were therefore no longer able to measure the performance of the guidance system during powered flight by comparing its indication of position with accurate tracking data. This problem will be solved when the development of the highly accurate Missile Performance Measurement System (MPMS) is completed. We are requesting $12.0 million in FY 1976 for the MPMS. This system, actually a very precise inertial measurement system, will be carried on board the MINUTEMAN III missile and measure the performance of the normal guidance system. The MPMS also provides a guidance system technology base to support the development of future ballistic missile systems (FY 1976 $122.7 million).

b. Advanced ICBM (M-X).

The M-X program provides the technology options for future ICBMs. It emphasizes improved guidance and propulsion, greater throwweight, and examination of alternate basing modes. This program is a continuation of the advanced ICBM strategic initiative which was begun in FY 1975, but we are now moving at a somewhat reduced pace than we had originally planned. The three areas of emphasis noted above reflect our principal technological concerns about the kind of ICBM we ought to have for possible deployment in the mid to late 1980s.

Added throwweight is the principal feature of the M-X designs. It should be noted that this increased payload, while impressive on a per missile basis, would have no appreciable effect on the projected ICBM throwweight asymmetry between ourselves and the Soviets. Basing modes being considered include existing fixed silos and mobile land or air-basing. While existing silos may become vulnerable in the future, the attractive features of least cost, good accuracy, excellent command and control, and least operation and maintenance cost may make it advisable to plan for initial basing in these silos with subsequent rebasing to a mobile mode if required by threat evolution. This more lengthly time scale will also allow us to address the more difficult guidance problems associated with mobile basing modes.

Our major efforts in FY 1976 are associated with guidance and control ($20.0 million) and propulsion ($14.2 million) which are relatively independent of the basing mode. Basing mode studies and the advanced development of their critical components, plus other technical support, will require $7.0 million in FY 1976 (FY 1976 $41.2 million).

3. Bombers.

a. The Joint Strategic Bomber Study.

The viability of our strategic bomber forces into the 1980s and beyond has been the subject of a year-long study conducted under my supervision. The study objective was to examine a wide set of bomber force options in order to shed light on the cost-effectiveness of various kinds of forces in an evolving threat environment.

The study revealed that bomber force cost-effectiveness was crucially dependent upon relatively few factors.

- For all forces, survivability against an SLBM patterned attack depends most upon reaction time. Dispersed basing, threat levels, air vehicle hardness and speed are substantial but secondary considerations.
- Bomber penetrativity against advanced fighters (having look-down shoot-down capability) depends most on ECM effectiveness. Yet, because of the low altitude supersonic SRAM which can penetrate terminal SAMs and suppress fixed barrier SAMs and because of warning receivers which permit evading mobile SAMs, bomber effectiveness is not significantly affected by SAMs.

o Cruise missile penetrativity is good against fighters because fighters are overwhelmed by the large numbers. Thus, the cruise missile is a potentially powerful complement to the penetrating bomber.

Copies of the Bomber Study have been provided all concerned Congressional Committees, but a precis of study results can be provided here in a few sentences.

Several bomber forces were investigated, representing different approaches to bomber effectiveness. An attempt was made to include each type of force for which there was serious advocacy, but realistic mixes of aircraft types rather than pure forces were employed. Each of the forces was sized so that they were all of equal cost over the period from 1975-1989. Forces subjected to detailed examination included several levels of B-1's, re-engined B-52's, stretched FB-111's, B-52G's and H's (both as penetrating bombers and stand-off cruise missile carriers), and wide-bodied transports, such as the Boeing 747, as stand-off cruise missile carriers exclusively. The Soviet air defense environment expected to be countered included Soviet AWACS, look-down shoot-down fighters, and low altitude SAM's.

Major observations were as follows:

o Of the equal-cost forces examined, those containing B-1's performed substantially better. The low-flying, nuclear-hard B-1, with its high quality ECM, out performed all other vehicles by a wide margin.

o The B-52's, with both survivability and penetrativity impaired against advanced threats, do not compete with the B-1 in cost-effectiveness. Furthermore, O&M costs of B-52 forces are higher than the others. Yet when mixed with forces including B-1's, the B-52's, despite sustaining heavy attrition in accomplishing their mission, are sufficient in number so that their overall force-effectiveness is maintained even against the threat through the late 1980's.

o The stretched FB-111 is deficient in range payload, and ECM. The stretched FB-111 force is markedly cost-ineffective compared to all other forces.

o An all-stand-off cruise missile force (using wide-bodied transports) is not promising because it invites attack on the relatively few weapons carriers before their cruise missiles can be launched.

o The KC-135 tanker, previously thought to be too vulnerable to SLBM attack to remain viable through the 1980's and beyond, showed itself to be adequate, when teamed with the B-1, against the SLBM threat. The issue of tanker survivability was thus addressed and laid to rest by this study.

o The need for bomber defense missiles (to defend bombers against fighter and SAM attacks) was shown to be further down-stream (beyond the 1980's) than was thought by some. We feel that no big expenditures in this area are as yet warranted and have adjusted our programs accordingly.

o The ECM suites for both the B-52 and the B-1 were shown to be effective, but the extreme sensitivity of the performance of the penetrating bomber to the quality of its ECM was manifest. This sensitivity is so crucial that continuous reevaluation of ECM interactions are required over the long term. Furthermore, we believe viable alternatives to the penetrating bomber must be pursued. Our cruise missile programs, which I will discuss later, constitute such an alternative, and we are searching for others.

o Supplementary analysis using bomber study data has examined cost-effectiveness at lower threat levels. At threat levels approximating those of today and extending until about 1980, modified B-52s remain cost-effective. For the threat of 1980 and beyond, however, the B-1 dominated forces become most cost-effective.

At the request of Senator Stennis, the GAO has been doing an independent assessment of the bomber study, evaluating the input assumptions, analysis methodology, and completeness. We have been working with the GAO since last summer. In particular, we have been examining the impact of different force levels and difficult threat projections. Although GAO's evaluation is still in progress, we believe the fundamental findings of the bomber study will remain unchanged.

In addition to the specific observations cited above, one of the principal results of the bomber study is that it has given us considerable insight into bomber performance and the factors which make bombers effective. We are utilizing these insights to evaluate other bomber force mixes in order to be certain that we achieve our strategic goals at lowest cost.

b. B-1

As you know, the first B-1 is now well into flight test. It is doing well. Most of the substantive data we can gather and assess continue to reaffirm that the B-1, as expensive as it is, will be a cost-effective weapon system into the 21st century. It offers substantially improved pre-launch survivability by virtue of its reaction time, speed and hardness. As a weapons platform it will be able selectively to penetrate with SRAM and gravity bombs. The flexibility and control afforded by the B-1 make it a weapon for high-confidence execution of limited options, as well as for delivery of conventional weapons when appropriate. The spectrum of operational options made available to us by the B-1 will make it the most versatile segment of our strategic deterrent force. As a modern, complex, high performance air vehicle, it is the epitome of our technological superiority--a reminder to all that power and influence in the world are not determined by numbers alone.

Since B-1 development was initiated in June 1970, the program has been under regular management review. During 1974 we accomplished a major restructuring of the program as a result of a comprehensive review initiated by the Secretary of the Air Force. As a result of the restructuring we should now be able to resolve, through an orderly phasing, the inherent conflicting demands of the fly-before-buy philosophy with program continuity into production. I believe that the Air Force has been conscientious and constructive in its approaches to cost-cutting and savings. For example, the idea of a crew escape capsule has recently been abandoned in favor of ejection seats. Numerous other changes of less but not inconsequential value are also being made.

In terms of significant development milestones to be accomplished, FY 1976 promises to be the most active year in the programs. Air vehicle #1 will accomplish a full year of flight testing to demonstrate the performance of the aircraft. Proof-load testing will be completed on air vehicle #2, and it will be prepared for flight testing at the end of the fiscal year. Assembly of air vehicle #3 will be completed with the offensive avionics installed, and flight testing will begin.

The last of twenty three YF101 engines will be delivered in FY 1976 and qualification testing involving 10,000 engine test hours will be completed. Fabrication and integration of the defensive avionics will be accomplished in preparation for ground testing. Design verification tests of the aircraft for fatigue will begin.

Fabrication of the fourth air vehicle, the pre-production prototype, to be started in FY 1975 will continue into FY 1976. This aircraft will incorporate the production design established during development of the first three air vehicles. It will also allow us to maintain the critical development team during the transition period from development to production. At the conclusion of the flight test program, this aircraft will become part of the operational inventory.

We expect to be able to consider a production decision late in 1976 after we have accumulated approximately 365 flight test hours together with the completion of many significant ground tests. Through 1975 we will have committed $2,027 million to B-1 development (FY 1976 $672.2 million).

c. Tanker

Although this program is addressed under the heading of "Strategic Offensive Forces," its prime objective is to assure adequate aerial refueling support for airlift and tactical as well as strategic forces.

Our experience with the very successful airlift mission to the Middle East pointed up our extreme dependence on foreign bases for tanker operations, stemming primarily from the limited refueling radius of the KC-135 tanker. This radius is an absolute number, in that it cannot be overcome by larger numbers of aircraft; the tanker simply runs "dry" at that point. For extremely long range missions an aircraft having greater refueling radius than the KC-135 is needed. Since only a modest number of such tankers are required for any foreseeable refueling needs, development of a new aircraft is not warranted; modification of a commerical aircraft is the correct approach. Fortunately, available commercial wide-body jets have fuel off-load capacity which is well matched to our large airlift aircraft.

In addition to the strategic airlift mission, such a tanker would also be more efficient in routine day-to-day operations of tactical aircraft, such as wing and squadron deployments. Finally, there are a few cases in our strategic bomber wartime missions involving very deep penetrations or long routes to entry points where a single advanced tanker could efficiently replace several KC-135s.

Studies are now underway to validate the need for the advanced tanker, directed toward an approval by the Defense Systems Acquisition Review Council late in FY 1975. Assuming that the DSARC approves the program, we plan to select the most cost-effective candidate from derivatives of commercial aircraft and initiate fabrication of tanker-modified aircraft late in FY 1976. We intend subsequently to procure a limited number of such aircraft.

Since fuel is dense enough to reach the weight limit of a typical aircraft while filling only the lower half of the fuselage, the upper half will not be needed for fuel. We intend to have this upper portion configured in a modified commercial freighter form in order to provide us with the flexibility to transport oversize cargo should contingencies require it. Thus, this program is designated the Advanced Tanker/Cargo Aircraft (FY 1976 $5.2 million).

We also have examined the adequacy of the KC-135, in its present form, to support strategic bomber operations. Although the bomber study has brought out that the hardness of the KC-135s can assure an adequate level of pre-launch survivability, there are several tanker shortcomings which should be rectified.

One is the low engine thrust on take off which provides little margin to make up for errors or failures when the aircraft is heavily laden. Another is the fact that the early-technology engines of the KC-135 are not as efficient as modern engines, and hence are relatively wasteful of fuel.

We are investigating ways of overcoming these shortcomings by replacement of existing turbojet engines KC-135s by new turbofan engines having better fuel consumption as well as better take-off thrust. This has the potential of saving several percent of the petroleum consumed by DoD, and can pay for itself over time in reduced tanker sortie requirements.

We expect in FY 1976 to determine the value of reconfiguring the KC-135, and will initiate appropriate modification programs subsequently. This study effort will be funded separately from the Advanced Tanker/Cargo Aircraft.

4. Cruise Missiles.

As a major alternative approach to penetration of formidable Soviet air defenses, including tens of surveillance radars, hundreds of ground radars and thousands of interceptors and SAMs, we are continuing development of the strategic cruise missile. The Congress has expressed concern about our Cruise Missile programs and we share that concern. For the last several months we have been completely reappraising cruise missiles, examining in detail both the need and the available technical solutions. A substantial number of studies have been conducted on cruise missiles. By using these to illuminate the situation, we have developed a set of fundamental considerations associated with cruise missiles. Salient among these are the following:

o An air-launched Cruise Missile may be required to complement the pure penetrating bomber in advanced threat environments, but the extent of the need depends on how the threat evolves.

o A sea-launched Cruise Missile development provides a desirable augmentation of capability, a unique potential for unambiguous, controlled single-weapon response and an invulnerable reserve force.

o Both types of Cruise Missiles, because they are designed for use on existing carrier vehicles and therefore have relatively low cost, are potentially very high leverage systems. They stress the air defenses in a different way than our penetrating bomber forces (i.e., they are effective against advanced fighters and are countered by extensive advanced-capability SAMs).

o A tactical Cruise Missile which is a derivative of the strategic version could provide the Navy with over-the-horizon defense and single-hit kill strike capability.

o Strategic cruise missile technology, though well in hand for components and subsystems, has not yet been integrated into a functional whole which demonstrates proof of concept.

o There is potential for improving management and allocation of scarce RDT&E resources by restructuring the current ALCM and SLCM programs into a single integrated program.

Of the above, I consider the most crucial factor presently to be the lack of concept demonstration. While it is true that the separate pieces of technology that make up a cruise missile are well in hand, the problem of integrating them into a useful and cost-effective system has not been solved.

It is in the engineering development phase that expenditures on a system begin to reach high levels. In view of the lack of proof of concept of the cruise missiles, to approve engineering development at this time (which was the issue addressed in a recent ALCM DSARC) would be premature. On the other hand, it is in the advanced development stage that expenditure levels are sufficiently low that we can

afford to keep all viable options open--so that the truths of cost and performance can be brought out clearly in an environment which is as competitive as practicable. Consequently, I consider it also premature to consolidate our cruise missile efforts into a single integrated program at this time. The two-program advanced development approach seems appropriate to be continued until we have demonstrated the cruise missile concept and illuminated reliable cost and performance data. At that time, sufficient information should be available to decide whether to continue with two programs, consolidate into a single integrated program, or pursue another alternative not presently perceived.

For the present, therefore, we have decided that:

o The ALCM program should not be approved for full engineering development but be kept in advanced development until complete concept demonstration has occurred.

o The SLCM program should continue in advanced development using the current competitive contractor teams, but with a revised schedule which will permit important milestones to be reached consistent with the ALCM, and with a requirement to be compatible with launch from B-52 aircraft.

o Both programs will be scheduled to meet the milestones of first flight in early Calendar Year 1976, first fully guided flight in the fall of 1976, and an engineering development decision-point (DSARC II) thereafter.

o Both Cruise Missile programs should maximize commonality, having as an objective a common navigation-guidance package, warhead and engine.

The two-program advanced development approach will have the advantages of:

o Deferring a decision to enter full engineering development, and the high level of funding required for it, until full-scale competitive demonstrations of concept have occurred.

o Preserving a full range of programmatic and technical options (including the possibility of a single integrated program, and the use of advanced fuels) until improved cost and performance data can be obtained and evaluated.

o Maintaining a competitive environment between the Navy's contractor teams as well as between the Navy and Air Force contractors so that production and other follow-on costs will be validated and minimized.

The above program structure will enable us to proceed toward an IOC but at a more deliberate pace early in the program cycle. We will be in a position to follow the threat evolution and respond accordingly. The sums required to continue the two-program approach in FY 1976 are $101.8 million for the Navy and $51 million for the Air Force. The Navy expenditures are higher because of their competitive-contractor approach and the requirement to develop both a surface-launched and tactical variant of the missile. The tactical variant, though part of the Navy's overall program, will have separate fiscal and technical visibility to facilitate management.

We will closely supervise and monitor the Air Force and Navy programs to insure maximum commonality and interchange of technical and program information so that when the full engineering development decision is made, the path to obtaining a full system will be smoothed (FY 1976 $152.8 million).

5. Supporting Programs.

In addition to developments of specific systems already described, we are conducting a variety of efforts to support future options to maintain the effectiveness, survivability and penetrativity of our forces.

a. SSBN Security.

To maintain the survivability of our ballistic missile submarines, we explore on an intensive and continuing basis potential threats and countermeasures in the SSBN Security Program. Because of the uniqueness of SSBN operations, and because of the emphasis on our opponent's capabilities rather than our own, this program is managed separately from the normal ASW programs. Consequently, it is possible to focus upon Soviet efforts in ASW technology which could possibly result in some unexpected development (FY 1976 $21.5 million).

b. SSBN Subsystems Technology.

The increasing importance of our sea-based strategic forces demands that we do all within our capabilities to insure that we preserve the invulnerability and effectiveness of those forces into the next century. Recognizing that the current POLARIS/POSEIDON fleet was acquired during the relatively short span between 1960-1967, we must take those actions now that will permit us to replace those ships in a timely manner at costs which we as a nation can afford. At present, limited by current technology, the TRIDENT SSBN and its C-4 missile are the most cost-effective approach to this requirement, despite the high cost of the submarine system. This is because the more expensive submarine carries proportionately more missiles. Nonetheless, we are concerned about these high costs and are, therefore, initiating this year, at a $2.0 million level, an SSBN subsystem technology program to identify and initiate development of technologies which we intend will provide us options to acquire in the 1980's less costly but equally or more cost-effective SSBNs (FY 1976 $2.0 million).

c. ABRES.

Our efforts in missile penetrativity are focused in the Advanced Ballistic Reentry System (ABRES) program. The Air Force-managed ABRES program continues its pursuit of reentry vehicles and penetration technology to provide a base for developing advanced strategic systems. ABRES-developed technology enables us to maintain confidence in the application of new techniques to the design of reentry systems for missiles such as MINUTEMAN and TRIDENT. In addition, this base permits us to understand developments by the Soviets and other nations in reentry systems.

Our RDT&E request of $101.0 million reflects a continuation of the broad-base technology associated with reentry vehicles development, and includes efforts such as maneuvering RV, terminal guidance techniques, all-weather nose tips, penetrating aids and related other technology.

In ABRES we are continuing to emphasize the development of new nosetip materials and concepts to mitigate the erosive environments of reentry into weather and nuclear explosions. We are now beginning to understand the relationship between nosetip size and surface condition and the onset of aggravated ablation and we are beginning to see how the new composite and woven materials developed in our laboratory programs can be applied.

In the FY 1976 program, a new reentry vehicle capable of carrying a high yield warhead will be developed. This vehicle, called the Large Advanced Ballistic Reentry Vehicle (LABRV)

was originally proposed to maintain the option for the development of a high yield warhead in any future system after the Threshold Test Ban Treaty was in effect. Since then, our analysis has indicated that the LABRV has enough desirable attributes to make it a candidate RV for TRIDENT-II or M-X. The proposed effort will be directed to proving that the ERDA designed warhead can be packaged into a reentry vehicle which has the desired performance and an acceptable size.

Maneuvering for accuracy, the Precision Guided RV Program, is one of the major efforts in the ABRES Program. We want to obtain the really high accuracies required for having high confidence in the precise application of force in flexible nuclear options--that is, to have extremely high probabilities of kill and low collateral damage. To do this may require the use of guidance systems whose accuracy is independent of the errors which always arise during missile flight. You are familiar with this approach in tactical war, where precision guided munitions can now be delivered with accuracies of a few feet, thanks to terminal guidance techniques. Conceptually, this same sort of technique will work with missiles.

Because of the speed, size, and trajectories of missiles and the need for all-weather capability, there are stringent constraints which limit the applicability of many of our currently available terminal guidance techniques (although some may remain viable). In the ABRES effort, we are carefully sorting out--initially by analysis, later by component development and test, and finally by flight test demonstrations--which technical approaches are most promising. At the moment, the ones which appear competitive are TERCOM (an altimeter profile matching scheme which has already been flight tested), MICRAD (a microwave radiometer approach), RADAG (a radar range/cross-section correlation technique), and several laser and optical approaches. It should be emphasized that all these approaches to terminal guidance pose extremely difficult problems in their implementation and represent very long term R&D efforts.

Under advanced development, we have designed and are developing the necessary hardware and software to enable the MINUTEMAN III to carry more reentry vehicles than can be deployed today. Flight tests of this reentry vehicle system are scheduled for May and August of this year. A decision regarding engineering development, production, and deployment has not been made.

Our program to develop penetration aids against Soviet BMD systems continues at a sustaining level. The SALT I agreement which limits the deployment of BMD systems nevertheless permits research and development to go forward and we have seen evidence of vigorous Soviet BMD R&D activity. Thus, we must be prepared to cope with a possible SALT abrogation. Further, we must consider the possibility that a flexible response strategy may require penetrating a defense with high confidence yet with a light attack. For these reasons, we are continuing the development of a penetration aid package of traffic decoys which are very light and can create radar signatures which are superficially similar to those of a reentry vehicle. By carrying enough of these devices, it is possible to saturate a defense radar or its associated computer. The analysis and development of these devices owes much to the work carried out in the BMD Advanced Technology Program and is an excellent example of how our combined ABRES and BMD activities assist in maintaining our offensive force effectiveness (FY 1976 $101.0 million).

d. Bomber Penetration.

Although the penetrativity of bombers depends fundamentally on their characteristics of low flight altitude, low radar and IR signatures, and high speed, it can be enhanced greatly by the use of electronic countermeasures (ECM), self-defense systems, and other penetration aids. Some of these (such as the Cruise Missile and ECM) comprise separate program elements, but the Bomber Penetration Technology element examines these and other techniques in context in order to be certain that appropriate penetration techniques will be available as enemy air defenses develop. In FY 1976, we will stress the technology necessary for a supersonic defense suppression missile (FY 1976 $7.7 million).

C. DEFENSIVE SYSTEMS

Although defense systems are not ordinarily thought of as providing deterrence, they in fact do. Since the surveillance activities of defensive systems provide warning, they eliminate the special effectiveness of surprise attacks, thereby deterring such attacks. Active defense deters small attacks or blackmail aggressions by being able to negate them. Finally, vigorous research and development in defensive systems assures that we will stay abreast of such technology and thereby reduce the possibility that a possible Soviet breakthrough might catch our retaliatory forces by surprise.

Our R&D effort in defensive systems include surveillance systems and active defense systems that address the air-breathing, missile and space vehicles threat.

Before reviewing our FY 1976 planned program, I would like to summarize the Soviet activity in strategic defense. The Soviets continue to maintain their traditional strong defense system orientation. As I have noted in the past, they possess a formidable deployment of air defense sensors, manned interceptors and SAM systems. Their air and missile defense R&D efforts, which we have observed in the past year, indicate that they intend to remain strong and to continue to upgrade their defensive forces. The overall magnitude of their R&D effort causes us concern because our efforts in this area are too austere in comparison. Hopefully, by fostering our superior technological skills, we can prevent them from developing a significant and exploitable asymmetry in defense capability.

In the area of missile defense they now have over six years of operational experience with the Moscow ABM system. (We will begin accumulating this kind of realistic experience with SAFEGUARD in the near future.) The Soviets have not slacked off in their development of defensive systems and our R&D efforts are directed towards keeping pace with their increasing capability.

In the program descriptions which follow the funding requested for FY 1976 is shown parenthetically at the end of each program discussion.

1. Warning.

A basic facet of our deterrent policy is an effective detection and warning system. Warning should be unambiguous and independently verifiable by at least two systems based on different underlying phenomenologies. Further, to be effective, warning should be timely, responsive to user commands and should minimize the costly implications of false reports. To meet these criteria, we are improving our warning systems.

a. Ballistic Missile Warning.

We are gradually obtaining excellent dual phenomenology missile warning capability. That is, by using two separate techniques based on different physical principles we reduce the chance of false alarms while increasing the probability of detecting a missile launch. Early warning of ICBM launches is now provided by an early warning satellite and BMEWS. Warning of submarine launched ballistic missiles (SLBMs) is provided by dual satellite coverage of most of the close-in threat areas and backed up by short-range coastal radars. Complete and continuous coverage of probable Soviet launch areas continues to be our goal.

The operational satellites have been exceeding design performance lifetime specifications; this success has permitted savings in out-year program acquisition costs. Last year we contracted for the development of an operational prototype.

In the warning satellite program during Fiscal Years 1976, TT and 1977 we propose to expend approximately $44 million in RDT&E funds. Part of these funds will be used to complete development of the prototype.

We are continuing to expend modest research and development efforts to provide warning coverage against new threats. Other R&D is directed toward reducing the vulnerability of our warning systems to direct attack and to electronic countermeasures (ECM), increasing the survivability of our command and control systems and enhancing the quality of the information received from the combination of warning sensors in order to better characterize the nature of any attack.

Present SLBM-detecting coastal radars are obsolescent and have a low availability. These radars will be replaced by two phased array radars approved in last years' budget. The phased array radars, referred to as PAVE PAWS, will increase radar coverage of advanced threats and be capable of providing better attack characterization information. In addition, a modification to the FPS-85 space track radar has been completed. It provides an SLBM detection capability above the waters off our southern and southeastern coasts. As these and other new systems enter the inventory and become operational, we will continue to phase out less capable systems, thus saving operation and maintenance costs.

b. Space Surveillance.

Our SPADATS network is presently limited to providing operational surveillance coverage to altitudes of less than 3,000 n.mi. Geographic gaps exist in this coverage. The growing Soviet utilization of space for strategic and tactical purposes dictates that we extend our coverage to at least the geostationary altitude of about 20,000 n.mi. and minimize the geographic gaps as soon as practicable. We are continuing work on detectors, target discrimination techniques, data processing and other critical components in the visible portion of the optical spectrum and plan to begin operation of an expanded experimental electro-optical ground station this spring in New Mexico. Our goal is to demonstrate the feasibility of a near realtime ground-based capability to detect and track objects. We are also developing technology to determine whether a space-based surveillance system operating in the visible and/or long wavelength infrared portions of the spectrum would be cost-effective. (FY 1976 $13.6 million)

c. Bomber Warning

While we are not pursuing active development of a CONUS air defense system, we are developing improved tactical warning systems.

Consequently, we are continuing our efforts to develop the CONUS Over-the-Horizon Backscatter (OTH-B) radar. This radar promises to extend our all-altitude surveillance and early warning capability to much greater ranges than that provided by our current line-of-sight coastal radars. We are pursuing the program in two steps--first, with the development of a limited coverage (in azimuth) prototype radar; and second, if the evolving Soviet threat and the performance/operational utility and production costs based on the first step so dictate, we plan to deploy a full coverage radar on each coast (FY 1976 $8.0 million).

2. Ballistic Missile Defense (BMD)

The Site Defense program and the BMD Advanced Technology program are the principal elements of our R&D effort in this area. The SAFEGUARD system will complete its R&D phase in FY 1975 so no R&D funding is required in FY 1976 and beyond. The Site Defense program has been scaled down from a prototype demonstration to an advanced development effort in compliance with Congressional direction in FY 1975. All three of these programs are now fully integrated under a single program manager. The Advanced Technology effort is now consolidated at Huntsville, Alabama; the Washington-based office has been phased out. This streamlining encourages the maximum transfer of experience and technology advancements between programs. In addition, the conclusion of the SAFEGUARD R&D effort is allowing a significant reduction in personnel.

Our overall FY 1976 BMD program comprises an austere, but flexible R&D effort that will maintain our expertise and enhance our capabilities in this technically demanding field. I believe we need to continue BMD R&D of significant breadth and depth to ensure that we can keep pace with the Soviet efforts I have already discussed. BMD R&D not only provides a hedge against sudden abrogation of the ABM Treaty, but also motivates the Soviets to negotiate additional limits on strategic arms. I also look to our overall BMD program to assist both our offensive missile development and our intelligence assessment of Soviet activity by supplying knowledgeable estimates of what can be achieved in strategic defense in both the near term and in the more distant future.

To accomplish these goals, our program needs three critical elements. First, we need practical day-to-day experience and insight into the operation of these complex systems. The operation of the SAFEGUARD system will give us this base as well as providing a defense of part of our offensive deterrent force. Second, we need to preserve and build our expertise in overall system technology and systems integration--still the outstanding technical challenge in BMD systems as we know them today. We plan to accomplish this objective with the Site Defense program. Third, we need to aggressively probe the growing number of new technologies which could cause rapid evolution of--or perhaps revolutionize--defense against strategic missiles. The BMD Advanced Technology program is designed to accomplish this difficult task. Each of these three BMD efforts, while they have somewhat different orientations, are interrelated and mutually supportive. For example, the success of the SAFEGUARD SPRINT interceptor program has allowed us to reduce the emphasis on the interceptor in the restructured Site Defense program. In addition, the new Site Defense program is now configured to readily accept and develop in a system context technology advances in sensors, computer hardware, software and interceptors after they are proved feasible and initially developed by the Advanced Technology program. The single manager concept for these three related programs facilitates this transfer of experience and technology while providing more efficient use of our very limited R&D resources.

The overall level of effort in BMD R&D has declined from close to $500 million in FY 1971 to less than $250 million in FY 1975. Inflation makes this decline even steeper. We are proposing an austere effort this year because of the great pressure on our R&D budget. This level of austerity causes me some concern because of the vigorous Soviet effort in this area.

a. SAFEGUARD

The SAFEGUARD system at Grand Forks achieved its Equipment Readiness Date of 1 October 1974 on schedule and all indications point to achievement of an IOC in April 1975 on schedule. No R&D funds are required for SAFEGUARD in FY 1976 or beyond.

The new operating plan for SAFEGUARD has now been completed and calls for operation of the site on a full-time basis for about one year. Thereafter, the scale of operation will be reduced to lower the cost of operation. The site could return to a higher level of capability and readiness if changes in the international situation warrant.

I believe that the outstanding field test record of this program deserves a special comment as its R&D phase nears completion. Forty-seven complete successes and two partial successes in 54 system tests conclusively demonstrated that we can indeed "hit a bullet with a bullet in mid-air." We know that the presence of this effort was instrumental in achieving the ABM Treaty. Our R&D program in FY 1976 and beyond is designed to preserve the technical lead established by SAFEGUARD.

b. Site Defense

We have recently completed a restructuring of this program in response to Congressional guidance in FY 1975. The program now primarily emphasizes the advancement of technology in subsystems integration and components rather than a prototype demonstration. The broad purposes of this new and more austere program continue to be: to provide a technological foundation for a defense of land based missiles or other national value targets, to maintain and further develop our system-related BMD expertise, and to assist in the attainment of our overall deterrence and arms limitation objectives by keeping pace with the continuing Soviet development of new and more capable BMD systems.

We will accomplish these goals and remain responsive to the Congressional guidance by focusing our efforts on only the most critical technological issues and by maintaining a program structure which facilitates the inclusion of new technologies and techniques into the basic system concept. We will make a major reduction in the interceptor development effort and will develop in detail only a limited subset of the total system software. The validation of solutions to the key technical issues requires that we test the radar and parts of the software against live targets at Kwajalein. These solutions will provide major improvements to terminal BMD capability in five critical areas. I believe that this scaled-down field test activity is crucial to the viability of the basic Site Defense concept and I see no avenue for eliminating it. While we make maximum use of computer simulations to test subsystems and software, major technological issues such as bulk filtering of tank fragments or discrimination of decoys require field testing to adequately assess and validate our solutions.

The Site Defense program will maintain a system technology orientation because the ability to integrate sophisticated radars, computer software and interceptors into a smooth working,

resilient system is the keystone of our continuing command of BMD technology. Finally, I view this program as evolutionary in the sense that changes of emphasis will occur with the passage of time and new advances in technology will be introduced as they become available (FY 1976 $140.0 million).

c. Ballistic Missile Defense Advanced Technology.

Our approach to maintaining strategic equivalence with the Soviets is to maintain a technology lead rather than try to match all their forces numerically. To accomplish this, I look to the BMD Advanced Technology program and its equivalent in strategic offensive technology, the ABRES program, to lead the way in the investigation of those technologies which promise to be the backbone of our future strategic systems. In view of the importance of this basic goal, I propose to continue the BMD Advanced Technology program at a relatively steady level of effort.

This program necessarily covers a very broad spectrum of R&D. In FY 1976 the program will place increased emphasis on advanced concepts for missile defense including novel applications of radars and other sensors. A number of field tests will be conducted at Kwajalein to help resolve outstanding questions in the physics of tank fragmentation. Past efforts have convincingly demonstrated that infrared sensors have great promise; this basic technology work should continue. We can foresee the potential for major advances in interceptor performance and we plan to conduct laboratory investigations in propulsion, air frames and guidance. The software and advanced computer research will continue because this is a relatively young field that can yield dramatic improvements in capability and reductions in cost.

The Congress funded this technology program as requested in FY 1975 and I am pleased to report that the program is continuing to provide outstanding advances in infrared sensors and physics, reentry physics, phased array radars and interceptor propulsion and guidance. I feel strongly that this important technology work is critical to our long-range strategic capability (FY 1976 $105.0 million).

3. Air Defense

The manned bomber presents a potential threat to this country which cannot be ignored. While not pursuing an active program to develop a tight air defense, we are developing the improved tactical warning capability I discussed earlier and an airspace control capability to support the peacetime air defense missions of airspace sovereignty and early warning of bomber attack.

To insure our capability to maintain peacetime control of our sovereign airspace, we are implementing the Joint Surveillance System (JSS) program. This system will combine existing FAA and USAF radars into a single integrated surveillance system under the control of four Regional Operations Control Centers (ROCCS) which will replace the current Regional, BUIC and Manual Control Centers. Each ROCC will be able to handle tracks from the joint USAF/FAA surveillance system as well as control all the interceptors in its region. The system, when operational, will not only provide an improved airspace sovereignty capability, but will enable a reduction of more than $50 million per year of the current O&M costs involved in our present USAF/FAA surveillance and control system.

In addition, we are examining candidate alternative radars as an economic replacement to the radars currently installed in the F-106 interceptor force. Current technology radars, such as the AN/APG-63 installed in the F-15 or the lightweight fighter aircraft radar, might provide sufficient airborne radar capability to eliminate the need for height finder radars at the joint USAF/FAA surveillance radar sites. This would further reduce the costs of our air defense operation while improving the tactical usefulness of the F-106 into the 1990 time frame (FY 1976 $7.7 million).

D. SPACE SYSTEMS

Space Systems are playing an ever increasing role in supporting our forces in their global operations. Although most of our space systems are now designed and used for strategic applications, we expect their importance to our tactical forces to grow and become paramount in the next decade. For the time being, however, space systems are most important to our strategic forces and will be covered in this chapter.

Space systems perform vital defense functions. They are superb for early warning of Soviet and Chinese rocket launches. They provide us with highly reliable and relatively inexpensive worldwide communications, meteorology, geodesy, navigation, and surveillance. In many cases space systems are so much more effective and so much less expensive than surface-based systems, which have classically performed similar functions, that we are abandoning or dismantling our backup ground-based systems completely. This fact has led us to conclude that we must renew our efforts to protect our space assets, to make them less vulnerable to physical and electronic attack.

Funding requested for FY 1976 is shown parenthetically at the end of each program discussion.

1. Space Shuttle

The Department of Defense is committed to support and utilize NASA's Space Shuttle. The Space Shuttle holds great promise for reducing the cost of our military space operations while at the same time introducing a new capability which could make our space operations even more effective. We see our role as that of a major user once the development is complete. In keeping with this role, we are requesting in FY 1976 $22.7 million to support our effort which is directly related to the future military use of the Shuttle.

To assure uninterrupted military space operations, to minimize changes to our costly payloads and to make possible early DoD use of the Shuttle with its low projected launch costs, DoD has initiated a program to modify an existing upper stage for Shuttle use. In FY 1975 we are studying a number of upper stage approaches. During FY 1976 we plan to select the minimum RDT&E cost Interim Upper Stage (IUS) which can most effectively meet our military needs over the early years of Shuttle use until NASA is able to provide a sophisticated stage capable of meeting the needs of all users. But this NASA stage may not come into being before the late 1980's. Also in FY 1976, we plan to proceed with the IUS validation phase, which will be the next step in acquiring the stage for Shuttle use.

Today the majority of our space launches are conducted from Vandenberg. Because Vandenberg is located on the West Coast, we can achieve high inclination orbits which cannot be achieved safely from Kennedy Space Center. To assure a continuation of this polar orbit capability, during this calendar year we are defining the minimum

cost modifications to Vandenberg necessary to provide a Shuttle launch and landing capability. In FY 1976 we will begin the development of detailed design criteria necessary to support future construction of this facility. Once our essential needs are met, this facility will be available for Shuttle launch of civil payloads.

Our program transition planning will be conducted in much greater detail during the coming year. A special Defense Science Board Task Force has been established to study the use of the Space Shuttle in future DoD missions. Specifically, the Task Force will suggest innovative spacecraft designs and entirely new space system operating concepts which may be practical and desirable with the Shuttle. The Shuttle provides new capabilities such as payload recovery and reuse, on-orbit check out and servicing of payloads, and increased payload volume and weight lifting capability, all of which can lead to more effective, flexible, and economical military space operations. This emphasis on new payload design and mission concepts will be an integral part of our transition planning. Our planning now calls for launch of our high priority military payloads on the Shuttle beginning in 1980 from Kennedy Space Center using the IUS and from Vandenberg starting in December 1982. During the period of early Shuttle use we would plan to phase out from inventory our current costly expendable launch vehicles and supporting launch complexes.

We have high confidence in NASA's ability to manage the development of the Shuttle and to achieve their program milestones. Our own effort is carefully coordinated with the NASA development program and is the minimum essential for timely Shuttle use by the DoD (FY 1976 $22.7 million).

2. NAVSTAR Global Positioning System (GPS)

In my view, the NAVSTAR program is one of the most far reaching in its impact and one of the most forward looking within the Department of Defense. It can have a revolutionary effect on both strategic and tactical warfare. Unprecedented measurement precision of platform position and velocity in three dimensions will be possible for any elements of our forces equipped with NAVSTAR receivers. This factor opens up vast new opportunities for multiplying force effectiveness. Ultimately, we may be able to use NAVSTAR to complement our accurate inertial guidance systems. As a fall-out benefit, we will be able to use NAVSTAR's nanosecond clock accuracies to synchronize our jam-resistant battlefield communications systems for more rapid message acquisition and anti-jam effectiveness. These are but a few of the potential benefits which may derive from this remarkable new development.

Since its inception, the NAVSTAR program has met all cost and schedule predictions. Continuation of this on-target performance will mean that both substantial net cost savings for all of the navigation area and significant weapons systems performance improvement will be derived by all of the Services.

During the year, the NAVSTAR Joint Program Office has become joint-service in fact as well as name. Officers and civil service staff from the Army, Navy, Air Force and Marines are now in residence devoting full time to the program in all levels of management and engineering. It is a model of a totally integrated effort. In July we successfully launched our first technology confirmation satellite, and we are now well under way in development of the satellite for the first NAVSTAR constellation. In October we went on contract for user equipment and ground control facilities. During the summer we made a decision to expand the planned NAVSTAR satellite constellation from four satellites to six so that NAVSTAR can be used instead of radar range instrumentation in support of SLBM accuracy improvement efforts of the Navy. This capability will also be utilized to measure and,

therefore, help improve ICBM guidance accuracy for the Air Force. The expanded constellation will result in increased NAVSTAR availability for all DoD users at an earlier date.

As NAVSTAR's global capabilities either obviate the need for other developments or greatly reduce the complexity of other navigational systems, the potential for cost savings grows. We are continuing to search for new opportunities to make major cost-avoidance decisions in navigation programs and anticipate finding more ways to exploit NAVSTAR as we enter the operational test phase.

FY 1976 will be a peak year for NAVSTAR development activity and I request the continued strong support of Congress for this centrally important program. Satellites will pass the halfway mark in development and some user equipment fabrication will be complete. Testing will also begin at a DoD test range in Arizona. Development of components for the Navy SLBM tests will continue apace (FY 1976 $92.1 million).

3. Communication Satellites

The programs include the Air Force Satellite Communications System, the Defense Satellite Communications System and the Fleet Satellite Communications System. They are discussed in detail in the chapter on Telecommunications where they are treated in the context of the over-all defense communications complex.

4. Satellite Systems Survivability.

Efforts have been intensified during this past year to require that our new space systems programs evaluate threats and incorporate appropriate survivability measures in design specifications. Some RDT&E efforts to assist in this are under way. This program does not include the LES 8/9 experiments which I will address in my comments on communications satellites in Chapter VIII (FY 1976 $4.8 million).

E. DEFENSE NUCLEAR AGENCY

The Defense Nuclear Agency (DNA) executes our programs in nuclear weapon effects research and development to assure maximum survivability and operability of nuclear weapons systems. The DNA plays an increasingly important part in military planning as we endeavor to refine our targeting, reduce collateral effects, and search for weak points in the positions of potential adversaries.

DNA meets these objectives through a synthesis of underground nuclear tests, laboratory experiments, and large non-nuclear field tests, all tied together by theoretical analyses. A continued high level of emphasis is needed because our experience and data base from atmospheric nuclear tests of years ago is decreasingly useful. DNA programs will require $67.2 million for Nuclear Weapon Effects Development and $63.4 million for Nuclear Weapon Effects Tests (including Non-Nuclear Tests) in FY 1976.

Our underground nuclear test program has been highly successful. Obtaining nuclear effects data a few hundred feet, and in some cases a few feet, from a nuclear explosion in a tunnel presents immense technical difficulties. In recent years, however, we have improved our testing technology so much that we are getting increasing returns of information for the dollar spent in spite of rapidly escalating costs of doing work at the Nevada Test Site. In the near term the underground test program will concentrate on assuring hardness of TRIDENT and of MINUTEMAN III with the Mark-12A reentry vehicle, and on new types of experiments on silo hardness, buried structure vulnerability, and electro-magnetic pulse effects which were considered impossible to do underground a few years ago.

Because of the expense and long lead time associated with underground effects test, and to reduce the national dependence on nuclear testing, DNA is continuing an aggressive program of simulator development. The CASINO X-ray simulator, which will come on the line early in 1975, is the most recent step in this direction. Further expansion of our simulator capability--based on major advances in technology--is necessary if we are able to substitute simulators for the majority of our current underground testing. While we are making substantial progress, we cannot forecast a date when this substitution can be made.

A year ago we mentioned increased emphasis on tactical problems in the nuclear effects program. In FY 1975 DNA initiated a new project area on tactical warfare to analyze the totality of nuclear effects on battlefield positions of U.S. and enemy forces. While most of the efforts are still very new, substantial progress has already been made in new concepts for reduction of nuclear effects which do not contribute to destruction of military targets. Our European military commands are actively involved in these programs.

Greatly increased efforts on C^3 problems have been initiated in FY 1975 and will be consolidated and intensified in FY 1976. This emphasis is required by the increased sophistication of C^3 hardware and software, the difficulty in insuring survivability and operability in a nuclear environment, new perceptions of the need for very close control of forces at all levels during nuclear hostilities, and the need for real-time assessment required to provide credible escalation options.

In the past year, DNA has initiated an already successful non-nuclear test program to determine the effects of nuclear-induced ice and rain clouds on incoming reentry vehicles. Results are being obtained through use of novel hardware which is audaciously simple. The ABRES program is partially supporting this effort and is applying the data to achieve a new understanding of reentry vehicle performance in weather environments. A portion of our program addressed these new nuclear environment issues.

Our program to test the resistance of ground communications facilities to electromagnetic pulses (EMP) from high altitude explosions is in its second year and is proving highly successful. Testing of facilities at Delta, Utah with a transportable EMP simulator has recently been completed. We will continue with testing of other types of facilities in the U.S. and the Pacific area. We are placing heavy emphasis in each test exercise on verification of theoretical predictions.

We are achieving important results from our program at Fort Polk, Louisiana to test the effects of small, shallow-buried nuclear explosions. Through use of computer codes developed over a period of years, we are now able to use conventional high explosives to simulate a nuclear charge so that no nuclear material is involved. The results of these tests are having a major impact on our thinking on the utility of earth penetrating weapons to create heavy damage within a very restricted area (FY 1976 $130.6 million).

VI. TACTICAL WARFARE PROGRAMS

A. INTRODUCTION AND SUMMARY

1. Program Rationale

The R&D programs for tactical warfare systems determine to a great extent the military capability of our future General Purpose Forces and those of our allies. For the U.S.--with its traditional concern for the life of the individual soldier and its need to more than make up for fewer numbers with greater firepower--the technological superiority of our war-fighting equipment is paramount. Our tactical systems present the principal evidence of our abilities to wage conventional war, to defend ourselves and to strike back if necessary, and by the demonstration of their effectiveness in the field, to deter an aggressor from incautious acts.

Conflicts of our own in the recent past and those of friendly nations even more recently have demonstrated the high calibre of our battlefield technology. And they have demonstrated again the decisive impact of technology on the outcome of warfare. These weapons and systems--the ones actually tried-by-fire--must be kept technologically and operationally up to date. They must be the first line of our defense and prime indicator of our determination to keep our alliance commitments. They must be effective enough to shape the nature of modern warfare, not merely be responsive to the acts of others.

Creation of these weapons and systems is the continuing challenge to tactical systems R&D. This challenge is the driving force behind the broad range of technology efforts which we structure to serve the varied needs of our General Purpose Forces and for those of our allies. Fulfilling this challenge in a timely way and within a severely constrained budget demands a fertile well-balanced technological base which provides the source material from which to mold future weapons, and a reliable decision process which permits correct selection of which molds to turn into systems for deployment with our forces.

The functions of creating new options and developing systems for deployment with tactical forces are the essential elements of the tactical warfare R&D program. Because of the great diversity of available technology and the diversity of military functions involved, it is difficult to be sure that the range of needs is adequately addressed, that the right technology is applied to each need and that good judgments are made as to the level of effort to be applied. To deal with the knotty problem of resource allocation we have developed the approach of reviewing our programs from a number of distinctly different viewpoints. This multi-dimensional review gives us better perspectives and insights on our overall program. Let me briefly describe this three-dimensional process.

- o The first dimension examines each proposed effort for its potential for meeting mission needs. This tests each element for relevance, associates it with alternatives which meet the same need, and assesses responsiveness to the threat.
- o The second dimension establishes relative emphasis among major programs. This is accomplished by examining both annual and total development program funding requirements and asking whether the greatest emphasis is being placed on correcting the most serious deficiencies. This test provides the opportunity to change priorities from one area of conventional warfare to another as the technology evolves, new threats appear and old problems are solved.

o The third dimension of the review examines how to group efficiently the applications of new technology for management. When a new technological tool becomes available (e.g., forward-looking infrared sensors, lasers, etc.), there is a tendency to apply it to many different problems and to independently develop different versions of the device for each application. Our technology review comprehensively examines the R&D program and identifies those efforts that should be grouped and jointly managed or coordinated so that unwarranted depulication is prevented. Important judgments are required as to the amount of parallel and technologically competitive development--that is, deliberate redundancy--that should be supported. Especially in the formative stages of new developments, it is very valuable to proceed with development work along several parallel lines. This approach promotes healthy technical competition, provides ways to resolve technical differences by test and demonstration, provides cost competitive alternatives and leads to better full-scale development decisions.

In the following paragraphs I will describe in broad terms --illustrating with examples when appropriate--the tactical warfare RDT&E programs which emerge from the three-dimensional review just outlined. In subsequent sections the full program of tactical system R&D is furnished in detail in sections broken down by military mission area.

2. Tactical Warfare Programs in Broad Perspective

a. Land Warfare

Since the military mission area is the dominant and most comprehensive way of looking at the program, I will use it in presenting the program in this statement. The environment for which we design our systems is Central Europe. While it is the most demanding, it is also the most vital so we use the Central European scenario and the threat associated with that scenario. One caveat, although we are concerned primarily with performance of combat systems in a European environment, the Defense Department must structure and equip forces to operate in any area where national interests may carry them, whether in the temperate, Arctic or tropical zones. And this approach has a strong bearing on equipment capabilities and costs.

For the foreseeable future, we see the tank as the dominant land warfare combat system. We see our forces being opposed by great numbers of tanks, reinforced by SAGGER equipped antitank vehicles (BRDM) and supported by infantry mounted in armored carriers (BMP). Further, since the Soviets were able to observe the strengths and weaknesses of such weapons systems in the Middle East, we must expect that vigorous efforts are underway to correct any deficiencies and to benefit from the lessons learned in that theater.

b. Air arfare

The air threat continues to pose a NATO/PACT numerical force imbalance of 1800:3900, less than 1:2, and a posture of sheltered aircraft still vastly superior to our own. We continue to view PACT air forces as heavily dependent on ground-based command and control and recognize in their emphasis on electronic countermeasures a strong appreciation of the value of efficient command and control. An interesting contrast between east and west tactical philosphy in this area is eastern emphasis on land-based defensive systems and our emphasis on airborne jamming capabilities to accompany strike aircraft and to shield them with airborne standoff systems.

The air defenses for our ground forces and for air bases and high-value targets continue to be an area of concern and therefore of R&D program emphasis. This portion of our posture, of course, includes both our ability to fight in the air and to defend ground assets with missiles and guns. The Soviets' recent efforts to improve ground attack aircraft and to provide themselves with new ground attack

missiles lend extra impetus to this always critical area. The culmination of a number of quite separate program thrusts is bringing us to a point of major new achievements in our air defense capability over the next several years. Introduction of the F-14 and F-15 into our air forces has provided a base of high performance, high threat responsive combat aircraft, more self-reliant than most combat aircraft that we need in the force in significant numbers.

Since these are also expensive aircraft, we can't procure them in adquate numbers to cope with the NATO/PACT imbalance. Therefore, we are vigorously pursuing highly effective though lower cost complementary aircraft in the Advanced Combat Fighter program to allow numerical expansion of our fighter forces.

In combination with the expanded fighter force the AWACS, with its robust airborne command and control capability, will have superb close combat capability and will provide an enormously flexible air combat team. Rapidly deployable, suitable to widely varying levels of conflict, effective enough for a hot, intense engagement--this combination is more survivable in sustained conflict. The AWACS will provide our forces in Europe or in other potentially hostile areas with important, unique mission capabilities; e.g., pre-hostility warning by furnishing track information on enemy aircraft, surveillance of broad areas in support of defensive air battles by passing track and vectoring information to friendly aircraft, and by vectoring of aircraft on offensive air strikes into enemy territory.

Complementing these forces, the ground deployment of Improved HAWK--which is emerging from all of the analyses of the Middle East conflict as a highly effective air defense system--is the major air defense improvement in European NATO. The need for a more proliferable and highly mobile all-weather air defense SAM has led to the initiation of the SHORAD program using the European-developed ROLAND as its basis. The ROLAND system will fill a serious void in our field army air defense capability. The ability of the system to counter low flying attack aircraft at night and in conditions of severely degraded visibility and to move with the fighting forces, carrying protective cover as it goes, is of enormous value to land forces.

These systems, with the addition of a HIMAD (High and Medium Altitude Air Defense) capability on the high end and a mobile air defense gun and the man portable mission (STINGER) on the low end form a formidable air defense array--without redundancy of capability, enormously difficult to countermeasure in part or in whole and able to deal in its various combinations with virtually the full gamut of air defense threat below the level of the Tactical Ballistic Missile.

c. Ocean Warfare

Naval missions and their associated R&D needs are viewed in a truly global context. Here we are driven by our continually increased dependency on the rest of the world for resources including both materials and energy and the concomitant increases in the importance of the seaways to our national welfare. At the same time we observe a broadly based, high energetic program of Soviet expansion of its surface and undersea fleets. For these reasons and because our naval forces have dwindled in numbers due to aging and the high costs of new construction, it is of crucial importance that we modernize and improve the effectiveness of our current forces and the new ships and submarines we can build. Our efforts in naval mission research and development serve these needs. The thrusts carried on within the naval missions of fleet air defense, fleet offense, ASW and ocean surveillance are as follows:

The picture for fleet air defense outside of the deployment of the F-14A is not quite so positive as for the land warfare case. Before developing this subject, I want to pause for a moment to discuss the F-14A. In all of the rehetoric concerning production cost and financing problems and our concerns about how many F-14As the Navy and Marine Corps can afford, we have lost sight of the fact that the F-14/AWG9/PHOENIX system development has been a significant achievement -- the overall system meets the objectives established for it. Its capabilities are far beyond those of our adversaries and it constitutes a powerful counter to the growing air threat (e.g., the Backfire bomber) to our fleets.

The AEGIS program, our major effort in surface-based fleet air defense, while making progress in its at-sea testing on the USS NORTON SOUND, has not moved rapidly toward application on a combatant ship. The difficulties here are of a management rather than a technical nature and will be discussed fully later on. he important point is that we are falling behind in our fleet's ability to deal with the air threat because we have not previously found a way to get AEGIS into the fleet.

We have also continued to fall behind in improving the self-defense of our surface forces against anti-ship missiles because of delays in the PHALANX Close-In Weapon System and lack of an adequate focus on this persistent problem.

In sharp contrast to these worrisome areas the Navy has made a major step forward in strengthening its offensive punch at sea. With HARPOON moving into production and into the fleet on aircraft, in ships and in submarines, each of these types of fighting vehicles will become substantially more effective in engaging surface vehicles. Additionally, the DD963 will be entering the fleet in the near future followed by the FFG-7 initiated last year as the Patrol Frigate. The PHM prototype has already started its testing. With careful attention to solving production cost problems, the PHM can make a major contribution of its own both in the U.S. Navy and with NATO forces in the waters of the North Sea, Baltic and Mediterranean.

d. Anti-Submarine Warfare

While these additions to our naval capabilities are of critical importance, they must be able to operate in the presence of an ever more formidable submarine threat. Since the major efforts of DIFAR, P-3C and the S-3A, we have continued our efforts in anti-submarine warfare at a more subdued pace. A number of independent analyses, fleet experience and the continuing vigorous Soviet submarine construction program (12-14 in 1974) have reminded us to direct greater attention to this difficult area of warfare. The great importance of undersea surveillance to effective ASW has been reemphasized and we are pursuing an aggressive program of improvements to SOSUS and the development of new mobile/deployable surveillance system options. For the ASW force itself, emphasis is being placed on sonobuoys and associated information processing, improved lightweight torpedoes (the MK-46 and its possible successor), towed array sonars integrated with the hull-mounted system and the adaptation of the Army's UTTAS helicopter for the Navy's ASW helicopter mission (LAMPS).

e. Air Mobility

Air mobility is fundamental to our strategy and posture for the future. It is characterized by our ability to quickly move forces

and equipment from CONUS to a theater of operations and within a theater. Our major strategic and tactical airlift capabilities, the C-130, C-141 and C-5A are products of past efforts in this area. The Berlin airlift and the quick response resupply of Israel are highly visible examples of its value.

In addition to the Utility Tactical Transport Aircraft System (UTTAS), which is being developed to replace the versatile HUEY with an even more versatile machine featuring major improvements in reliability and maintainability, this area supports the Advanced Medium STOL Transport (AMST) Program. The AMST will provide options for future replacement of the C-130 with a highly productive, low cost aircraft for operation from unimproved fields.

Major steps in the technology of heavy lift helicopters are also under development. The Navy-Marine Corps CH53E is currently in prototype test. The Army Heavy Lift Helicopter (HLH) advanced development prototype program is testing the limits of our heavy lift technology and a single prototype will be assembled and tested during FY 1976.

f. Defense Suppression

A final mission meriting particular emphasis is Defense Suppression, the means to operate combat aircraft over dense, hostile air defenses effectively and with low losses. This mission includes the destruction of air defense batteries (lethal suppression) and the jamming and deception of air defense radars (non-lethal suppression). Both types of defense suppression are parts of a highly sophisticated interaction of measure and countermeasure between ourselves and our adversaries. No measure is without a conceivably effective defeating response so it is of essential importance that we learn enemy system vulnerabilities and exploit them without his knowledge, thus depriving him of the opportunity to redesign and modify his sytems to remove the vulnerability we are exploiting. This process requires a broad technical base of alternative techniques that can be applied quickly and designs having their own versatility to allow response to changes in enemy system design. Major programs in the lethal category include the High Velocity Anti-Radiation Missile (HARM), improved over SHRIKE in versatility of seeker design and standard ARM in terms of flight and cost, the Modual Weapons Family with a number of alternative terminal guidance mechanisms and the Precision Location and Strike System (PLSS) for the accurate location of enemy emitters and guidance of ordnance. In the non-lethal category we are improving the F-4 Wild Weasel jamming system and initiating work on a jamming capability for the F-111A (EF-111A) to provide standoff and escort jamming of strike forces. The EF-111A uses the jamming equipments developed for the Navy EA-6B integrated in the F-111A airframe.

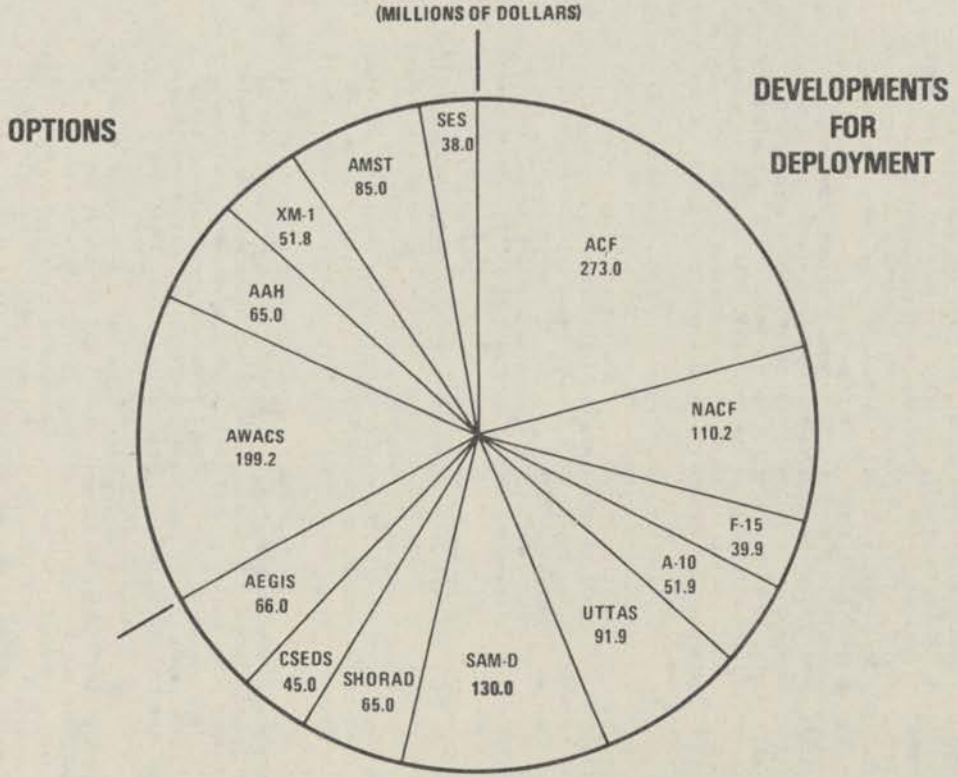
From this broad overview of our Tactical Warfare Programs, let us now move to detailed discussions of the elements in each mission area.

3. Major Program Review

a. The Major Programs

It is clear that our emphasis rests heavily on correcting deficiencies in air superiority. The need for $490.7 million stems primarily from our need for quantities of affordable aircraft. We propose a fire support program of $306.8 million (to develop a variety of anti-armor and other troop support firepower elements), fleet air defense $293.9 million (principally to counter the enemy's air and sub-launched cruise missiles), field Army air defense $274.4 million (to counter the

DISTRIBUTION OF FUNDING FOR 14 LARGER TACTICAL SYSTEMS RDT&E



enemy's extensive fighter force), air mobility (to modernize the means of bringing troops and supplies into the combat areas), and Air Space Command and Control Support (primarily to provide means of controlling the air battle). These six mission areas constitute about 50 percent of the tactical warfare mission, the balance being covered by the 13 other mission areas shown on the figure.

Figure 1 shows the 14 largest programs which constitute about 40% of the total tactical warfare mission. Relative program cost depends on both the complexity of the program and the phase the program is in. Programs are reviewed in their totality by the Defense System Acquisition Review Council (DSARC) which is convened at major decision points. This review concentrates on the whole program with considerable emphasis on total cost-effectiveness and less on individual year costs.

On the other hand, the annual budget reviews tend to focus on the details to be carried out over the next year and to a lesser extent the following year. In the event of major program problems or the need to establish priorities between programs to match a constrained budget, the overall program may also be reviewed.

b. Last Year's Review

In what follows we discuss substantive aspects of the review and decision-making process that each of our 13 largest programs underwent last year.

Air Combat Fighter

Our largest program is the Air Force Air Combat Fighter ($273.0 million). Major decisions were made during the review process to establish the program, to determine the program phasing to meet required dates, to optimize expenditure rates and to reflect the state of competition existing on the program. The funding reflects these factors and provides sufficient funds for the program to move forward efficiently.

The USAF was directed to select for engineering development one of the two competing lightweight fighter prototype designs for engineering development. The YF-16 was selected. The schedule features first delivery in CY 1979, and two operational squadrons will be deployed to Europe. This program will provide a low cost fighter option for the U.S. high-lo force mix as well as provide a low cost fighter option for consideration by our allies.

Navy Air Combat Fighter

The Navy requires a low-cost, multi-mission carrier based strike fighter to augment the F-14 and eventually replace the aging F-4 and A-7 aircraft. After considering variants of several existing aircraft, the Navy concluded that the best way to meet these requirements was to develop a new strike fighter to be called VFAX. Congress eventually approved $20 million for this fighter in FY 1975 and changed its name to Navy Air Combat Fighter. Congress also directed the Navy to maximize use of Air Force Air Combat Fighter (ACF) technology, limiting use of funds to the development of a carrier-suitable derivative of the Air Force ACF. In response to this direction, the Navy provided their technical requirements through the Air Force to both ACF contractors and requested proposals on cost and feasibility of developing a carrier-based ACF derivative. The Navy analyzed the initial contractor submissions and provided preliminary results to the Air Force for use in the source selection process. The Navy is expected to complete its evaluation and make an aircraft selection in March 1975.

F-15 Fighter

The F-15 has been in full production since 1973. The FY 1974 buy was approved in January 1974 and included increased rate tooling. The most recent decision was made in October 1974 when the complete F-15 production program was approved.

A-10 Attack Aircraft

The A-10 program had two major reviews during the year. The first review followed the successful fly-off against the A-7, and resulted in a decision to release long-lead items for production. The second review was held in late fall following further key testing of the airframe and engine. Since the A-10 achieved its test milestones, release of funds for a low rate initial production of the first 52 operational aircraft was approved.

AWACS (Airborne Warning and Control System)

The AWACS ($199.2 million) has undergone a variety of reviews to validate the need and to establish the minimum cost program which still satisfied NATO application. The AWACS program was reviewed from the standpoints of Test and Evaluation objectives and results, procurement objectives and schedules, and growth items needed to enhance effectiveness in an intense NATO-Warsaw Pact conventional engagement or to create/preserve capability options. We strengthened our Test and Evaluation program for measuring system performance in an ECM environment. Production plans were changed to accommodate a rate of one aircraft every two months. We completed a comprehensive review of the NATO threat through 1985 and examined capability-enhancement items for installation in the aircraft as requirements change or the threat evolves. Two of these items have already been approved. As a result of our extensive review process, we concluded that the Block I AWACS constitutes a powerful and cost-effective capability urgently needed for surveillance, and command and control in NATO as well as for world-wide contingency operations. The Block III AWACS--with its enhancements--permits an orderly evolution of the system.

Advanced Attack Helicopter

he Advanced Attack Helicopter presentation at the FY 1975 budget hearings in March 1974 reflected assurances by both prime contractors that adequate funds for contractual requirements were contained in the FY 1975 budget. However, cost growth was reported by both contractors between May and July 1974. Causes of cost growth were the adverse effects of inflation, required redesign, unavailability of materials, and underestimation of the effort required for the cost/performance trade-offs encouraged by the design flexibility clause of the development contracts. We elected to slip the Phase I schedule by six months in order not to exceed the FY 1975 appropriation.

SAM-D (Surface-to-Air Missile System)

During the past year, we restructured the SAM-D program to reduce program investments until the new track-via-missile (TVM) guidance concept is demonstrated in FY 1976. In addition, another extensive cost effectiveness analysis was completed which endorsed continuation of the SAM-D development. As a result of these actions, planned expenditures in FY 1975 and FY 1976 have been reduced to an austere level while still preserving the option to continue development if test results warrant.

SHORAD (Short-Range Air Defense System)

Army studies addressing the requirement for a SHORAD missile system were completed during 1974 and an acquisition program for a system was approved. Contractor proposals were received for U.S. systems concepts, as well as for foreign-developed, U.S.-built systems. The ROLAND II foreign system developed by France and Germany was selected. A contract has been signed with Hughes Aircraft Corporation to fabricate ROLAND II units for test and evaluation. Funds are being requested in FY 1976 to continue the development of the ROLAND II weapon system mounted in a U.S. vehicle (Goer or MICV).

XM-1 Tank

In line with our objective of greater standardization of weapon systems of the U.S. and our allies, particularly in NATO, we have within the past year taken two significant actions regarding the XM-1 tank program. We have reached agreement on a tripartite (FRG, UK and U.S.) joint evaluation and shoot-off of candidate tank main gun systems under development in the three countries. This shoot-off has the objective of selecting a single gun system for future tanks of the three countries, and perhaps NATO. We have also reached agreement with the FRG to include the Leopard II tank (which the FRG plans to modify to meet the U.S. XM-1 requirement) as a competitor to the XM-1 prototypes.

AMST (Advanced Medium STOL Transport)

During the FY 1976 budget formulation, the AMST review addressed two major issues: the need and priority for a tactical airlift replacement aircraft for the C-130 and the value of a two-contractor competitive approach. The operational need was verified for a tactical airlift transport with an improved lift capability, yet able to operate from the austere landing fields that might be available in future contingencies and under the NATO mobilization scenario. The competitive design-to-cost approach was reaffirmed as a viable method of attaining the greatest operational improvements at the least possible cost.

UTTAS (Utility Tactical Transport Aircraft System)

Of considerable concern during the recent DSARC review of the UTTAS program was the propriety of continuing the program under the existing CPIF contracts, as the contractors expect to exceed the specified funds availability schedules. The best alternative appeared to be to allow the contractors to continue the program development at their own risk. Contingent upon Congressional approval, the Army will reimburse the contractors for FY 1975 efforts with FY 1976 funds. During the review, a Navy decision to employ the UTTAS aircraft in the anti-submarine warfare LAMPS application and Marine Corps interest in the aircraft as a replacement for the aging CH-46 assault helicopter was revealed.

AEGIS (Shipboard Weapon System)

The AEGIS program underwent DSARC review to reassess the need for this high performance shipboard weapon system, evaluate system performance and development risks and identify the critical development milestones remaining prior to full production decision for this system. Our final assessment of this program has not yet been completed because the decision is interrelated with final selection of an appropriate shipbuilding and/or conversion plan. However, we did conclude that the Soviet air threat provided a compelling and urgent requirement for the earliest practicable deployment of this weapon system. With some adjustment, the Navy development schedule was judged adequate and fully supportive of a number of ship installation options.

A major modification of the AEGIS program was approved by the DSARC to provide establishment of a Combat System Engineering Development Site (CSEDS). The purpose of this site is to furnish the necessary transition from the existing AEGIS engineering development model to the first operational shipboard system. CSEDS permits integration and test of the total ship combat system, including AEGIS, prior to final commitment of a major shipbuilding or conversion program.

SES (Surface Effect Ship)

The DSARC conducted a full-scale review of the Surface Effect Ship program in December 1973. The review concentrated on technical risks and developmental Test and Evaluation aspects of the proposed 2200-ton SES. Potential mission effectiveness was also addressed but received lesser emphasis, in recognition that the 2200-ton SES was not expected to be an operational unit. This DSARC review resulted in some redirection of the 2200-ton SES efforts in order to reduce the risk and was followed by more detailed staff level reviews of the risk-reduction plans through spring and summer of 1974. These reviews did not reveal any major deficiencies and program technical progress has been generally satisfactory. Late in 1974 the size of the SES program, compared to the resources available for creating and preserving options and alternatives in general, led us to conduct a series of top-level reviews of the program in a broad R&D context. The focus here was not primarily on technical risk, although that was reexamined, but on foreseeable worth of the program in relationship to overall R&D priorities and its impact on our ability to pursue other vehicle options. As a result of these reviews, we have found that we must sharply reorient the SES program-a task which will occupy us for much of 1975.

B. THEATER NUCLEAR FORCES

1. Nuclear Policy

U.S. forces must be effective in a wide range of conflict situations and must be mutually supporting in the sense that our capability to fight effectively at all levels of warfare and thereby control escalation deters the initiation of hostilities and encourages their termination. The policy of the United States is to rely primarily on U.S. and allied conventional forces to deter conventional aggression by both nuclear and non-nuclear powers. Theater nuclear forces are not relied upon as a substitute for conventional forces. The combined use of conventional and nuclear forces could be required in the event of significantly worse circumstances than those for which conventional forces are planned. Theater nuclear forces help deter nuclear conflict by allowing the controlled application of nuclear weapons where such weapons could significantly alter the local military outcome in favor of the United States and its allies.

In order to carry out the above policy, theater nuclear forces and their essential support (intelligence, C^3, target acquisition) should emphasize the following:

- o minimal vulnerability to attack,
- o significant advantage over conventional force alternatives,
- o capability for flexible, limited, selective, carefully-controlled militarily effective attacks without excessive collateral damage, and
- o improved safety, security and command/control.

Certain of our present nuclear weapons have deficiencies in these characteristics and study, development, and production efforts are underway to overcome them. In this section only the efforts involving nuclear weapons themselves are described in detail. The carriers and supporting systems are not discussed in detail since they are covered in depth elsewhere in this statement.

2. Correction of Deficiencies

A number of programs are underway to reduce the vulnerability of some of our theater nuclear forces. Production continues on the previously developed azimuth reference system for the PERSHING IA to enable the firing platoons to use unsurveyed launch sites. Development of the new 8-inch artillery fired atomic projectile (AFAP) continues, with among other features, a substantial increase in range over the present round thereby reducing vulnerability by permitting more rearward deployment. Study of a possible new 155mm AFAP as a replacement for the present round continues, with among other features, an increased range for the same reason. Development of an improved communications system continues. Improved communications will enhance security of information about nuclear weapons deployment and status, improving their survivability. An over-all study and experimental effort to enhance Army theater nuclear forces survivability will be initiated in FY 1976.

Nuclear weapons are not developed unless they offer significant advantage over conventional alternatives. In evaluating proposed nuclear weapons, consideration is given to conventional weapon developments, in particular precision guided munitions (PGM) that may accomplish tasks that would therefore not need to be done by nuclear weapons. Analysis indicates that nuclear weapons have their primary utility against large area targets (as contrasted to the single target capability of PGMs) or against very hard point targets. The development of the 8-inch AFAP emphasizes effort against large area targets; the advanced technology program for PERSHING II would provide options which emphasize effects against both large area targets; e.g., an airfield, and hard point targets. Studies are underway on a variety of other nuclear weapons to evaluate the need and their comparative advantage over conventional alternatives.

Some of our weapons and associated systems have deficiencies in their ability to provide for flexible, limited, carefully controlled, military effective attack with minimal collateral damage. The improved 8-inch AFAP and PERSHING II will have higher accuracy of delivery and lower yields thereby both increasing effectiveness while decreasing collateral damage. Developments are underway in improved target acquisition systems which, although primarily developed for conventional use, will permit more reliable and accurate targeting. Improved intelligence systems under development will also provide for improved targeting and direct support of combat forces. The improvement of the system discussed above will also enhance selective use of nuclear weapons. Studies are underway on other systems to provide for improvements in this area.

The nuclear weapons laboratories, under the auspices of the Energy Research and Development Administration have done extensive advanced development in safety, security and command and control. The problem of plutonium scatter has led to initiatives in plutonium separation. Improved disablement, nonviolent destruction, PAL sophistication and automated code handling systems exemplify improvements available to our weapon stockpile.

Engineering development of the 8-inch AFAP (in cooperation with ERDA), which started in FY 1975, continues in FY 1976 at a funding requirement level of $10.8 million. Notable features of the new round

are its advanced technology nuclear warhead, an accurate fuzing system, ballistic similitude with conventional rounds, rocket assist, and advanced devices to deny unauthorized use. In combination, these features have many advantages over the present nuclear round including:

- o Much greater flexibility,
- o Higher accuracy, permitting use of lower yields with concomitant lower collateral damage,
- o Increased range, giving greater military utility and less vulnerability due to the ability of the artillery to be deployed further to the rear, and
- o Very substantially increased security against unauthorized use.

The PERSHING II advanced technology demonstration program seeks to develop options for improvement of the PERSHING IA missile system. The program started in FY 1975 and requires $19.0 million in FY 1976. The present PERSHING missile system's deployment plan and mobility-under-alert conditions provide a high degree of survivability in wartime as compared to aircraft. Its military utility is significantly greater than conventional means of attacking fixed deep targets (e.g., airfields) in that far fewer weapons are required per target. It provides high military effectiveness over aircraft delivered nuclear bombs because of its assured penetration under all weather conditions in the very heavily defended enemy areas where it is targeted. As an additional advantage, the use of PERSHING to attack fixed deep targets (when nuclear attack is authorized) frees aircraft for close air support and for shallow interdiction, conventional or nuclear attack against transient targets. Finally, there may be escalation control advantages in the use of a limited range theater weapon as compared to longer range tactical aircraft or strategic weapons.

The PERSHING II advanced technology program (in conjunction with ERDA), seeks to supplement the advantages of PERSHING IA and provide increased military effectiveness and lower collateral damage. The PERSHING inertial system would be supplemented by a highly accurate terminal homing Radar Area Correlation Guidance (RADAG) system. An advanced technology nuclear warhead with multiple, rapidly-selectable low and moderate yields and designed to minimize undesirable nuclear effects would be provided as compared to the higher yields on the PERSHING IA. The higher accuracy and lower yields in combination would provide for greater military effectiveness and much lower collateral damage. A low-yield earth-penetrator option, not available with PERSHING IA, would provide a capability of attacking certain fixed hard targets. The FY 1976 funding provides for design and development of the re-entry vehicles with their RADAG guidance system and earth penetrators. Testing will be conducted in subsequent years. A decision on proceeding with engineering development of the system has been reserved until the completion of the test program and an evaluation of the cost-effectiveness of the system. The Federal Republic of Germany has been thoroughly briefed on the PERSHING II project and we believe will participate with us in the development and deployment of the system as the program proceeds.

C. LAND WARFARE

The basic objective of the Land Warfare R&D program is to maintain and improve the capability of our land forces to counter modern mechanized forces that are supported by effective air defense, electronic warfare, and tactical aircraft. Following the Warsaw Pact's example, the armies of potential adversaries throughout the world place heavy emphasis on armor. As a result, a very large fraction of the targets on a modern

battlefield are hard-point targets. These targets require not only more precise and specialized systems (such as antitank systems) for acquisition, location, and attack, but also systems which will allow our forces to overcome the sophisticated defenses that protect those targets. Thus, much of the Land Warfare effort is concentrated upon developing a variety of such systems. At the same time, with their development of close-air-support aircraft and armed helicopters, the Soviets are dramatically improving their ability to attack our forces from the air, and this new emphasis must also be countered.

In keeping with this broad objective, the principal thrust of R&D related to Land Warfare is to:

- o Dramatically improve our capability to find and attack enemy forces.
- o Upgrade our armored forces and make our antitank systems night-capable and more resistant to countermeasures.
- o Increase the coverage, lethality, and survivability of our close air support, attack helicopter, and ground-based fire support systems.
- o Upgrade our ground-based air defense forces.
- o Provide a comprehensive capability to conduct Electronic Warfare.

The next few pages describe our research and development efforts in the five major mission areas of land warfare: Battlefield Surveillance, Close Combat, Fire Support, Air Defense, and Electronic Warfare.

1. Battlefield Surveillance

Battlefield Surveillance is the continuous systematic watch over the battle area to provide timely information for the conduct of combat operations.

We need to improve our ability to locate, identify, and detect the movement of enemy forces, particularly in the region beyond line-of-sight (LOS). Our aim is to be able to use sensors, communications links, and processing and disseminating subsystems to provide the field commander not only with traditional tactical intelligence, but also real-time operational information that he can use to bring fire rapidly on targets.

We have improved our capability in the 0-3km (line-of-sight) region forward of the front line troops. At this range, earth's curvature and terrain irregularities prevent direct viewing of enemy activity unless we use some form of aerial platform. However, our experience in Southeast Asia and the Israeli experience in the October 1973 war indicate that aircraft attrition could be intolerable if aircraft must penetrate the various layers of sophisticated air defenses that have been developed and deployed by the Soviets. Therefore, to preserve options for airborne surveillance that would be survivable, we are initiating two feasibility programs, the Mini-Remotely Piloted Vehicle (RPV) and the Stand-Off Target Acquisition System (SOTAS). To provide cueing for the employment of these systems and also to fill surveillance gaps, we are continuing development of Unattended Ground Sensors (UGS). Another option to provide surveillance beyond line-of-sight still in the feasibility stage is the counterbattery radar.

The Mini-RPV system is essential since it is the only potential beyond LOS system that will provide positive identification as to the type of enemy target other than the counterbattery radar for locating enemy artillery batteries. It would be employed when the SOTAS or UGS systems indicates enemy movement or activity. Technology now permits the coupling of sophisticated sensors and simple airframes in a small, inexpensive and reliable package. To reduce its vulnerability to air

defenses, the Mini-RPV must have low radar, visual, radiating, and aural signatures. It can then perform surveillance missions when larger manned aircraft would suffer high attrition. The Mini-RPV program is known as Little "r" and we are requesting $10.8 million this year for the completion of the fabrication of 30 RPVs and four ground stations, and the conduct of flight tests and technology demonstrations.

The other airborne system, SOTAS, achieves survivability by the principal of stand-off operation. It is the only system currently under consideration that would provide near continuous real-time surveillance of enemy activity. SOTAS is a joint Army-Air Force effort designed to demonstrate the feasibility of providing accurate location of moving targets. The FY 1976 funding of $2.8 million is for equipment modifications to the follow-on system arising out of ongoing feasibility demonstrations and to complete the demonstration program.

The AN/TPQ-37 counterbattery radar program will determine the feasibility of detecting and locating enemy artillery weapons with sufficient accuracy to permit rapid engagement by friendly counterfire. The vulnerability of the AN/TPQ-37 to ECM, antiradiation missiles and enemy artillery will be carefully investigated prior to initiating full-scale development. This program will require $13.3 million in FY 1976 and acceptance testing of the two competing prototype radars is scheduled to begin in February 1975.

The Army AN/TPQ-36 counter-mortar radar is being designed to detect and locate enemy mortar positions. It is in competition with a Marine Corps-sponsored radar called the Hostile Weapons Locator and side-by-side testing is scheduled for the spring of 1976.

In addition to the comparative testing, and prior to the selection of one of these systems for procurement, we will also complete an investigation of the vulnerability of both of these radars to ECM, antiradiation missiles and artillery fire. The FY 1976 funding for the AN/TPQ-36 is $10.8 million and $2.9 million is required for the USMC radar program.

Our program on Unattended Ground Sensors is evolutionary and includes both feasibility and operational developments. We are initiating engineering development of an austere system which will use derivatives of the equipment used in Southeast Asia. This system is called the Remotely Monitored Battlefield Sensor System (REMBASS) and $3.2 million is requested in FY 1976 for engineering development of improved sensors and a narrow band data link. In the meantime, we are investigating the feasibility of improved sensors which would be added to REMBASS. The planned funding for this advanced development work is $8.0 million in FY 1976.

2. Close Combat

Close Combat employs infantry and armored units in direct engagement with enemy forces. Objectives of these units are to gain and hold ground.

The major deficiencies in our infantry and armored forces include numerical inferiority (about 3:1 in tanks, and higher for armored personnel carriers), insufficient mobility, marginal survivability against modern weaponry, lack of night-fighting capability, and lack of an effective infantry fighting vehicle. Moreover, the Soviets have a tank modernization program that could permit complete replacement of their equipment. We are studying an accelerated production rate.

The XM-1 main battle tank prototype advanced development was started two years ago to provide an option to produce a tank of superior combat effectiveness, yet low enough in acquisition and maintenance costs to allow us to buy and operate it, in the numbers required to meet the projected Pact capabilities for the 1980s. The XM-1 is a new tank design as opposed to the evolutionary approach used for the M60 series tanks in our current inventory. It takes advantage of development work previously accomplished in the MBT-70/XM803 tank programs on the engine, suspension system, gun stabilization, and high performance ammunition for the main gun. To meet the unit design-to-cost goal of $507,000 (constant FY 1972 dollars), simplicity of design is being emphasized. Thus the XM-1 will feature only those improvements over current tanks that show the greatest payoff such as the much greater survivability and combat effectiveness, high mobility, low profile, and improved firepower. The XM-1 development is progressing on schedule. We are continuing design trade-offs to assure that the original goals for design-to-cost and for maintainability and reliability are met and that the final tank design (to be selected next year for completion of full-scale development leading to production) will have the best combination of characteristics, consistent with those goals. Demonstration and test of the prototypes will be conducted next year as a major part of the evaluation to select the winning design.

The FRG has initiated a modification of the LEOPARD II tank responding to the performance, protection, reliability, maintainability, and cost goals established for the XM-1. Arrangements have been made to evaluate the modified LEOPARD II as a competitor to the U.S. XM-1 prototypes, with the objective of greater standardization of future tank weapon systems of the two countries and perhaps NATO. We are also participating this year in a joint FRG, UK and U.S. shoot-off evaluation of tank main gun armament candidates for future tanks of the three countries, with a similar objective. The U.S. candidate in the shoot-off is an improved kinetic energy round for the current 105mm tank gun.

The FY 1976 request is $52 million and the FY 7T request is $39 million--the latter amount including funds to initiate full-scale development. The FY 1976 request includes $1.4 million to cover cost of U.S. evaluation of the LEOPARD II, and the U.S. share of a jointly funded LEOPARD II cost/producibility study.

For the near term we are improving the M60A1 tank. The FY 1976 funding ($3 million) will complete development and testing of improvements in reliability, fire control and night fighting. Fielding of the M60A2 SHILLELAGH missile-firing tank is now scheduled for early 1975.

The Mechanized Infantry Combat Vehicle (MICV) is under development to provide our mechanized infantry forces, for the first time, with an armored squad carrier with sufficient firepower, mobility, and protection, together with the option for mounted attack, to function effectively as an armored infantry combat vehicle. Unlike other modern armies including the Soviets, the U.S. Army lacks an operational vehicle designed for this role. The MICV will replace the M113 armored squad carrier in the Europe-positioned force. The M113 has a good record as a reliable infantry squad transporter, but it is highly vulnerable to a wide range of weapons because of its light armor, poor mobility, and limited firepower, and it does not provide a mounted attack option for the infantry squad. During the past year of testing of the first MICV prototypes, development problems have been encountered with the transmission and suspension system, and several months' slippage in the program has been required to resolve these problems. Recent tests have been very encouraging, however.

The main concern about MICV has been its unit production cost, projected at more than twice that of the M113. The MICV has been the subject of extensive cost-effectiveness examinations, and consideration is being given to lower cost approaches, such as a modified version of the M113. MICV still appears to be the best buy of the various alternatives, but we plan to examine the question again thoroughly prior to the low-rate production decision late next year.

The FY 1976 budget request includes $16 million for MICV development and $16 million for development of its main armament, the BUSHMASTER rapid-fire 20-30mm cannon.

To improve night-fighting capability of our tank and infantry forces, we are developing thermal imaging night sights for use on the XM-1 and M60 series tanks, and for use with the TOW and DRAGON antitank missiles. These night sights are of an advanced design, utilizing the common module approach both to achieve high performance and to reduce production and life cycle costs. The common module approach takes advantage of mass production economy by using standardized modules adaptable for a variety of night vision systems needed for differing requirements. The FY 1976 budget request includes $8 million for the tank night sight and $7 million for the TOW and DRAGON night sights.

To improve our capabilities for mine detection and neutralization, we are requesting $1.7 million in FY 1976 for engineering development of mine plows, and for development/operational tests of several mine detecting systems.

One of our serious deficiencies in mechanized infantry and armored operations has been the unsatisfactory performance and poor reliability of the M114 Armored Reconnaissance Vehicle in the ground scout mission. The Armored Reconnaissance Scout Vehicle (ARSV) prototypes tested last year, however, may be over-specialized and not cost-effective. The ARSV development has been halted for re-examination of the program to determine whether or not a lower cost modification to an existing vehicle could fill this need. A decision is expected by mid-CY 1975. The Army anticipates that an existing vehicle can fill this need, and therefore no funds are requested in FY 1976 to continue the ARSV development.

Efforts to improve the combat capability of the infantryman include work on a new one-man machine gun, a lightweight mortar, and an improved LAW (light antitank weapon). In FY 1976 we are requesting $2 million for advanced development of the machine gun, $3.6 million for the light-weight mortar, and $3.0 million for the improved LAW.

3. Fire Support

The prime purpose of Fire Support is to help tank and infantry maneuver elements occupy and/or hold ground. Firepower in support of ground forces is delivered by tube and rocket artillery, surface-to-surface missiles, and fixed- and rotary-wing aircraft.

Our current R&D program is designed to eliminate or reduce the following major deficiencies: inferiority in quantity and range of cannon artillery, vulnerability of current close air support (CAS) aircraft (rotary- and fixed-wing) to enemy air defense systems, the limited capability of our CAS systems to destroy armored targets, limited night and adverse weather capability, and inability to deploy mines rapidly. In the conduct of this program, we are making a sustained effort to proceed cautiously and to prevent unnecessary duplication.

The A-10 is the first aircraft designed specifically for the close-air-support mission. It represents a major shift by the Air Force from their previous concentration on systems designed for the air-superiority and deep-strike interdiction missions. The A-10 was approved for initial low-rate production of 52 aircraft in the DSARC IIIA (held in July 1974) following a fly-off competition with the A-7 in a simulated combat environment. The only significant problem that emerged during the prototype phase in either the aircraft or its internally-mounted GAU-8 30mm cannon was a tendency of the gun gases to ignite under some firing conditions. This resulted in burnt-gas ingestion into the engine, and a distracting flash for the pilot at night. The problem has been corrected, however, by a change in the propellant mixture. The first of six RDT&E test aircraft is scheduled for delivery in February 1975, to support a full production decision, scheduled for October 1975. The total planned buy is 733 aircraft. The A-10 is one of the first programs to be managed under the design-to-cost concept. The initial design-to-cost goal of $1.5 million (unit fly-away cost in FY 1970 dollars) was increased to $1.7 million after the DSARC II, and it appears that the present goal will also be exceeded slightly (approximately $1.8 million). However, the design-to-cost goal has kept Air Force and contractor attention directed to cost, has aided demonstrably in holding production costs down, and has resulted in a very cost-effective aircraft. FY 1976 RDT&E funding request of $52.2 million for the A-10 and $8.0 million for the GAU-8 gun represents the last major R&D expenditure planned for this program.

To improve combat capabilities of the Army and Marine COBRA attack helicopter forces in the near term, 290 Army AH-1G helicopters are being modified to incorporate the TOW antitank missile. The TOW system is being installed in new production Army AH-1S helicopters and provisions for TOW are to be included in all new production AH-1J (improved) Marine COBRAs. Both the AH-1S and AH-1J (improved) have uprated engines, transmissions, and associated dynamic components to increase flight performance. We are requesting $2 million in FY 1976 to develop improved high-lift main rotor blades designed for longer service life and reduced combat vulnerability, for in-service replacement on Army COBRA series helicopters.

The Advanced Attack Helicopter (AAH) Program is a two-phase development aimed at major improvements over current armed helicopters in performance, survivability and night capability. The first phase, which requires about 40 percent of total R&D costs of $345 million (FY 1972), is a competitive prototype effort aimed at obtaining the best airframe and culminates in a fly-off between the two designs and a decision late in 1976. The development and integration of the full mission equipment (weapons, sensors and navigation) will be accomplished in the second phase with the winning contractor only. Design-to-cost is being stringently applied to this program with a goal of $1.7 million (fly-away unit cost in FY 1972 dollars). Contractors have been given unusual flexibility in trading off performance, within broad limits, to hold production cost down. Nevertheless, production cost risk is substantial and will be a key criterion in the decision to proceed into the next phase. First flight is scheduled for September of 1975. While technical risks on the AAH are low, there are operational uncertainties associated with nap-of-the earth flight at night and survivability. Extensive field tests have been and are being conducted on these questions. R&D costs for Phase I have risen above earlier estimates due to both inflation and real cost increases, including an unexpectedly heavy effort on cost-performance design trade-offs. As a result of the increased Phase I cost, and fixed annual expenditures, completion of Phase I is expected to slip five to six months. We are requesting $65.0 million for AAH in FY 1976 and $17.9 million in FY TT, which will nearly complete Phase I.

The Close Air Support Weapon System (CASWS) program builds on the successful MAVERICK development. Contract award for the laser seeker for MAVERICK is expected in March 1975. Development continues in FY 1976 with IOC in FY 1978. Laser MAVERICK can provide a new dimension to close air support with ground laser designator operators able to direct air-to-ground missiles precisely to their targets. The Air Force and Navy have formally agreed on a Joint Service Operational Requirement for Laser MAVERICK. The laser seeker is designed to satisfy any future requirements for laser-guided air-to-ground weapons, specifically including the Army's HELLFIRE Missile. Engineering development of an imaging infrared seeker for MAVERICK to provide additional night capability has been delayed until the third quarter of FY 1976 to permit careful evaluation of captive and live flight test data, operational advantages, and cost reduction efforts. The Navy and Air Force are jointly pursuing a dual field-of-view version of this same seeker for glide bomb applications. The FY 1976 request for CASWS is $31.5 million.

Full-scale development of laser guided HELLFIRE is being deferred. Technically the program has been very successful and there are significant potential advantages of HELLFIRE over TOW including longer range, shorter flight time, launch-and-leave when a remote designator is employed, reduced exposure, multiple launches per exposure and increased survivability. However, some of these advantages may not be realized in practice and others may not be decisive enough to justify the costs of HELLFIRE. Another view is that the follow-on missile to TOW should have a passive "true" fire-and-forget guidance system. In view of this, the next phase of the HELLFIRE program will include further field tests to assess realizability of potential advantages, a thorough cost-effectiveness analysis and minimal efforts to maintain the option of initiating full-scale development. Because the Air Force will be developing a laser seeker suitable for HELLFIRE and the Army will be developing a ground laser designator for use with guided projectiles and Air Force weapons, the laser HELLFIRE option can be kept open inexpensively; $5.0 Million is requested in FY 1976.

CLGP (Cannon-Launched Guided Projectile) is the Army's cannon-launched laser-guided 155mm projectile employing proportional guidance. Field tests are showing that the CLGP concept fits very nicely into current field artillery systems and practice. The program, which is just completing competitive feasibility testing, is aimed at providing artillery with major new capabilities, especially the defeat of stationary and moving armor. The Navy has a similar (in-house) program for a 5-inch projectile, though the applications are quite different. From their inception these programs have been viewed as very high risks. Test results achieved by one of the Army contractors (no successes in seven firings) and firings by the Navy confirm this assessment. However, the other Army contractor has had very encouraging results with five of the last six shots being near-perfect hits. These hits have been achieved at 4, 8, and 12 km and against two moving tanks. It now appears we will have a sound basis for considering engineering development. In order to coordinate the CLGP and 5-inch guided projectile developments, a very thorough program of tests and evaluation and a review of the results by the DSARC were planned. Difficulties encountered by the Navy have so far precluded completion of this program but the DSARC did review all available results on 28 January 1975. The findings and decision of the DSARC will be communicated to the Congress separately.

Development of two new towed artillery pieces will be completed in FY 1976 to improve our artillery capability. Both new howitzers offer

helicopter transportability and longer range than the weapons they replace. The 105mm XM204 is a soft recoil system which has been very successful, for which $3.1 million is requested in FY 1976. 155mm XM-198 howitzer replaces the M114 howitzer which entered service in 1942. The XM-198 will have a range of 30km, twice that of the M114, and will give near parity in range to current Soviet artillery pieces of equivalent caliber. In addition, essentially complete standardization of ammunition for the XM-198, M109A1 howitzer, and the UK/FRG/Italian FH-70 howitzers have been achieved. Recent testing of the XM-198 has been proceeding very well and the $0.6 million requested in 1976 will complete engineering development.

We are also initiating feasibility investigations of a new low-cost and very accurate missile as an alternative to non-nuclear LANCE (NNL) and a new low-cost free rocket called General Support Rocket System (GSRS). The NNL alternative missile will have an extended range employing a much lower cost solid propellant motor and distance measuring equipment (DME) or strap-down inertial guidance. The GSRS system would have a very high rate of fire as compared to tube artillery, offering a major improvement in our effectiveness against massed armor, mobile air defense weapons, and "shoot and scoot" indirect fire systems. The FY 1976 funds of $3.0 million for the long-range guided missile and $2.0 million for the GSRS are for preparation, evaluation and cost-effectiveness comparisions of preliminary design concepts.

Land mine technology is receiving renewed concentration in land warfare R&D. The synergistic effect of mines, when used in conjunction with covering fire, has long been recognized, but historically mines have taken much too long to emplace, particularly in front of the rapidly moving armored attacks which would be expected in a European conflict. The availability of the cargo carrier artillery projectile, aircraft and helicopter dispensers and new sensor and fuzing technology are permitting the development of scatterable antipersonnel and antitank mines which can be very rapidly deployed in front of or around enemy units. We are requesting $5.4 million in FY 1976 for feasibility and advanced development work on "off-route" and remotely-controlled mines, and $16.8 million for full scale development of an artillery-delivered anti tank mine, the joint Service air-delivered GATOR mine, and a vehicle-mounted surface dispensing system.

To avoid duplication in mine developments, the Services, at my direction, have established a joint requirement for air-delivered scatterable mines and now support the joint GATOR program.

TACFIRE is an integrated system of computer elements which will provide for automatic transmission, receipt and computation of artillery firing data. Engineering development is nearly complete and operational tests indicate a significant improvement in the time required for fire planning and artillery computations. There still are some deficiences in the system, however. The DSARC in January 1975 authorized limited procurement of 14 sets of TACFIRE equipment contingent on improvements to certain components of the system and adequate testing of the changes to assure system readiness to proceed with Development/Operational Testing. We will need $8.1 million in 1976 for R&D effort on several new devices, software changes and testing.

Several programs in Fire Support have either been substantially slowed or terminated. Laser HELLFIRE and the imaging IR seeker for MAVERICK were mentioned above. The Air Defense Suppression Missile program has been terminated. The Army Airborne Laser Designator has also been terminated because of the uncertainties of HELLFIRE and because there are less expensive ways to achieve an airborne laser designation capability if it is needed. The above discussions of laser MAVERICK, guided projectiles, imaging IR seeker for glide bombs, and scatterable mines are major examples of our efforts to prevent duplication.

4. Field Army Air Defense

Initial objectives of enemy tactical air will be to destroy our tactical nuclear capability, achieve at least local air superiority in order to attack potential ground force elements, and to minimize damage from retaliation by U.S. counter-air strikes. The objective of Field Army Air Defense is to limit enemy first-strike effectiveness against air bases, air defenses, command and control functions, SSMs, troop concentrations, special ammunition support points, and depots.

Unless field army commanders can conceal their assets from the airborne threat or have adequate air defense, they will be unable to freely maneuver their forces over extended combat periods. To insure adequate survivability of critical assets, a mix of passive and complementary active air defense systems with overlapping capability is necessary.

Air defense of the field army is provided by a mix of weapons including fighter aircraft, medium/high altitude SAMs, low altitude SAMs and AA guns, and self-defense weapons, all supported by other radars and sensors, electronic warfare facilities, C^3 systems, and passive defense measures.

All of our operational air defense systems have significant shortcomings. The SAM-D is intended to provide medium-to-high altitude air defense and will replace both NIKE HERCULES and Improved HAWK. In our various studies, we have been unable to find a clear advantage for either fighters or surface-to-air missile systems to provide medium-to-high altitude air defense in the rear areas. Their relative merits are dependent on many factors such as geographical deployments, assets to be protected, command and control and countermeasures. Each type of system has advantages in certain situations. As recent conflicts in SEA and the Mideast have demonstrated, a combination of SAMs and fighters can provide an effective defense. Thus prudence dictates continued development of an improved technology medium-to-high altitude surface-to-air missile system as well as manned aircraft for air defense. SAM-D is designed to correct the current deficiencies by providing a multiple simultaneous target engagement capability in an intense ECM environment. SAM-D will also reduce the annual operating cost by $100 million if it replaces the Improved HAWK and NIKE HERCULES systems and reduce the military manpower programmed for air defense by about 8,000 men. Numerous cost effectiveness studies have concluded that a system with the characteristics of SAM-D is the best and most cost-effective solution to the high-to-medium altitude air defense requirement in the 1980s, provided the design objectives can be achieved.

The SAM-D program was restructured in FY 1974 to reduce program investments until the new track-via-missile (TVM) SAM-D guidance concept was demonstrated. In addition, a program to determine the feasibility of alternative guidance techniques was initiated to develop options for a new medium-to-high altitude SAM. Through flight test, the current program has validated the airframe structure, airframe controls and propulsion. Limited radar tests to date have demonstrated missile acquisition and track-via-missile guidance with an airborne guidance section mounted on an aircraft. The planned completion date (January 1976) of the test program has slipped six months from that reported one year ago. The cause of the slip has been a combination of parts/procurement delays and component failures requiring redesign or improvements in manufacturing.

The total RDT&E program cost for SAM-D is estimated at about $1,500 million of which $856 million will be spent by the end of FY 1975.

In FY 1976, $130 million is requested for SAM-D to complete the guidance feasibility tests and to continue engineering development. Funding for engineering development in FY 1976 is required to avoid a costly interruption of the program. Continued full-scale engineering development is contingent upon guidance feasibility tests which will be carefully evaluated and judged by a DSARC Review.

Improved HAWK is performing very well and is perhaps the best land-based, low-to-medium altitude SAM in the world. This program is a good example of our general philosophy and management approach to improve existing assets to get maximum return on investment while bringing along (where warranted) the next generation system. RDT&E is continuing on Improved HAWK to shorten its relocation time and improve detection of low-altitude targets in ground clutter. A total of about $35 million RDT&E is planned for these improvements, and $15.7 million is requested in FY 1976.

The most critical need we have in Field Army Air Defense is in the low-altitude area.

The Short Range Air Defense (SHORAD) SAM program will provide a mobile, low-altitude air defense system which can operate in a wide range of weather and light conditions. Our currently deployed CHAPARRAL is limited to daylight visual conditions, and a tail chase engagement. The Army has completed an evaluation of proposals for a new SHORAD system and selected the ROLAND II system developed by France and the Federal Republic of Germany. The system will be fabricated and produced within the United States by a licensed prime contractor (Hughes Aircraft). The total RDT&E program funds are estimated to be $237.6 million with $65 million required in FY 1976. Low-rate initial production is planned.

The highly mobile ROLAND II will be mounted on one M553 "GOER" vehicle with the MICV as an alternate. The vehicle will carry eight missiles and have a dual missile launcher with a rapid reload capability. Mounted on the vehicle is a target acquisition radar and a separate target tracking radar to provide command guidance to the missile. An optical backup target tracker is provided for use in an ECM environment. A cooperative test program with France and the Federal Republic of Germany using foreign built hardware is planned for FY 1975 and 1976 when U.S. produced units will not be available.

ROLAND II can be used in both forward and rear areas. It will complement our larger, more costly SAM-D system and provide a relatively low-cost means for greatly enhancing our air defense capability. The projected procurement cost per tactical fire section of ROLAND II is about $6 million compared to $40 million for SAM-D (in escalated dollars).

The Soviets continue to stress low-altitude systems. They have recently deployed two systems, the SA-8 and SA-9.

Manportable air defense systems are a vital part of our air defense weapon mix. Their low cost and high portability allows them to be proliferated throughout the division area giving company size units a means of self-protection against enemy aircraft.

REDEYE, our current manportable air defense system, is limited to tail-chase engagements of aircraft. We are developing STINGER to replace REDEYE. In addition, we are supporting feasibility testing of a STINGER alternative system as well as a backup seeker for STINGER to provide technological options in the event the STINGER development becomes too costly or serious development difficulties occur.

The STINGER program has had technical problems which have caused schedule slippages and program cost increases. In February 1974, a cost-reduction program using design-to-cost principles was implemented which extended the schedule by eight months. Current difficulties have caused an additional six-month schedule slip. The STINGER rogram cost estimate of about $660 million in September 1974 has increased by about 185 million over the original estimate (May 1972). Over 90 percent of this increase is due to escalation.

Development costs are estimated to be about $107 million, of which about $75 million will have been spent by the end of FY 1975. For FY 1976, $20.7 million is requested to continue development. The next series of flight tests are scheduled for early 1975. If continued guidance system difficulties are encountered in these flights, the program will be restructured to reduce obligations until fixes can be demonstrated. Additionally, we plan to accelerate and expand the feasibility development program for both the STINGER alternative system and the backup STINGER seeker in FY 1976 for a total of $3.7 million. This increased effort will provide for 20 guided missile firings in 1975--ten to test the STINGER alternative system and ten to test the backup STINGER seeker.

In addition to improvements to our current VULCAN, we are currently planning to initiate a program in late FY 1975 for an improved air defense gun system. Candidates to be considered will include foreign-developed and new U.S. systems. In FY 1976, $6.4 million is requested to continue fabrication of U.S. candidate systems and/or to procure a foreign-developed system for test. This effort is planned for completion in FY 1977 resulting in the selection of a system for full-scale development leading to deployment.

5. Electronic Warfare in Support of Land Warfare

Electronic warfare systems serve two basic purposes. First, by intercepting communications, radar, or other signals, they detect and locate enemy forces. Second, by active interference with portions of the electromagnetic spectrum, they either disrupt enemy operations and/or provide protection for our own forces. A close tie between intercept and jamming is essential to prevent loss of intelligence and to maximize jamming effectiveness.

The Assistant Secretary of the Army for R&D now chairs an Intelligence R&D Panel to insure that the systems of the various services are compatible and interoperable wherever possible. There has been a great deal of interservice coordination, and many of the projects have been cooperative efforts.

The long-range goal of this mission area is to be able to provide complete coverage of the different segments of the electromagnetic spectrum in systems positioned where they will be most effective (ground versus airborne). Because of the various combinations required, the number of individual projects is necessarily large. At the present time there are 64 individual projects or tasks under advanced or engineering development. The FY 1976 funding request of $74.3 million is still below the peak of what will be required in the next few years.

D. AIR WARFARE

The Air Warfare function encompasses the development of systems for Air Superiority, Deep Strike/Interdiction, Defense Suppression, Tactical Reconnaissance, Tactical Air Surveillance and Command and Control, and Air Mobility. Emphasis continues to be placed on the Air Superiority mission with over $490 million allocated in FY 1976. The Tactical Air Surveillance and Command and Control, and the Air Mobility

missions are funded at about $260 million each, with Defense Suppression at the $230 million level. The Tactical Reconnaissance and Deep Strike/Interdiction missions are allocated $103 million and $155 million, respectively, making a total of over a billion dollars in Air Warfare developments planned for FY 1976. This covers a wide range of major weapons and supporting systems developments all of which we believe are important in helping us maintain our leadership in this critical area.

1. Air Superiority

This mission area supports programs to enable the U.S. and its allies to gain and maintain dominance in the air battle over both friendly and enemy territory so that our forces can conduct land, sea, and air operations without prohibitive interference by the enemy. Primary air superiority missions include cover for close air support and battlefield interdiction, combat air patrol, strike escort, fighter sweeps, and theater (fleet) air defense.

Our view of which tactical air warfare missions should receive emphasis is changing significantly - change which will be reflected in development and procurement expenditures of the future. We now realize that an important factor in deterrence is a display of capability to blunt the rapid movement of armor. The ability to prevail in the vicinity of the FEBA will require a combination of systems to simultaneously conduct close air support and maintain local air superiority.

The Communist block countries continue to enjoy a substantial numerical advantage over allied forces. The Warsaw Pact displays an advantage of 2:1 over NATO forces in the category of tactical and air defense fighters, the bulk of which are MiG-19, MiG-21 and SU-7 models. The Soviet Union is modernizing its massive fighter force with more sophisticated aircraft such as the FOXBAT and FLOGGER. We are attempting to balance the force size disparity in the air-to-air area by:

- o Procurement of a moderate force of aircraft which combine high air combat maneuverability with long-range radar and all-weather missiles.
- o The development of a new, lower cost, less sophisticated, very high performance air combat fighter.
- o Supporting specialized air combat maneuvering training of our pilots against dissimilar aircraft, a la the Aggressor Squadron and Top Gun School.
- o Development of the AWACS.
- o Continuation of attempts to solve the illusive problem of IFF, and
- o Continued development of improved short range air-to-air missiles, cannon systems and ammunition.

During the past year, we have terminated the GAU-7 25mm cannon development program because of technical problems which appeared unsolvable within the cost goals and the projected high cost of the caseless 25mm rounds which would have made the cost of training for the air-to-air mission very high.

Among the unsolved problems in the Air Superiority mission area is command, control and coordination of air-to-air and surface-to-air systems in the air space and over the forward edge of the battlefield area (FEBA) during dynamic, chaotic combat actions.

a. Air Combat Fighter (ACF)

The objective of the ACF program is to develop an affordable, high-performance air superiority fighter aircraft that can be bought in sufficient quantities to alleviate our present and forecast deficiency in numbers of fighter aircraft. We are combining the new technologies from Lightweight Fighter Prototype program into a missionized fighter version of the better of the two LWF prototypes, the YF-16. The missionized aircraft, the F-16, will be optimized for "dogfighting." Further, since it will provide a lower cost fighter choice to implement the F-14 and the F-15, it opens an avenue for possible force expansion within a constrained budget. We have enhanced the possibility of achieving low cost on this and other programs through application of the design-to-cost management concept. The cost goal established at the inception of the LWF program has effectively defined the range of alternatives and countered tendencies to increase the sophistication of the aircraft. The LWF program has been a highly successful effort, rendering maximum return-on-investment. The return for $104 million has been four flight vehicles of two competing designs each of which exhibited significant advances in air combat performance, handling qualities, and reliability. I attribute much of the achievement to the manner in which the program was initiated. The contractors were afforded freedom to pursue design innovations of their choice rather than being bound by the typically tight government instructions and specifications. The results have provided us valuable options which can now be exploited for the development of timely, useful combat fighters for not only the U.S. but others. The LWF experience has encouraged us to examine other areas for application of prototyping activities.

During FY 1976 we are requesting $273 million to provide for aircraft/engine and system development of the YF-16 which will move into full scale development for deployment as the ACF. Upon completion of full scale development, the YF-16 will represent a significant alteration in the cost/size trend of tactical fighter aircraft.. I am proud of the progress the Air Force has made in this program and I plan to provide continued assistance and encouragement toward fulfillment of program goals.

The YF-16 will compete for the role of replacement for the F-104G aircraft now being used by European allies and for other sales to friendly countries. It may also serve as a base from which to derive a version suitable for the Navy fighter-attack mission.

b. Navy Air Combat Fighter (NACF)

On the premise that it will be practical to adapt the Air Force Lightweight Fighter Technologies for Navy use, we have included $110.2 million in the FY 1976 budget to pursue engineering development of a Navy Air Combat Fighter. The NACF is visualized as a fighter-attack airplane which will be superior to the bulk of fighters in air fighting and will use precision guided munitions to contribute effectively to the air-to-ground mission. We want to produce a combat aircraft that will have an associated life-cycle cost of less than half that of the F-14 thereby allowing us to arrest the decline of Navy and Marine Corps force structure. We visualize the NACF as a replacement for the F-4 and possibly for the A-7 in the Navy and Marine Corps. The final configuration and weapons suite of the airplane will be determined through appropriate trade-offs.

c. V/STOL Technology

Continuation of research and advanced development efforts in the V/STOL area are justified by the potential high pay-off of combining technologies to achieve a combat-useful and affordable vehicle. Benefits to the Navy would, of course, be relief from the burden of catapults and arresting gear on a large number of ships. V/STOL would afford the use of carrier decks for operations in spite of combat damage to landing and launching areas. The Marine Corps values vertical lift fighter/attack aircraft for operations in confined areas which would typify expeditionary operations. I intend to continue a moderate effort in V/STOL research and development to create the technological opportunities for advanced development of a form of V/STOL combat aircraft. Accordingly, our budget request contains $21 million for this effort including continuing work on the thrust augmented wing (TAW). The next important milestone in the TAW program is the demonstration of the thrust augmentation ratio (Ø). The objective is a Ø of 1.55 to be demonstrated by July 1975. If this milestone cannot be met, we will evaluate the operational potential of the technology for short take-off and vertical landing. If the results of our Test and Evaluation are encouraging, the $18 million will be used to initiate prototype flight test vehicles.

While development is proceeding on the approach for a completely new V/STOL, the Navy and Marine Corps are examining growth potential of the AV-8 HARRIER. The options for a second generation AVX range from aerodynamic refinement of the AV-8 design with the presently installed PEGASUS 11 engine to a redesigned aircraft incorporating the PEGASUS 15 engine. Such an effort would provide a V/STOL candidate to replace A-4 and AV-8 in the U.S. Marine Corps inventory as those aircraft reach the end of service life.

We also have a joint program with NASA to modify two aircraft with new lift fans and existing gas generators to provide inexpensive test vehicles. We are requesting $0.5 million in FY 1976 to develop a flight-worthy lift fan based on those used in previous wind tunnel tests and to design and fabricate the modifications to the test vehicle. The Navy is supporting NASA in this effort.

d. F-401 Engine

The research and development of the F-401 engine has been curtailed since there is not currently a requirement to support continued development. The $2.0 million requested for this engine will provide for close-out of the documentation and will include a review of Air Force engine component improvement program efforts in the common-core F-100.

e. Advanced Radar Air-to-Air Missile (ARAAM)

The AIM-7F radar missile is just starting production. We have thoroughly evaluated this missile and can project that it will be many times more reliable than the previous models. A next-generation seeker can further improve both its performance and cost. We have the technology to make such improvements but have delayed initiating an improvement program until the AIM-7F operational evaluation was completed and deficiencies, if any, revealed. We are now starting a five year program to develop a new seeker. These seekers will be incorporated into production AIM-7F missiles starting in 1980 but will not be retrofitted into earlier missiles. The program is a joint Navy/Air Force effort to be managed by the Navy. Two contractors will compete through a fly-off program. The objective is to provide an improved missile at less cost than the AIM-7F. The $7.0 million required by the Navy in FY 1976 will fund the two contractors' efforts.

f. Anti-Radition Missile

This is a joint Navy/Air Force exploratory development effort, a simple application of existing technology. Still in early test, it has exhibited great promise and should have considerable impact on air tactics.

g. Short Range Air-to-Air Missile (SRAAM)

Our first order of business in the SRAAM area is to complete AIM-9L development and to put this missile in production for the Navy and the Air Force. For this task we are requesting $3.0 million. We are also requesting $6.0 million for the Navy and $3.8 million for the Air Force to determine the efficacy of a follow-on SRAAM that will fulfill the requirements of both the Navy and Air Force, and to define the configuration of that missile. Missiles of this type will be needed in large quantities and their unit cost must be kept low. One part of this two-part program consists of a joint Navy/Air Force test on the Air Combat Maneuvering Range (ACMR). Differing operational concepts and different missile seeker/guidance control unit configurations will be used in actual situations involving multiple aircraft to gain the insight and experience necessary to define the operational requirements for the missile. By means of the ACMR we expect to resolve differences regarding combat utility of forward quadrant and off-boresight firings, the influence of aircraft size and performance, and operational factors relating to engagement (the target-sparse environment of fleet air defense as compared to target-rich dogfights over battlefields). The second part of the program is a parallel hardware development to establish feasibility of candidate technological innovations and missile configuration options. An important feature of this program is insistence on cross-Service management participation at the working level, both in the ACMR tests and in the hardware technology development. This program should provide the most complete set of data on requirements, feasibility, and cost ever developed for an air-to-air missile. This base of information should enable us, by the end of CY 1976, to describe the character of an advanced short range air-to-air missile for development as a follow-on to the AIM-9L. I want to assure you, however, that we have no intention of arresting the research and development activity required to provide SRAAM options during the two years of requirements validation. It is my goal to be in a position to embark upon the advanced development of an advanced SRAAM by the end of CY 1976.

2. Defense Suppression

The Warsaw Pact and other potential adversaries have developed large numbers of mobile and fixed SAMs and air defense artillery (ADA) to support attacking armored forces and to protect homeland targets. It is important that we develop capability adequate to suppress these weapons or attack the targets they defend from beyond their lethal range. During the prolonged interdiction operations in Southeast Asia we lost substantial numbers of aircraft. The lost of a large part of the Israeli Air Force to SAMs and ADA during the 1970 and 1973 Middle East wars increased the interest in suppressing enemy air defenses. The objective of the defense suppression program is to provide lethal (destruction) and non-lethal (neutralization) suppression of the enemy's air defense weapons. In FY 1976 we plan to support the following programs:

Lethal Suppression:

- Radar hunter-killer aircraft - Advanced Wild Weasel
- Anti-radiation missiles - HARM
- Stand-off weapons - Modular Guided Glide Bombs
- Target location/strike - Precision Location Strike System

Non-Lethal Suppression:

- o Tactical Support Jammer Aircraft - EF-111A
- o Radar Warning Receivers - F-15/ALR-56; F-111/ALR-62
- o Self-protection Jammers - F-111/ALQ-137; F-4/ALQ-131
- o Chaff and Flares
- o Tactical Airborne Signal Exploitation - TASES
- o RPVs to jam and decoy enemy flight control radar.

The overall funding levels requested to support this mission area have increased steadily since 1970 as have the numbers and variety of weapons our aircraft must be prepared to counter. Two new weapons, the SA-8 and SA-9 mobile SAMs were deployed in 1974 to protect Pact field armies. We have taken a hard look at the proper mix and time-phasing of various systems to maximize our defense suppression capability within the bounds of a constrained budget and have adjusted the priority of some programs accordingly. For example, our studies show that the effectiveness of the EF-111A tactical jamming system would be very scenario-dependent. The EF-111A would be extremely useful as a complement to an effective PLSS and standoff MGGB weapons but by itself the EF-111A would have limited usefulness. Conversely, the EF-111A would be effective by itself in several other contingency situations but these could be covered in an emergency by the EA-6B. We have elected, therefore, to slow the EF-111A development until FY 1977 when it may be accelerated to phase in with the lethal systems that we plan to give development priority. We are therefore only requesting $5.0 million in FY 1975. This amount, coupled with the $31.8 million FY 1975 funds still available will launch the initial hardware prototype phase of the EF-111A program.

a. Lethal Defense Suppression (Attack and Destroy)

The FY 1976 budget request contains $27.6 million to support development of the Navy's Highspeed Anti-Radiation Missile (HARM) to be used by Navy strike aircraft and the Air Force's Wild Weasel force to destroy SAMs and other enemy radars. The objective of the HARM program is to develop a missile much more capable than the slow flying, limited threat coverage SHRIKE and much less expensive than the large, sophisticated STANDARD ARM. HARM is being designed-to-cost for an average of $42K per missile. The FY 1976 funds will support fabrication and flight testing of 16 advanced development missiles, providing the solid information on costs and technical feasibility needed to decide whether the HARM program should go into full scale development for deployment.

To achieve our objective of striking targets from beyond the range of their defenses, we are programming $19 million to continue the hardware development of the Precision Location Strike System (PLSS) we plan to initiate late in FY 1975. The PLSS is designed to locate targets very accurately and guide strike aircraft or stand-off weapons to destroy them. The PLSS will guide strike aircraft and stand-off weapons such as the Modular Guided Glide Bombs (MGGB) to destroy the targets, regardless of night or cloud cover. The FY 1976 budget contains $23 million to support developments in the modular guided glide weapons family for use alone or with the PLSS. The planar wing extended range MGGB II will be completed, PLSS/DME guidance kits will be integrated, and the laser-seeker developed under the MAVERICK program will be installed and tested. The MGGB are for both Navy and Air Force use.

b. Non-Lethal Defense Suppression (Electronic Warfare)

Continuation of the development of self-protection systems for strike aircraft against SAMs, initiation of the Navy's Tactical Airborne Signal Exploitation System (TASES) and the aforementioned EF-111A program are the major non-lethal defense suppression activities

in the FY 1976 budget. $19.8 million is planned to complete the F-15 Radar Warning Receiver (ALR-56) and self protection jammer (ALQ-135) and begin development of a chaff/flare decoy dispenser. $7.5 million will support the update of the F/FB-111 EW System to make it effective against the newer model SA-2E and SA-3 weapons. Programs to update the B-52 ($3.7 million) and SR-71 ($4.6 million) protective systems will also be supported.

The Navy plans to replace the aging EA-3B aircraft with an S-3A equipped to provide the task force commander with electronic warfare support and tactical ocean surveillance. The Tactical Airborne Signal Exploitation System (TASES) would be used to range far ahead of the fleet to intercept enemy communications (to determine his plans and intentions) and radar transmissions (to determine the location, size and make-up of his anti-shipping attack forces). The TASES would also carry ocean surveillance radars and forward looking infrared (FLIR) sensors to detect non-emitting enemy naval forces. A major objective of the TASES program is to act as the forward scout for the fleet and thereby allow the task force to operate silently to avoid detection. Pending a favorable decision from the TASES DSARC II Review scheduled for September 1975, $19.6 million will start an engineering development program to install and integrate and test some existing surveillance sensors with some new data processing and display equipment in an S-3A loaned from the ASW program.

3. Deep Strike/Interdiction

The deep strike/interdiction mission encompasses the employment of tactical air-to-surface operations and surface-to-surface missiles to strike heavily defended high value targets beyond the forward edge of the battle area (FEBA) and within the enemy's heartland. Since we must have the option of destroying targets regardless of weather or level of defense, both conventional and tactical nuclear weapons may be employed. The R&D objective is to provide an ability to effectively attack enemy offensive, logistic, economic, and psychological strengths at will and in adverse weather. This must be accomplished in the face of improved enemy defenses, and harder and less vulnerable target elements. In this mission area the largest improvement in capability comes from improved weapons, avionics, and delivery techniques rather than, for example, from new aircraft and we are ordering our priorities accordingly.

a. Improved Tactical Bombing

To improve our capability to conduct strikes at night and in limited adverse weather, we are requesting $22.0 million to continue Air Force development in improved tactical bombing. The major program in this element is PAVE TACK, a podded system that contains a forward-looking infrared (FLIR) sensor with a boresighted laser ranger/designator. The system is designed for use on several types of aircraft and will provide 24-hour target acquisition, precision delivery of laser guided weapons and free-fall weapons, and eventually, delivery of imaging infrared guided bombs. We have two FLIRs under competitive development, the best of which will be chosen for PAVE TACK following a flight test under operational conditions. PAVE TACK will initially be installed on F-4E and F-111 aircraft with first flight tests planned for December 1975.

b. A-6E TRAM

The Navy A-6E Target Recognition and Attack Multi-sensors (TRAM) system, like the Air Force PAVE TACK system, employs a FLIR

sensor and laser ranger/designator to achieve a night/limited-adverse weather attack capability. The major difference is that the TRAM system is integrated into the A-6E airframe rather than being carried in an external pod. We are requesting $4.1 million to complete the R&D of this program in FY 1976, to install three prototypes for technical and operational evaluation.

c. Weapons

We are continuing developments in a series of weapons programs that will improve our effectiveness against certain targets and to take advantage of the gains we are making in target acquisition. In the aggregate, these programs will require approximately $66 million of FY 1976 funds. We are developing munitions for use against hard targets such as aircraft shelters, runways, and command centers; cluster munitions for area targets; more effective land and shallow-water mines; fuel-air explosives for anti-personnel and other uses, and we will improve the effectiveness of the M-61 aircraft cannon through increased rate of fire, optimized dispersion, and increased projectile velocity. We are investigating several all-weather guidance schemes for eventual application to advanced standoff missiles. We are also developing an Air Launched Low Volume Ramjet motor for possible application to a supersonic standoff missile.

d. PERSHING II Advanced Technology Development

The PERSHING II program, discussed in more detail in the Theater Nuclear Forces Section will demonstrate a technological option for highly accurate, minimum vulnerability, all-weather delivery capability. The implications are significant for future weapons including surface-to-surface and very high altitude/high speed air vehicle platforms with both small nuclear and conventional warheads. As discussed elsewhere, I would like to reserve futher speculation on the long term possibilities until we have been able to demonstrate the technology and have studied the cost effectiveness. We have requested $19.0 million in FY 1976. These funds will provide for design and purchase of hardware and support for advanced development test. The next phase of the program would provide funds for flight tests of re-entry vehicles in late CY 1977 or early CY 1978.

4. Reconnaissance and Intelligence

Rapid and responsive tactical all-weather reconnaissance and intelligence processing capabilities are essential to provide accurate targeting for strike operations and reliable data for our own force planning and deployment. The recent Mid East conflict plus our own experience in Southeast Asia highlighted these facts and further confirmed the need to achieve a viable night and all-weather reconnaissance capability.

Our tactical air reconnaissance systems such as the RF-4C, RA-5C and OV-1 have changed very little since the mid 1960's. There have been some improvements in sensors, but they are still basically useful only in clear weather. Intelligence processing capabilities have similarly shown little improvement over the past decade. The Navy's carrier-based integrated operational intelligence centers, which were installed in the early 1960s, are the only automated intelligence processing facilities presently available to support tactical air, ground or sea operations.

We have several programs now in development that should help alleviate the situation. Emphasis is being placed on all-weather sensors, target detection and location, reconnaissance drones, and automated intelligence processing to reduce the collection/processing/dissemination cycle time from days and hours to minutes and seconds.

a. Side Looking Airborne Radar (SLAR)

Our major thrust in the all-weather sensor field is development of a high resolution side looking airborne radar (SLAR).

Several ADP-10 SLAR systems were deployed in late 1973 to Europe and flown extensively in Air Force's RF-4C aircraft. These systems graphically demonstrated the great potential of this unique sensor which permits detection and location of trucks, tanks, aircraft, and similar-sized targets at night and under all-weather conditions. During the REFORGER exercise, in which extremely poor weather conditions were encountered, these systems obtained virtually all of the reconnaissance products that were generated. The Federal Republic of Germany, recognizing the tactical value of this sensor in bad weather areas, has signed a joint development agreement with the U.S. on the UPD-X to equally share development costs. We are asking for $3.6 million in FY 1976 for our share of the development. The total development cost of the project through the operational date is estimated at $110 million, half of which will be paid by the FRG.

b. Remotely Piloted Vehicles

We are requesting $17.3 million to develop several improved drone/RPV vehicles and major subsystems. Efforts include a high altitude, long endurance, multi-sensor RPV (COMPASS COPE), a new multiple drone control and data retrieval system (DCDRS), and an interim multi-mission RPV (BGM-34C) capable of reconnissance, electronic warfare support, and air-to-ground strike. The goal of the COMPASS COPE development is to provide an unmanned platform with very high reliability. If successful, COMPASS COPE will perform a variety of surveillance and relay functions at a lower cost while avoiding the personnel exposure associated with manned aircraft. The concept validation which was initiated in FY 1972 will be completed in FY 1976 and will include a flight demonstration of an automatic landing system. A successful DCDRS program, which addresses the critical question of real-time control of a significant number of RPVs in the dynamic and often chaotic environment of war, is prerequisite to commitment to large scale use of RPVs. We have paced the DCDRS development to insure that its data links are compatible with other data transfer systems.

The BGM-34C effort will incorporate in a single vehicle the various subsystem improvements which have already been developed. The resultant design will be used for attrition replacement of the current RPV inventory and allow the Air Force to further explore the strike RPV concept through extensive Test and Evaluation.

c. Quick Strike Reconnaissance (QSR)

The Air Force Quick Strike Reconnaissance (QSR) program is designed to satisfy the most critical requirement in tactical reconnaissance--to provide immediate information pertaining to enemy ground targets and threat activity. The goal of the program is to combine existing or very-near-term development hardware (both airborne and ground-based) into an integrated system using the RF-4C as the basic platform. The RF-4C will be optimized for strike control and reconnaissance with target marking/designation equipment and imagery transmission capability via data link. A ground facility will be modified to transfer target information to the Tactical Air Control System, strike force, and other Services in near real-time. Because of the mutually supporting roles of the Air Force and Army in battlefield targeting, we will be working toward use of common equipment and will require ground terminal compatibility with both the RF-4C and

the Army OV-1D MOHAWK which has a digital data link for transmission of infrared and radar imagery. The Navy and the Marines are also monitoring these developments for possible future use. The $3.1 million requested for FY 1976 ($10.5 million total development cost) will be used to complete the engineering design, integrate a target designation subsystem in an RF-4C aircraft, and modify a Forward Reconnaissance Reporting Post for data received.

d. Tactical Information Processing and Interpretation (TIPI)/Marine Air Ground Intelligence System (MAGIS)

The TIPI/MAGIS program is the major DoD effort to improve the accuracy and reliability of intelligence data for tactical operations and to shorten the intelligence processing time. It is a joint project with the Air Force funding common items and the Marine Corps items unique to its needs. The program has been conducted on an incremental basis with the image interpretation unit being the first to complete testing. Use of this unit in operational exercises and during OT&E showed interpretation time for a standard reconnaissance mission to be less than one-fourth that of the manual approach. Production is planned in FY 1975. A second part of the TIPI/MAGIS called the Display and Control/Storage and Retrieval or Intelligence Analysis/Storage and Retrieval is now in test. This segment is the automated processing "heart" of the system and provides the capability for handling and processing intelligence gleaned from reconnaissance missions or other sources. The final part of the TIPI/MAGIS is the image processing unit which will be used to process and print infrared, photo, and radar imagery. Development of this unit will commence in FY 1976. The major objectives are to provide greater capacity and higher quality than is now possible with units in the field. Air Force funding for TIPI is $11.7 million in FY 1976. Through the joint TIPI/MAGIS program office the Marines are planning to initiate development of their Intelligence Analysis Center which is a reduced version of the Intelligence Analysis/Storage and Retrieval unit now in test. Funding in FY 1976 is $3.9 million. Total TIPI/MAGIS program cost is $86 million of which $57 million has already been expended.

e. Tactical Air Reconnaissance

In FY 1975 we continued the development of advanced photo and infrared sensors for Navy needs. We now request $6.9 million to integrate these sensors into a tactical reconnaissance pod for use on a dedicated RA-7E aircraft. The development schedule of both the sensors and the pod-equipped RA-7E has been carefully coordinated with RA-5C retirement plans to assure a smooth transition of this required capability.

5. Tactical Air Surveillance and Command and Control

In order to achieve the maximum effect from combined tactical forces, it is necessary to integrate command and control, surveillance, and offensive and defensive weapons systems into a smoothly functioning and responsive network. To meet this goal our tactical air surveillance and command control programs have the following objectives:

- o An airborne surveillance and command control capability integrated with surface-based air defense systems to help defend against aircraft at all altitudes,
- o Total interoperability between command and control systems to permit rapid, accurate and reliable data transfer among the Services and our allies,

o Jam-resistant, secure and reliable data links for use within all warfare areas,

o Reliable and secure identification systems for all warfare areas, and

o Improved navigation and tactical air traffic control.

Deficiencies exist to some degree in nearly all of the above. The proliferation of data links and navigation systems is making cost-of-ownership extremely expensive and adding to the problems caused by the increased technical complexity of each new autonomous system. Our efforts to redress deficiencies are discussed below:

a. AWACS (E-3A)

In FY 1975, we requested funds for 12 AWACS aircraft and planned for a total of 34 operational AWACS aircraft (including the retrofit of three DDT&E flight test aircraft). The AWACS will bring significant improvement to the conduct of air operations through improved early warning, control, and battle management. It is of critical importance that we proceed into production with this new, highly flexible capability which will serve vital functions, tactical and strategic, and defensive and offensive.

Congress reduced the 1975 request to six aircraft principally because of its concern about the ability of the aircraft to operate effectively in an intense central European conflict where the enemy may employ vast electronic warfare resources. The Senate Armed Services Committee recommended "that the Secretary of Defense appoint a group of disinterested radar and ECM technical experts--to examine this issue and to report to him on the potential vulnerability of the system to jamming, with an assessment of the GAO and Air Force claims on the subject." The Defense Appropriations Authorization Act, 1975, required the Secretary to certify to the Congress, that AWACS "is cost-effective and meets the mission needs and requirements of the Department of Defense as a prerequisite to any use of production funds."

In response to these concerns, the Secretary of Defense appointed a panel of disinterested experts, chaired by Dr. Harold P. Smith, Jr., of the University of California. In its examination of ECM vulnerabilities the panel considered the following three roles for the AWACS in NATO central Europe:

o Warning of potential hostilities,

o Surveillance to support the defensive air battle over NATO-held territory, and

o Surveillance to support offensive air strikes into enemy territory.

The panel concluded that:

o Attempts to jam AWACS prior to initiation of hostilities constitutes, in itself, warning,

o The AWACS (Block I) will be substantially less vulnerable to ECM than the present air surveillance network in NATO,

o The present ECM equipment of the potential enemy should not seriously degrade AWACS performance in support of <u>defensive</u> operations,

o Such equipment could degrade AWACS performance in support of <u>offensive</u> operations, and

o Early implementation of the Panel's electronic counter countermeasure (ECCM) recommendations should insure that postulated threat ECM deployments will have no greater effect than the current ones.

Because the enemy has the capability to employ an extensive array of high-powered jammers, both airborne and ground, over his own territory, AWACS surveillance into enemy territory is more easily degraded than AWACS surveillance of NATO territory. AWACS can descend and thereby neutralize the effect of the ground jammers (by placing them beneath the radar horizon) at some sacrifice of AWACS surveillance volume and a modest decrease in low level detection capability over hostile territory. With regard to offensive operations, such surveillance could be degraded -- not denied. In any event, the current systems have virtually no capability to control forces effectively in hostile territory -- with or without the employment of enemy ECM. For these reasons and since NATO's strategy is primarily defensive, the Secretary has certified to Congress that AWACS is cost-effective and meets the mission needs and requirements of the Department of Defense. Accordingly, we now propose to proceed with the initial production of operational AWACS aircraft.

As now conceived, AWACS will be operated as a pool from which aircraft can be drawn and used as needed worldwide. For example, aircraft could be deployed to Europe in the event of a NATO-Warsaw Pact conflict, be deployed to defend vital air and sea lines of communications, be used to support a minor contingency operation, or be retained in CONUS in times of crisis.

Several AWACS are necessary for each 24-hour orbit required, depending on the distance from operating base to the orbit location. Fairly good coverage for most NATO scenarios can be achieved with a reasonable NATO force level requirement. We are now working with our NATO allies to define a NATO AWACS program in which the procurement and operating costs for this NATO AWACS force would be borne by all nations according to equitable proportions. Under our proposal, the majority of the costs associated with a NATO-dedicated AWACS force would be borne by nations other than the United States. A NATO decision on eventual procurement of AWACS could be made as early as November 1975.

AWACS is needed to support one orbit in the Greenland, Iceland, United Kingdom gap. This coverage would help protect naval forces and independent shipping in the North Atlantic as well as contribute a measure of defense for the North American continent. The remaining U.S. AWACS aircraft would provide a NATO strategic reserve and an attrition base, augmentation of NORAD forces, and limited coverage in other theaters, should the scope of a European conflict expand, or a simultaneous minor contingency occur.

Three RDT&E AWACS aircraft, including the System Integration Demonstration (SID) aircraft, were funded in prior years; the first six production aircraft were funded in FY 1975. The $689.7 million included in the FY 1976 budget for this program would provide $490.5 million for the procurement of six more AWACS and $199.2 million to continue development of the system, including the Time Division Multiple Access (TDMA), digital data link and a minor modification to the radar to provide an improved surveillance capability. The first 12 production aircraft (6 in FY 1975 and 6 in FY 1976) would be very useful even without the latter "enhancements," but they (and the three RDT&E aircraft) will be retrofitted with them as well as other mission-essential growth items as may prove of value in the future.

The $84.5 million requested in the Transition Budget includes $54.4 million for continued development and $30 million for advanced procurement. The $503.9 million requested for authorization in FY 1977 would provide $380.1 million for the procurement of six more aircraft (all with the "enhancements") and $123.8 million for continued development. Any additional U.S. and/or NATO AWACS (with "enhancements") would be procured in FY 1978 and FY 1979, and the first 12 production aircraft, as well as the four RDT&E aircraft, may be modified to the final "enhanced" configuration at that time. Thereafter, further improvements would be incorporated as they are developed. AWACS is expected to remain in the force for 20-30 years and during that time it will undoubtedly undergo essential configuration changes as the threat and operational requirements dictate.

b. Tactical Data Links

We are concerned over the proliferation of individual data links and with the apparent lack of attention to the inter-operability, compatibility, and standardization needed in order to be able to operate in common environment. Two major actions were taken in 1974 to help us get this situation under control and to provide us with a management mechanism to establish and maintain a coordinated data link program within DoD.

First, DDR&E established a joint development program for a jam-resistant digital data link in September 1974. This was a necessary step towards meeting future DoD tactical data link needs of the AWACS, and other DoD command and control systems and related systems. These needs include a high degree of security, reliability, and jam-resistance: increased data transfer capability: and the capability to provide all equipped units access to information when they need it. The development is a joint effort resulting from the combination of the Air Force's SEEK BUS and the Navy's Integrated Tactical Air Control System (ITACS) time division multiple access (TDMA) data link projects. A Joint Systems Program Office under the Air Force has been formed to carry out the development. Other Services will have representation in the project office and will use the resultant data link for a variety of applications. The development of the prototype TDMA data link terminal for AWACS was put under contract with FY 1974 and FY 1975 funds. Delivery is scheduled for FY 1976 with production and deployment aboard AWACS planned for 1978. Combined FY 1976 Navy and Air Force funding in the amount of $18.6 million will be used to initiate development of fighter, attack and other aircraft terminals, surface command and control terminals plus other subsystems components. Total development costs for the TDMA data link will require approximately $100 million.

The other action was taken by DDR&E in coordination with the Assistant Secretary of Defense (Intelligence). This was the formation of the DoD Data Link Planning Committee, co-chaired by the Principal Deputies of ODDR&E and OASD(I), to review all ongoing and planned DoD data link projects. The primary objective of the group is to reduce proliferation of data links. To date the committee has reviewed over 60 separate ongoing data link developments and is now entering into a detailed analysis of these projects to determine which efforts should be permitted to continue.

c. Identification Systems

In the identification area, which supports all warfare areas, there has been an awakening to the need for greatly improved ability to positively identify friends, foes and neutrals. Arms transfer between nations results in the same types of aircraft, tanks, etc., appearing on both sides of a subsequent conflict. In the Mid-East War and the recent Cyprus conflict, we saw several instances of friend shooting at friend. The problem can be overcome only by positive identification capabilities in our weapons and command and control systems. Within the DoD we have chartered a task force of industry and government experts to study the problem and recommend what should be done. A report is expected in October 1975. We are also working closely with NATO to formulate solutions acceptable to our allies. Funding in FY 1976 at the $8 million level will continue development of several promising noncooperative identification techniques and provide for new work by the Army in battlefield IFF. Any new long-term development program which results from these combined efforts will be a joint project aimed at making compatible identification systems for all warfare areas.

d. Tactical Data Systems Interoperability

Lack of interoperability among our automated tactical air control and air defense systems were highlighted during the early stages of the Vietnam conflict. Automated data systems could exchange data such as commands and target information with other automated systems within one Service, but they would not exchange data with the automated systems of another Service. This caused serious air space control problems. An interim solution was developed for use in passing air surveillance data in Vietnam. To extend interoperability to other air control and air defense function, the joint Tactical Air control Systems/Tactical Air Defense Systems (TACS/TADS) interoperability program was started in 1969. The TACS/TADS program, which is to develop and demonstrate interoperability among the Army's TSQ-73 missile command and control system, the Navy's Tactical Data Systems, the Marine's Air Command and Control System and the Air Force's Tactical Air Control System, is now in its final test phase and will have its operational effectiveness demonstrated in early 1976. The AWACS will be incorporated into this network.

Total program funding for R&D to date is $40 million. The total funding requested by the Services in FY 1976 is $6.3 million for the final increment of work.

A project similar to TACS/TADS, which is in its third year, is the Ground Amphibious Military Operations (GAMO) program. It is a joint project to develop, test, and demonstrate compatibility and interoperability among tactical command, control, and communications systems. This program was started three years after TACS/TADS when the same inability to "talk" among the Services tactical C^3 systems was recognized. The GAMO project, which is just entering into its joint interface development phase, will be a significant step towards making our tactical C^3 capabilities much more effective. FY 1976 funding requested by the Services totals $4.5 million, with total R&D funding for the project estimated to be about $90 million.

e. Navigation and Air Traffic Control

Within the navigation area there are no major efforts oriented specifically for tactical warfare purposes. The major long-term development effort which shows the greatest promise for supporting

a wide range of tactical operations is the Global Positioning System (GPS). The GPS is discussed in detail in the Strategic Forces Chapter of this statement. There are several smaller projects such as the Marine Remote Area Approach and Landing System, tactical LORAN, etc., that support interim needs or give us other alternatives should GPS not continue to fruition. Under the tactical LORAN program, we are funding the ARN-101 update/modification program which provides an important option to replace the "PAVE PHANTOM" LORAN navigation/weapon delivery system on the F-4. The ARN-101 is an integrated, digital navigation and weapons delivery system (employing LORAN or an inertial navigator as the basic sensor) which is designed for improved reliability and modular growth capability to integrate future requirements such as the GPS and sensors for new air-to-ground weapons. Funding for these combined supporting efforts is $17.7 million in FY 1976.

In September 1974, as part of our drive to reduce proliferation, DDR&E formed a new Executive Group on Position/Navigation which reviewed all navigation and positioning programs. This Group is made up of top-level management from OSD activities and is chaired by the Principal Deputy, DDR&E. As a result of that review, the following major actions have been taken or are underway:

- o The Army and Marine Corps are to agree on joint procurement of a single tactical landing system or interoperability between two versions of one basic system.
- o The Air Force is to discontinue development of low cost OMEGA and plan to buy equipment to commercial standards.
- o The Air Force Ground Directed Radar Bomb Scoring development program was disapproved.
- o The Army, Navy, and Air Force are directed to standardize on classes of inertial navigation equipment.

Through its subcommittees, the group will maintain an ongoing overview of navigation and positioning programs. Periodic detailed reviews similar to that conducted in September 1974 are planned for the future.

6. Air Mobility

The importance and scope of aerial logistics has expanded rapidly, in both military and commercial logistics. Requirements have continued to expand. The air mobility programs are designed to "catch up" on these requirements and to accommodate discernable cargo trends.

In addition to being designed to accommodate the cargo requirements which have evolved, current development programs capitalize on technological advances in propulsive lift, wing and rotor design and fabrication, and improved reliability and maintainability.

There are at this time three major air mobility programs approaching decision milestones on whether to proceed with engineering development. Because of excessive costs as revealed in advance technology testing, a fourth major program will be terminated prior to full-scale development. Two other programs, the CH-47 and C-5 programs, are for the modernization or improvement of existing aircraft. We have included $244.1 million in the FY 1976 authorization for RDT&E in the air mobility mission area.

a. Heavy Lift Helicopter Developments

The value of the technological option engineering approach is nowhere better evidenced than in this program area. As a result of this approach, plans are to terminate the Army's Heavy Lift Helicopter program prior to full scale development. High cost projections derived from information gained through advanced development have allowed us to make this decision prior to expenditure of any production funds. At the same time the Navy's CH-53E program has progressed to the point where a knowledgeable decision to continue into engineering development is expected sometime early this year. Details of these programs are as follows:

o Heavy Lift Helicopter (HLH)

In September 1970 the Army was designated as lead Service to undertake the Advance Technology Component (ATC) program to seek maximum reduction of cost and risk associated with the major components of an HLH system. The HLH prototype program was added as a modification to the ATC program in November 1972 in order to flight prove the advanced technology components developed under the ATC program. Due to the high production costs involved, the program will not proceed beyond the ATC/prototype phase. However, the current technology program will be completed because important proofs of technology can be gained from flight test of a 35-ton payload aircraft utilizing advanced fly-by-wire stabilization and flight control system, a two-point winch-powered suspension system, and composite rotor blades.

The original program cost planning estimate of $189.9 million has been revised upward to $218.9 million of which $179 million has been expended. The revised program cost estimate allows for $8.1 million in escalation and provides 95% certainty of not exceeding $220 million for the program.

In FY 1976, $19.8 million is being requested in order to complete ATC testing, continue fabrication of a single prototype and complete qualification testing of the XT701 engine to power the prototype aircraft.

As in all such programs, there is the risk that the single prototype may be lost in test which would necessarily terminate the program. Due to the decision to not proceed beyond the ATC/prototype phase, the second prototype, which was requested last year, cannot be justified. If successfully demonstrated, the results of the HLH advanced technology program will constitute a solid technology base for future developments, if required.

o CH-53E

The YCH-53E prototype is now in the preliminary stages of flight test. During testing, the YCH-53E has successfully lifted its design goal of 16 tons, twice the payload of its precedecessor, the CH-53D. Navy Preliminary Evaluation (NPE) Phase I flight test was delayed due to the loss of one of the two prototypes with its instrumentation following a catastrophic failure of the main rotor blade sleeve and spindle assembly during ground test. The cause of the failure has been determined and the second prototype is again flying following a redesign of the sleeve and spindle. NPE Phase I testing is now scheduled for completion in early 1975 and $12.2 million in FY 1975 Phase II funds released for long-lead procurement towards engineering development. The Defense Systems Acquisition Review Council will meet subsequent to NPE Phase I testing in order to determine if full-scale engineering development and release of the remaining

Phase II production funds are warranted. RDT&E funds in the amount of $10.5 million are being requested for FY 1976 for the test and evaluation of the production prototypes. RDT&E costs for the prototype program are estimated at $44.3 million and $56.1 million for engineering development.

b. Utility Tactical Transport Aircraft System (UTTAS)

The UTTAS is being developed to perform Army tactical troop assault and utility missions now performed by the UH-1 series helicopter. It is also being considered for use as a Navy anti-submarine warfare helicopter and Marine Corps assault helicopter.

The UTTAS program is a competitive program between Boeing Vertol Company and the Sikorsky Division of United Aircraft Corporation. Both competitors have aircraft flying and the program is essentially on schedule. The initial production contract is scheduled for early in FY 1977.

Both contractors should come reasonably close to meeting the airframe design-to-cost goal of $600,000 (FY 1972 constant dollars). Total RDT&E costs are now estimated at $459.1 million, of which $91.9 million is being requested in FY 1976 in order to continue prototype construction.

Major cost savings are expected from improved reliability and maintainability and additional studies are underway on cost savings that will be realized as the result of increased productivity.

c. Carrier On-board Delivery (COD) Replacement Aircraft (VCX)

During FY 1975 the Navy has studied alternative programs to obtain the needed replacement of the aging COD aircraft fleet and announced their preference for a modified S-3A aircraft. The Navy's justification for selection of the costly S-3 variant was primarily based on increased range and speed requirements to meet future contingencies. However, the proposed aircraft is costly, fails to provide the outsize load capability of the existing C-2A, and is not configured for efficient cargo loading. By the addition of long-range tanks, an improved C-2A could be made to satisfy most of the Navy's range requirements.

It is anticipated that the Navy will make a firm decision later this year as to which aircraft is best suited to fulfill its COD requirements. The proposed budget provides $3.7 million for the Navy to initiate the preliminary phases of engineering development on the selected aircraft.

d. Advanced Medium STOL Transport (AMST)

This is an Air Force high-priority competitive prototype program between Boeing Aerospace Company and McDonnell-Douglas Corporation for the design, fabrication, and flight test of an advanced technology STOL transport to provide an option to replace aging C-130 aircraft, and the current STOL aircraft, the C-7 and C-123. Both contractors have capitalized on technology advances in propulsion lift, super-critical wing design, landing gear, control systems, and cargo system design. Both aircraft, which are now in the fabrication stage, offer increased speeds and greater payload to enhance productivity.

In addition to being designed to accommodate the Army's outsize cargo requirements which have emerged since the first flight of the C-130 in 1954, the AMST program capitalizes on the technology gains of the last 20 years. These technology advances now permit significant gains in operational capability in a jet aircraft which is designed to achieve minimum replacement cost. The AMST will significantly lower manpower requirements, while offering at least twice the airlift productivity and a STOL-capable response to airlift requests. The Air Force has placed the AMST among its top priorities.

Though no decision has been made to go into full scale development, the AMST design-to-cost competitive approach is expected to provide the Air Force with the most advanced tactical transport in the world today at reasonable cost with considerable potential for foreign sales. Program RDT&E costs are estimated at $229.1 million. The requested $85.0 million in FY 1976 RDT&E funds allows continuation of the fabrication and test of two prototypes per contractor with first flight for the Douglas design scheduled for November 1975 and the Boeing aircraft in August 1976.

The AMST prototype program is another example of competitive demonstration of new technology in hardware form. The availability of solid cost and cost-effectiveness data before the big expenditures that occur in engineering development provides a solid base for decision on whether to carry the program further.

e. CH-47 Modernization

The purpose of this program is to reduce operating problems by developing improved components for CH-47 helicopters currently in the Army inventory. The CH-47 has been in the Army inventory since 1962 and will continue to meet the Army's medium lift requirement through the 1980's. The CH-47A and B models, which constitute 51 percent of the fleet, require modernization because of the high operating costs and low operational readiness of these ageing aircraft. The objective of this program is to develop fiberglass rotor blades, integrally lubricated transmissions, modularized hydraulic system components, and other required improvements for better maintainability, reliability, survivability, and safety while reducing operating costs. We have included $10.0 million in the FY 1977 authorization in order to continue this program which was started in FY 1975 with $3.0 million. RDT&E costs are estimated at $23.0 million thru FY 1977.

The CH-47 modernization program is another example of improving existing assets for maximum return-on-investment.

f. C-5 Wing Modification

In last year's statement, we estimated that C-5 wings could expect a service life of 18,000 to 20,000 hours through installation of structural modifications and changes in operational use of the aircraft. However, these measures have not been as effective in practice as predicted. The fatigue monitoring program now indicates that the service life will be only 11,000 to 16,000 hours. Early aircraft will reach this level in 1979. Therefore, we must now undertake development and test of a new wing structure in order to avoid grounding aircraft.

Ongoing fatigue tests and operational experience with the C-5 fleet have shown that the principal aluminum alloy used in the wing structure is more crack-sensitive than originally predicted. New wings therefore must be designed with alloys which have demonstrated greater crack resistance. These facts make it pointless to proceed with the third C-5 fatigue test article as previously approved and funded in FY 1975. With the concurrence of the Congress, we plan to reprogram $21 million from FY 1975 for the design engineering and test of a new wing structure early this year. We have included $22.3 million in the FY 1976 authorization to continue this effort. The development program for the new wing structure is phased to provide demonstration of the design goal of 30,000 hours prior to modification of fleet aircraft. This program will ensure the long term viability of this key element of our airlift capability.

E. OCEAN CONTROL

Our tactical naval forces are required to provide sea control, projection of power, and peacetime presence in support of U.S. interests and policy throughout the world. The major features of the Soviet naval forces which could severely challenge us are:

- o A major tactical submarine fleet, which the Soviets are continuing to upgrade by replacing older diesel submarines with nuclear submarines,
- o A large force of long-range, land-based naval aircraft, which is being greatly improved by the introduction of the Backfire,
- o A large fleet of surface combatants, which is evolving from a homeland defense force to a true oceanic surface fleet through the addition of aircraft carriers, and
- o An extensive worldwide surface surveillance and command control capability for coordinated employment of these forces.

A factor of significant concern is the worldwide proliferation of sophisticated but simple-to-operate anti-ship missiles, which allow any unfriendly country or group of terrorists to pose a threat to our naval and merchant ships.

The current and projected world environment, taken together with the above factors, give highest priority to these specific objectives of our tactical naval forces:

- o Provide protection of sea lanes for supply of materials critical to U.S. industrial and defense needs,
- o Assure that sea transport resupply to a NATO war can be achieved without unacceptable losses,
- o Provide carrier-based aircraft reenforcement in direct or indirect support of a NATO war,
- o Provide a flexible naval response in crisis situations, including a credible defense against preemptive attack.

Our R&D efforts are focused on these objectives. Their significant features are discussed below, grouped by the military function they perform (Fleet Offense, Ocean Surface Surveillance, Fleet Air Defense, and Fleet Anti-Submarine Warfare).

1. Fleet Offense

The Fleet Offense mission area includes those weapon systems required to destroy enemy ships and submarines, to conduct amphibious assaults, to support U.S. and allied troops and forces ashore, to conduct tactical strikes against land targets, and to inhibit the movement of enemy commercial and military traffic. This mission area also includes Naval Vehicles and Mine Warfare Systems.

a. Offensive Weapon Systems

The absence of an all-weather anti-ship missile capability for our air, submarine, and surface forces limits their ability to destroy enemy surface combatants and shipping from ranges which minimize risk to our attacking forces. The offensive anti-ship missile reach of Soviet surface combatants can be offset only by attack aircraft operating from our carriers. However, to be effective against high-value Soviet ships, these aircraft must penetrate into their defensive missile envelopes, a high-risk undertaking. Introduction of all-weather HARPOON and daylight (electro-optical) CONDOR missiles will offset this tactical imbalance by providing a standoff capability for our air, surface, and submarine forces. CONDOR has completed development and is scheduled for introduction into the fleet in 1977.

The electro-optically guided CONDOR successfully completed its operational evaluation in 1974. This air-to-surface missile demonstrated truly remarkable performance. The CONDOR operator in the launch aircraft can both guide the weapon during its mid-course phase and make final corrections to the precise aim point of the missile. Accurate delivery of the weapon through low ceilings was demonstrated. The ability to communicate with the missile during its flight also allows the delivering aircraft to fly away from the targeting area as the missile proceeds to the target. In the test, the delivering airplane was remote from the target at the time of impact and the missile impacted accurately. This outstanding precision allows the operator to select a particularly vulnerable point on the target. He can also confirm that his target was hit. We are planning to inventory the CONDOR in limited quantities for use against high-value targets where both precision delivery and the ability to stand-off far from the enemy's defenses are required.

In engineering development firings conducted to date, HARPOON has achieved outstanding success against targets of the size of destroyers and patrol boats, at various ranges. Some of these successes have been in the presence of various types of electronic countermeasures and passive decoys. Although HARPOON has remained within its development cost and schedule goals, preliminary information indicates that production costs will be higher than expected. We are conducting a review of this program to assess the causes of the cost growth and to find ways of reversing this trend. $19.9 million is required in FY 1976 to complete development of HARPOON and Encapsulated HARPOON.

To insure that technological momentum is maintained within our only all-weather anti-ship missile program, we plan $3.0 million in FY 1976 to initiate technology to support future HARPOON missile improvements. The two-fold objective of this program will be to avoid technological obsolescence in the HARPOON missile and insure the availability of production modifications when needed.

We are also continuing to investigate the feasibility of developing a tactical variant of the Sea Launched Cruise Missile (SLCM) which would provide a long-range offensive reach from an air, surface, or submarine launch platform. The tactical variant is a hybrid missile composed principally of airframe and control surfaces from the SLCM and propulsion and guidance technology from HARPOON. To exploit the long range of this missile, we must insure that our airborne and surface surveillance systems are capable of detecting and identifying an enemy target and locating it with accuracy sufficient to acquire and guide the missile to its target. Studies to define the total surveillance-to-impact system for the Tactical SLCM have been initiated and will be completed in FY 1976 to permit a decision on full scale development in FY 1977. FY 1976 funding for the tactical variant is included in the SCLM program.

We are now conducting operational tests of the 8-inch Major Caliber Gun which will extend further the offensive capability of our surface combatants, principally against shore targets and in support of our Amphibious Forces. We have in development a tri-service 8-inch guided projectile which I have described previously, and we expect to begin development in FY 1977 of an extended range 8-inch guided projectile which will extend the offensive reach of the gun to minimize the exposure of the firing ship to hostile fire.

We are also working toward a follow-on replacement of the MCG using advanced technology, possibly liquid propellent. Our principal goal is a lighter-weight, lower-cost gun with significant improvements in firing rate. We are also initiating in FY 1976 a new program to investigate the military promise of surface launching Modular Guided Glide Bombs (MGGB), which have been employed so successfully from our attack aircraft, to provide a low-cost offensive weapon option for our surface combatants. This concept expands upon a successful feasibility demonstration of a short-range, surface-launched, Mk82, laser guided glide bomb (SMARTROC) and could lead to application of MGGB technology to a family of surface launched weapons. FY 1976 funding required to support these 8-inch gun and surface launched MGGB programs is $8.9 million.

b. Naval Vehicles

The Multipurpose Naval Vehicles programs include most of our general-purpose submarines and surface ships as well as a few aircraft programs and some unconventional vehicles, such as Surface Effect Ships (SES) and hydrofoil ships.

We are emphasizing R&D to reduce the costs of acquiring, manning, maintaining, and operating the Navy's ships and submarines. In the Shipboard Systems Component Development program we are seeking to develop a series of new, standard ship components where application of modern technology will permit substantial reduction in life-cycle costs. Desalinization systems, electrical control systems, air compressors, and solid-state frequency changers are all in this category. Because this program offers clear promise of ultimate savings in procurement and life-cycle costs which far outweigh the small R&D costs, we plan to increase funding for this program, from $1.6 million in FY 1975 to $3.6 million in FY 1976. As just one example of the high leverage which may be obtained in this program, the high temperature desalinization system, whose development costs will total about $2 million, should save more than $10 million in maintenance costs and more than a million barrels of fuel every year when installed throughout the fleet.

Another related set of programs in which we see high leverage are those labeled Ship Development--Advanced and Engineering. These two programs provide for the design and development of all procurement-funded general-purpose Navy ships and thus strongly influence the quality and costs of ships whose procurement costs alone aggregate to $3 billion or $4 billion per year. We need to raise our design funding substantially, from a total of $44.6 million in FY 1975 to $60.5 million in FY 1976. Much of this funding reflects the extensive design effort needed for new strike force ships which are large, complex, and nuclear-powered. We wish to pursue more intensive design efforts than we have in the past, particularly in the early stages where we may identify potential savings many times the cost of the design effort.

In fighting at sea, weapon and sensor systems are not enough: we must have platforms capable of carrying these systems over or through the ocean. The aircraft, surface ships, and submarines we use as naval vehicles are very expensive. In fact, in most cases the vehicle costs substantially more than its weapons and sensors, a fact which has stimulated a search for other types of vehicles which might enable us to perform some of our naval missions more efficiently. The search for advanced naval vehicle types has produced two programs to develop such vehicles for deployment: NATO Patrol Hydrofoil Missile Ship (PHM) and Amphibious Assault Landing Craft (AALC).

The NATO PHM program is a cooperative effort with Germany and Italy to develop a small but fast, highly seaworthy, and heavily armed ship for offensive operations against enemy surface ships in "narrow seas" such as the Mediterranean. The first prototype PHM is now undergoing tests and the $11.3 million requested for FY 1976 is planned to cover completion of all testing. FY 1976 is expected to be the last year of R&D funding for this program. The PHM program has encountered very serious cost growth problems, largely associated with unexpected difficulties in start-up of the ship's relatively novel construction processes. To carry on construction of the first prototype in the face of increased costs, the Navy suspended construction of the second PHM in its early stages. Since the second PHM could not now be completed in time to take part in the Initial Operational Test and Evaluation (IOT&E) program, it will not be completed as an R&D prototype. The final disposition of its partially-completed hull is as yet undetermined.

The first prototype, USS PEGASUS (PHM 1), has been completed and will be undergoing IOT&E throughout the spring and part of the summer of this year. The test program will be complete, covering all aspects of the performance of the ship and its weapon system. Because of the problems encountered in building the PHM 1, there is an intensive effort underway to define the most efficient and economical production methods for ships of this type. Production of follow-on PHMs will be authorized only after successful completion of the full test program and determination of a firm and satisfactory production cost.

The AALC is a 50-knot air cushion vehicle (ACV) or "hovercraft" intended to carry tanks and other heavy equipment ashore in an amphibious assault. It will be truly amphibious, far more so than any of our present landing craft. It can run through the surf, up onto the beach, and well inland to discharge its cargo. Two prototypes will be completed with FY 1976 funding. Extensive testing will be done in the field to help determine whether we should procure such craft in quantity and what the characteristics of the production version should be.

In its efforts to create options and alternatives, the Navy has been pursuing two major lines of development, Surface Effect Ships (SESs) and Advanced Hydrofoils. Early development, construction, and test of two 2200-ton prototypes of one sub-type of the SES was emphasized. The 2200-ton SES, now in the stage of developing and testing of critical subsystems, has been generally successful in meeting it technical goals. We have been forced by other considerations, however, to review the direction of this program. The dilemma facing us is this: we cannot go directly into full-scale development for deployment on a vehicle whose performance, military potential, and problems have not been well explored. We must move to resolve these uncertainties first, while keeping our technological options open. But here we are caught between the very sharp constriction of the resources we have for creation of options and the very high costs of carrying large vehicles through the full-scale prototype stage. The Navy and OSD will, therefore, take a searching look at all the naval vehicle options, and at the paths we might pursue in creating and protecting these options, before going ahead with construction of full-scale prototypes. The options we will evaluate will include:

o High-Efficiency Long-Range Aircraft. Advances in aeronautical technology promise aircraft which can land and take off on the open sea or loiter in the air for long periods at great distances from base, thus enabling them to protect ships or carry out long-term offensive missions.

o Wing-In-Ground-Effect Aircraft. WIG aircraft gain efficiency by flying low over the water.

o Airships. Technology advances may permit us to overcome the barriers which have prevented efficient exploitation of the airship's advantages in the past.

o Surface Effect Ships. The SES, in its many possible variants, remains a leading naval vehicle option, particularly because it is the fastest vehicle we can envision actually operating on the sea surface.

o Hydrofoil Ships. The hydrofoil ship, while slower than the SES, offers a unique combination of good speed and very good seakeeping, even on the open ocean, in a relatively small ship.

o Small Water Area Twin Hull (SWATH) Ships. The SWATH ship offers only a moderate improvement over conventional surface ships in speed, seaworthiness, and payload, but at a modest cost which may make it a very attractive "workhorse."

o Advanced Submarines. Improved materials, anti-friction additives, and design refinements might permit submarines to still further expand their capabilities.

There are currently a great many technological and military unknowns about these advanced vehicle types. If the past is any guide, we can expect to see new vehicle concepts invented rather frequently. We cannot complete this evaluation and close the books on it. We plan to have initial results of our study available for planning our FY 1977 program. We anticipate supporing several advanced vehicle options, perhaps at different paces.

Our evaluation of advanced vehicle options may result in some change of course for both the SES and advanced hydrofoil programs. We consider it unwise, however, to cancel or sharply curtail the on-going efforts in these programs while awaiting evaluation results for the following reasons:

o It is highly likely that some forms of SES and hydrofoil ship will be among the options to be pursued;

o The work planned for the SES and advanced hydrofoil programs in FY 1976 will be broadly applicable to many of the likely vehicle options;

o These programs provide the major support for irreplaceable development resources, including specialized test facilities, a family of high speed test craft and their supporting organizations, and specialized development groups, most of which will be needed for pursuit of any advanced naval vehicle options. These resources would be largely dissipated if the SES and advanced hydrofoil programs were further curtailed.

The $64.5 million total ($44.1 million in FY 1976 plus $19.4 million in the transition period) requested for the SES and Advanced Hydrofoil programs will support the vehicle comparative evaluation effort as well as minimum level continuation of SES and hydrofoil technology. Authorization of $84.6 million is requested for these programs in FY 1977 to allow for active pursuit at a modest level of the selected options. The program structure and titles will be revised for the FY 1977 budget if evaluation results warrant.

c. Mine Systems

Under the proper circumstances, mine warfare can provide us with great military advantages at very small cost. In World War II, according to Japanese testimony, our mining of the Home Islands was a major factor in sealing Japan's fate. More recently, our mining of Haiphong gave us a great leverage in the negotiations to end the Vietnam war. Both of these operations were conducted with minimal expenditure of resources and minimal losses.

In addition to the CAPTOR program discussed below under the Fleet ASW mission area, we currently have four principal mine projects being pursued under the Mine Development program.

o The QUICKSTRIKE project is developing a family of bottom mines, all employing a common set of target detecting devices (TDD)--the heart of a mine.

o The Propelled Ascent Mine (PRAM) is transitioning from Exploratory Development to Advanced Development in FY 1976.

o RECO, which transitions into Advanced Development in FY 1976, has a remote command system which would have been very valuable in the Haiphong mining.

o Mine Improvements is a much-needed new project to upgrade our in-service mines, particularly their resistance to enemy mine countermeasures.

All of the above efforts have pushed our FY 1976 request for the Mine Development Program Element to $18.3 million, more than three times the FY 1975 budget. We believe this marked increase reflects past neglect rather than present excess, and is a wise investment for the improved capability we expect to gain. Moreover, much of the increase in this element is balanced by the fall-off in funding for CAPTOR as its development draws to a close.

2. Ocean Surface Surveillance

Ocean Surface Surveillance is the systematic observation of ocean areas to detect, locate, and classify selected high-interest surface targets and to provide this information to naval tactical commanders and national authorities in a timely manner. Surface surveillance programs include the Navy's high/medium altitude surveillance platforms (including RPVs), satellite surveillance systems, ship- and land-based high frequency direction finding (HF/DF) stations, systems required to communicate and process the sensed data, and shore and shipboard systems dedicated to the receipt and evaluation of these data.

In an era of diminishing numbers of naval vessels and aircraft, ocean surface surveillance becomes a highly leveraged activity --it can buy dramatic increases in operational capability for comparatively modest investments. These increases stem both from more efficient uses of Fleet resources, and from new tactics which can exploit the improvements. The extensive Soviet bloc deployment of surface-to-surface anti-ship missiles emphasizes the need for improvements in ocean surveillance. Performing ocean surface surveillance in areas such as the Mediterranean during periods of increased tension severely taxes the resources of the fleet commander.

After evaluating it carefully, we reoriented our ocean surface surveillance advanced technology program in FY 1975. This new concept will be one part of an overall tradeoff study of potential tactical surveillance platforms and associated command and control. Potential platforms include ships, helicopters, fixed-wing aircraft, and remotely-piloted vehicles.

Efforts to achieve local area surface surveillance by using high-flying aircraft were considerably altered during FY 1975. The planned U-2 test program was cancelled. We still need a dedicated airborne multi-sensor collector with passive and active sensors to provide continuous surveillance, with a real-time data link for shipboard correlation of data from the aircraft with information from other sources. Therefore, in FY 1976, emphasis will be placed on Remotely-Piloted Vehicles (RPVs) and on a conventional carried-based airframe, such as the S-3A aircraft, with the possibility of merger with the Tactical Airborne Signals Exploitation System (TASES) program. The TASES program is discussed in the Defense Suppression section. The RPV effort will concentrate on mission analysis and concept definition and will benefit from the technology base provided by the Air Force and Army RPV developments. We are requesting $2.0 million for this project in FY 1976.

Several programs to provide an improved ocean surveillance command, control and communications capability were continued in FY 1975. These programs included the Fleet Command Support Center (FCSC) and the Ocean Surveillance Information System (OSIS). Together these programs constitute a worldwide system which will integrate, display and disseminate all-source information for effective decision-making at national command authority and naval tactical command levels. High speed communication links for computer-to-computer data transfer between centers and development of the all-source computer processing system at the Pacific center will be completed in FY 1976. Funding for these programs in FY 1976 is programmed at $7.1 million. In addition, an advanced technology effort to achieve a data relay for providing near real-time information to the tactical commander is being undertaken. The budgeted level of effort in FY 1976 is $3.0 million. A decision regarding development of an on-orbit demonstration of this system is anticipated in the next year. The ground data processing and display equipment from the cancelled U-2 tests will be used in a fleet exercise to examine the functions, interfaces, and data exchange between shore facility and shipboard command and control systems.

3. Fleet Air Defense

The Fleet Air Defense Mission Area includes two categories of weapon systems: Area Defense system for defense of high value ships and Self Defense systems for short-range defense of the ships in which they are installed.

a. Area Defense

Our Area Defense System developments center on four major programs, the F-14 fighter with its AWG-9/PHOENIX Weapon System, the Navy Air Combat Fighter, the E-2C Early Warning Aircraft, and the AEGIS Weapon System. The F-14 and the E-2C have completed development, are fully operational, and will continue to enhance our Area Defense capability as they enter the fleet in increasing numbers. The Navy Air Combat Fighter, discussed in Section VI.D., will replace the aging F-4 and provide a lower cost complement to the F-14. AEGIS continues in development as a fully integrated detection-to-kill system to provide closer-in protection to our high value ships.

Our recent studies reaffirm the need for the highly jam-resistant AEGIS weapon system to provide high-rate missile firing and at the same time be capable of coordinating the defensive actions of other Area Defense missile ships in the defensive umbrella over our carriers or other high value ships. A one-quadrant AEGIS engineering development model completed successful land-based testing in 1973.

was installed in USS NORTON SOUND (AVM-1) and commenced at-sea testing in early 1974. Major test objectives have been met, including successful demonstration of technical and operational performance parameters, SM-1 missile firings, joint operations in Fleet Air Defense exercises, and system operation by fleet personnel. AEGIS is now being modified for a second at-sea test phase. This phase will include an Initial Operational Evaluation by the Navy's Independent Test Agency, demonstration of missile mid-course command guidance and simultaneous target engagements. $66.0 million in FY 1976 is required to support the at-sea test phase and continue engineering development of the total system.

In our view, the operational capabilities of the system have now been demonstrated and have confirmed the importance of moving forward expeditiously to put a full-scale AEGIS system in an operating ship. Since enactment of Title VIII last year, we have revised our AEGIS shipbuilding plans. A number of new candidate platforms for this purpose have been investigated including the DD 963, the DLGN 38 class and the USS LONG BEACH CGN 9. At the present time detailed studies are underway to define a conversion of the LONG BEACH for refit to the AEGIS capability. The CGN 9 appears to be a particularly desirable ship for this conversion since its current systems are aging and require modernization and the size and available auxiliary power of the ship do not impose engineering constraints on such a conversion. Use of the LONG BEACH will provide a full-scale test and demonstration of the system to prepare for its application to other combatant ships and, at the same time, will provide the first-line operational capability of AEGIS in the fleet at the earliest possible time. This installation of AEGIS will be prototypical of the system configuration to be employed in major anti air-warfare ships of the future Navy.

The extensive testing completed to date has identified a number of system improvements which will enhance AEGIS performance and reliability and lower cost and weight. These improvements will be evaluated in a land-based Combat System Engineering Development Site (CSEDS) to be established in FY 1976. In addition to assembling, integrating, and evaluating the AEGIS weapon system in this facility for a final production decision, we will use CSEDS to integrate and test the total AEGIS-ship combat weapon suite and develop and proof ship-related tactical computer programs. The CSEDS facility will also be used as a training facility for precommissioning crews of AEGIS equipped ships and to proof future AEGIS system cost/weight improvements.

The CSEDS concept, initiated for the Patrol Frigate program and supported by Congress, has established an excellent but expensive precedent in new ship construction. In the past, ship-related activities involving integration of systems already service-approved were funded in Ship Construction, Navy (SCN) appropriation. However, in response to FY 1976 Congressional guidance we have totally funded the AEGIS-ship CSEDS in the RDT&E appropriation. This will amount to about $180 million over the next five budget years and represents a major funding shift from procurement to the RDT&E account. The FY 1976 increment is $45.0 million.

Other Area Defense Systems in full scale development include: mid-course guidance and ECCM improvements to the STANDARD Missile (SM-2), improvements in DLG performance through use of automated target detection and tracking and through modification of the ship missile systems for SM-2

control, and improvements in performance of airborne and shipboard long-range air search radars. Programs for development options include: evaluation of alternative STANDARD Missile guidance modes to provide lower shipboard weapon system acquisition costs and increased firepower, and to permit real-time missile coordination for improved task force defense: formulation of DDG performance improvements, including use of automated target detection and tracking and missile system modifications for SM-2 missile control· improvements in data collection and displays at the task force level to permit more timely battle management by the force commander; and reliability improvements in our shipboard search radars. The aggregate FY 1976 funding requires for these Area Defense efforts is $59.5 million.

b. Self Defense

Our Self Defense System developments are to improve our current fleet capability or to provide a new capability to counter threats beyond the growth potential of current systems. The defense for each ship is determined by the value of the ship and the severity of the threat.

The importance of these Self Defense Systems, with or without protective Area Defense Systems, has grown with the number and diversity of anti-ship missiles with conventional warheads being deployed throughout the world. Although funding of Self Defense Systems has been constrained over the past few years, we can expect increases in the years following FY 1976 because of the growing sophistication of the Soviet capability.

PHALANX CIWS, a Self Defense System now in full-scale development, is intended to provide a last ditch defense against the majority of existing Soviet missiles. It successfully completed an Initial Operational Evaluation in 1974 but further tests will be conducted in early 1975 against more realistic targets. Firing tests conducted in late 1974 reconfirmed the lethality of the 20 mm projectile against typical missile and bomb warheads. While static tests do not guarantee success in dynamic testing, they do indicate a satisfactory upper level of performance. Procurement of Operational Suitability Models for Operational Test and Evaluation will continue following successful completion of the early 1975 testing. FY 1976 funding required for these systems is $30.7 million.

The high cost of current shipboard electronic warfare suites has restricted their installation to high value ships. To provide a cost-effective electronic warfare capability against anti-ship cruise missiles, the Low-Cost EW Suites Program is developing a modular family of electronic warfare components for equipping a wide range of ships and the LAMPS helicopter. This program follows a design-to-cost objective to achieve maximum tactical effectiveness within a fixed unit production cost. It appears today that target values for procurement and installation, established at $0.3 million, $0.5 million, and $1.4 million for three levels of capability, will be achieved. However, we are concerned that inflation will cause increases in these cost goals.

Engineering development and testing of prototypes by two competing contractors is proceeding on schedule. Critical Design Reviews were completed in FY 1975, and fabrication of the prototype systems is underway. Following development testing early in FY 1976, an Initial Operational Evaluation will be conducted to determine the operational performance and system limitations of the two competing systems. Service approval of the selected Low Cost EW Suites is expected in early 1976. $8.2 million in FY 1976 is required to continue development.

Other Self Defense Programs currently in full scale development include: modification of the AIM-7F SPARROW missile to counter sea skimming as well as high-speed, high-dive angle anti-ship missiles, 5"/54 gunnery fire control improvements, Mk 92 Fire Control Systems for the Patrol Frigate and PHM, and Target Acquisition System to provide a short-range jam-resistant integrated radar and infrared search system. FY 1976 funding required for these programs is $28.3 million.

Self Defense Programs to investigate or establish development options include:

o A 5"/54 laser semi-active or IR terminally guided projectile, discussed in Section VI-C., to improve gunnery against anti-ship missiles as well as sea and shore targets.

o Integration of shipboard combat systems to enhance AAW effectiveness,

o Five-inch ASMD Missile. This missile is intended to be low cost, utilizing already developed SIDEWINDER, CHAPARRAL and STINGER components. Feasibility firings will be conducted in early 1975 to insure that the missile guidance can achieve a miss distance against radially closing air targets within the lethal radius of the missile warhead. Engineering development is planned to commence in FY 1976 following successful feasibility demonstration.

FY 1976 funding required for these self-defense technology programs is $26.8 million.

In order to clarify system integration aspects of shipboard combat systems, we have categorized our weapon development programs into four functional areas: surveillance, combat coordination, deception, and destruction. New programs are assessed on the basis of need and potential pay-off. Need is determined by checking existing or already planned capabilities. Pay-off is the assessment of how much the new System would improve performance. This procedure requires total ship combat system definition, including interfaces, even though the new program is applicable to only one of the functional areas. This procedure also establishes the ship system performance criteria to be demonstrated prior to a production decision. We believe that this approach provides the management emphasis needed at program initiation to insure proper ship system integration.

Applying this procedure we have combined the Lightweight Intermediate Caliber Gun Program with a proposed ASCM Defense System for the 1980's into a new program, Shipboard Intermediate Range Combat System. This combined program is intended to provide a self defense capability against future Soviet threats. It will also have inherent offensive capability which may interrelate effectively with other options available in the 1980's. Funding required for the combined program in FY 1976 is $4.5 million to complete assessment of the various technology options and do appropriate performance and cost tradeoffs. The proposed system should be ready for a DSARC I development decision in FY 1977.

4. Fleet Anti-Submarine Warfare

The objectives of Fleet ASW are to provide naval forces with sufficient protection from hostile submarines to permit them to perform their primary missions and to assure that material shipped by sea transport reaches its destination without unacceptable losses from submarine attack.

In our judgment, the large Soviet submarine fleet and extensive building program, coupled with qualitative improvements, make their submarine force a critical potential threat to our fleet and shipping. In addition, the opaqueness of the undersea environment makes the submarine particularly difficult to deal with. No single approach will do the job. Our R&D program is a broad range of efforts to provide sensors and weapons for the major tactics used in ASW.

During the past year we have critically reviewed and modified the program to achieve a balance between area ASW and self protection for our Naval Forces. As a result, we have focused our efforts on improvements in undersea surveillance (discussed later), increases in passive sonobuoy detection and localization to counter Soviet submarine quieting, lightweight ASW torpedoes, and providing ASW escorts with passive capabilities through the addition of towed arrays integrated with active-passive hull sonars and LAMPS.

Because of long system lead-times and the difficulty of detecting quieter submarines, there are several programs which respond to anticipated changes in enemy submarine characteristics. Some of these programs may never result in a deployed system but are necessary as hedges. Examples of this type of program are advanced sonobuoys and new lightweight ASW torpedos. In FY 1976 out of total ASW budget of $253.6 million, (including Undersea Surveillance) $50.0 million is on programs to provide the necessary understanding for future decisions. A more detailed discussion of the ASW programs is provided below.

The Air Sensors program provides both active and passive sonobuoys for all planned and current ASW aircraft. This program has been reviewed to assure that redundancy exists only where differences in technical approach must be resolved by demonstration. A decision will be made in FY 1976 regarding the extent to which these programs should be continued. The principle concerning redundancy also applies to alternative technical approaches within the Passive Advanced Development Sonobuoy (PADS) program. In addition to improving detection capability and reducing production costs of sonobuoys, the Air Sensors program is emphasizing improved localization and precision of weapon delivery.

The MK-46 improvement program is nearing a decision on which modification packages under development will be completed for Test and Evaluation. Efforts on the Advanced Lightweight Torpedo (ALT) will concentrate on technology and analysis in order that decisions on full scale development vis a vis further improvements to the MK-46 and/or continued production of MK-46 can be made. ALT program started in FY 1975 and will continue as a technology program until we have a better picture of the requirements and alternatives and can understand the total cost.

To support ASW forces around naval task forces and convoys, improvements for surface ship escorts are required. Efforts are underway to achieve a high speed Escort Towed Array Sonar (ETAS) which will be integrated with improvements to the SQS-26 sonar and with LAMPS. The ship portions of these systems can use common processing and display subsystems. The Advanced Signal Processor (ASP) being developed in the air ASW programs is being assessed for its utility for ASW systems. The ASP may become a common ASW processing system with application to LAMPS III, ETAS, SURTAS, SOSUS, P-3 and future S-3A improvements.

The Light Airborne Multi-Purpose System (LAMPS) MK-III is included in this area because of its applications, although it has other missions as well. LAMPS is a helicopter carrying weapons and sensors to expand the reach of surface ships in investigating and attacking contacts made by long-range shipborne sensors or by remote surveillance systems. $35.4 million is being requested this year to

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continue design and evaluation of the combat system and start helicopter marinization. The Navy has decided to adopt the Army's UTTAS helicopter as the airframe for LAMP MK-III, thereby reducing helicopter proliferation, cutting costs, and increasing capability as compared to other alternatives. The Navy planned IOC is 1982; total RDT&E is $371 million. Tests at sea with simulations and prototypes of LAMPS MK-III combat system indicate it will be very good against both submarine and surface targets.

A broad program of improvements to our attack submarines is continuing. The program includes sonar localization improvements, silencing, countermeasures, weapons, and communications. Emphasis will be on sub-to-ship, sub-to-sub, and sub-to-air communications to improve tactical coordination between submarines and all elements of the fleet.

We believe the attack submarine R&D programs requested in this budget represent a proper balance with other priorities and fiscal constraints. However, we are sensitive to the possibility that maintaining our current technological advantage over the Soviets in submarine warfare may require a larger share of the R&D budget. We are considering exploratory development to examine the feasibility of submarine options for self-protection. To permit operating deeper, stronger submarine hull materials are needed. Although they have been under development for some time, they must be certified by constructing and testing a non-combatant, prototype hull prior to large scale application to submarine construction. During FY 1976 we will work with the Navy to formulate an aggressive, integrated program of submarine and submarine related R&D to map a long range plan for the continuing improvement of our attack submarine forces.

In addition to the major programs discussed above, there are a number of extremely important smaller programs that are continuing. Examples include acoustic decoys to confuse enemy submarines, avionics improvements to the P-3 aircraft, and ASW mine developments. The operational evaluation of the CAPTOR ASW mine is currently underway. Results are not yet available.

A reexamination of our acoustic countermeasures against torpedo attack has been instituted. This area has been somewhat neglected in recent years because of higher priority needs. Careful reevaluation of its relative importance and the prospects for significant improvements is now in order.

VII. INTELLIGENCE RESEARCH AND DEVELOPMENT

A. INTRODUCTION

The Intelligence R&D Council was formed in early 1974 in an effort to focus high level attention from each organization in the intelligence community on the central problem of getting improved intelligence from a more judicious application of research and development techniques and resources. This Council reviews the R&D programs of each organization with a view toward balancing resource investment for the solution of critical intelligence problems, examining emerging areas of opportunity for promising applications of technology and coordinating the totality of R&D effort within the entire community.

As Chairman of the Intelligence R&D Council, I have worked closely with Mr. William Colby, the Director of Central Intelligence and with Dr. Albert Hall, the Assistant Secretary of Defense for Intelligence, to assure that we have a vigorous, forward-looking intelligence R&D program and that the limited resources are wisely allocated and managed.

We have witnessed, over the past decade, a revolution in the means by which we gather and use intelligence data. This involves some of the most sophisticated technology in the world. Research and Development is central not only to the further development of our intelligence capability but also to its more efficient accomplishment with fewer people and at a reduced cost.

Foreign intelligence employs the talents of unique organizations to support national and tactical force decisions with information on significant foreign activities. Different sensors and techniques are used for monitoring international crisis areas like Cyprus and Middle East, where we must be precisely cognizant of activities of major nuclear powers--activities that could portend nuclear involvement, and where we must provide specific warning should hostilities commence.

In addition to the important problems of technical intelligence gathering and crisis management, our battlefield commanders rely on intelligence information to direct their commands. We must bring the best technology to bear to provide current and precise information concerning the forces arrayed against each of our tactical commanders during hostilities. During the past year the Intelligence R&D Council has focused its attention on the problem of updating and modernizing the technical equipment used to provide tactical commanders the resources they require. We will continue and expand this emphasis in the coming year.

Intelligence is a complex, technically demanding area endeavoring to provide precise, current, and adequate information to diverse users on a vast array of subjects. The success of these activities is increasingly dependent upon the technology from a coordinated program of research and development.

B. R&D OBJECTIVES

Our currently planned R&D efforts are specifically designed to achieve the following general objectives:

- To better support the military commander in the field. The reduction of forces requires that our intelligence support to field commanders give longer lead time in crisis warning and furnish timely detailed intelligence so that they may cope with the deployment capabilities of modern forces. We are developing systems for rapid dissemination of intelligence between the Continental U. S. and the overseas commander, and improving the commander's organic capabilities to support himself on the battlefield.

o To utilize technology to the maximum to obtain trade-offs of technology for expensive manpower. As one example, we are proceeding with a major effort to automate so that we may reduce the number of military people overseas. The initial success of this and similar projects to replace manpower with technology is so encouraging that we intend to increase our investments in this area.

o To expand our technical collection capabilities to cope with the increasing sophistication of the target environment and the increasing tasks for intelligence to monitor the treaties evolving from detente. We have found that monitoring the existing treaties and supporting the negotiations for new treaties have called for more flexibility and higher precision in intelligence. Our intelligence collection systems are the "national means of verification" referred to in the treaties themselves. Thus, in a very meaningful way, our national security depends on the technological powers of those systems.

o To better support the intelligence analyst and use technology to increase human productivity. Intelligence is dependent upon the human thought process, logical deduction, pattern recognition and insight. However, much may be done to assist this judgment by using technology to bring better information to the analyst more quickly and to allow him to manipulate this information much more rapidly. Automated data processing, interactive displays, internetting of data bases, and rapid access to raw data storage are all being pursued to improve analyst performance.

o To improve the survivability of our missile attack warning systems. We are increasing the number of entry points for data and modifying the systems to improve survivability.

o To improve the presentation of intelligence to the user of intelligence. We need to better focus our reporting so that the manager and/or commander receives precisely the information he needs, reduced to essentials, so that informed decisions can be made in fast-moving complex situations. We are investigating both methodology and technology to rapidly determine the relevant content of the data we collect and communicate it to the decision maker. Within the Department of Defense we are developing these capabilities for the National Military Intelligence Center and the intelligence centers of our major field commanders.

C. THE FY 1976 REQUEST

The efforts I have outlined are indicative of an intelligence future that is increasingly dominated by expanding technology both in our efforts and in those of the target countries. The technological lead-time between ourselves and the Soviets continues to decrease. The Soviets are rapidly developing MIRV ICBM systems, SLBM systems, antiship missile systems, air defense missile systems and advanced aircraft systems. As these systems become more sophisticated and complex, we must improve our technical intelligence to support the development of countermeasures in our weapon systems. The sobering thought is that the acceleration of technology has increased the danger of technical surprise.

The FY 1976 budget request of $527 million for intelligence R&D is approximately the same level as in FY 1975. These funds will support work in each of the three Services, the Defense Intelligence Agency and the National Security Agency.

I have described the major thrusts of this program in general terms. Specific details will be covered in separate testimony by Dr. Hall.

VIII. COMMAND AND CONTROL AND COMMUNICATIONS (C^3)

A. INTRODUCTION

To view RDT&E expenditures for C^3 in proper perspective requires an understanding of the changing mission of this far-flung network and the urgent needs which currently beset it. In this section and in the section on WMMCCS, I discuss in general terms the C^3 philosophy. After that I take up the C^3 programs and the RDT&E support they require.

Flexibility in employment of our diverse military forces is enhanced by reliable, survivable and secure command and control and communications systems (C^3). The C^3 systems are interlaced throughout the total DoD structure; the land, sea and aerospace forces, and their supporting elements. Effective C^3 requires that all of the individual parts be coordinated so that the appropriate mix of military power can be brought to bear on a crisis or war situation in precise response to and under the positive control of the proper national authorities. These C^3 systems should be interoperable and capable of providing rapid and secure communications between a variety of levels of command, between forces of the various Services and between the United States and its allies.

The ability to exercise command control of our forces has become increasingly significant during recent years due to the increasing complexity of the tasks facing us coupled with decreasing force levels. As the Soviets approached nuclear weapon parity, our ability to reliably and selectively command and control our nuclear forces grew in importance, and became more difficult. Today's nuclear strategy includes the added dimension of carefully controlled limited nuclear options, which places new additional demands on the C^3 systems. We must always be able to respond to many types of crisis situations, and be able to choose a response to any type of threat. These range from various applications of conventional forces, through the entire spectrum of nuclear options, to strategic nuclear exchange. Any weakness in this ability would degrade our confidence in controlling potentially escalating situations. The challenge for our C^3 is to permit this full range of force application options, recognizing both the vastness of geography and the limitations of the forces we have available.

Our present C^3 resources were not systematically designed to accommodate today's requirements. In general, they were introduced gradually, in response to an increased threat or to take advantage of advancing technology. They range from those resources meeting unique requirements such as the execution of our strategic nuclear forces, to others that meet the day-to-day operating requirements of our forces. No encompassing systematic plan has been available. The result has been the acquisition of several individual subsystems that can be broadly categorized into special and general purpose C^3 resources. Although requirements for some special purpose systems will remain, we must plan our basic C^3 system to be able to operate in response to force command and control requirements across the broad spectrum of operations described.

This is not to say, however, that our present resources are not applicable to today's situation. Although they have the flexibility to be used effectively in response to the present C^3 environment, they must be integrated into an over-all plan to insure efficient employment and to avoid duplication of capabilities in future procurement.

In recognition of the past lack of a system approach, several highly significant actions have been taken. Most important have been the establishment of the World Wide Military Command and Control System

(WWMCCS) Council and the creation within OSD of the Director, Telecommunications and Command and Control Systems (DTACCS). Closely following upon the creation of the DTACCS was the WWMCCS Council decision in February 1974 to seek a master plan, an "architecture," for a system which will be based on the identification and satisfaction of our C^3 needs, to the extent technology and the reasonable application of defense dollars will permit. The effort to develop C^3 requirements and architecture to satisfy those requirements is now underway. To implement the appropriate architectural option selected by the WWMCCS Council, we will identify an organization within DoD to follow on the architectural role and to engineer, implement and manage the C^3 systems capabilities.

The requirements for C^3 should receive the highest priority within the systematic approach described above, and they should evolve in response to national policy objectives, the threat, and our force structure. However, already recognized urgent requirements cannot be delayed while awaiting the final architectural design.

B. WWMCCS

The operational direction and administrative support of U.S. military forces worldwide is conducted through the World Wide Military Command and Control System (WWMCCS). The national level elements of this system, the National Military Command System, include the National Military Command Center (NMCC) in the Pentagon and two alternate command facilities designed to enhance survivability. The President, no matter where he may be, at the White House, Camp David, or airborne in the Presidential aircraft, is always kept in continuous communications with the NMCS and, through it, with the Alternate National Military Command Centers, subordinate commands and the military forces. The National Military Command System is linked to the commands and the military forces world wide by a variety of general and special purpose communications modes.

During the next few years, we propose to significantly improve the security and survivability of the WWMCCS communications, particularly that portion designated as the Minimum Essential Emergency Communications Network (MEECN). The MEECN is the survivable system for communicating executive orders to our forces in wartime.

Connections between the national level command centers and the Strategic Air Command (SAC) forces are provided through a deliberately redundant system of communications and command posts. SAC, in addition to its principal command post at Omaha, Nebraska, also maintains an airborne command post. The SAC airborne command post is in continuous communication with the SAC command post at Omaha. On receipt of warning of a nuclear attack on the United States, the SAC airborne command post would be linked to the SAC forces and the National Military Command System by the Post Attack Command and Control Systems (PACCS). The total PACCS system consists of eight airborne stations involving a total of 24 aircraft.

The national military command centers are also linked to the sea-based strategic missile forces, either through the appropriate subordinate commands or directly, by means of a deliberately redundant system of Navy radio transmitters and by the Navy TACAMO relay aircraft. To maximize the survivability of communications from the National Command Authority, these Navy transmitters (including TACAMO) can also be reached via those communications links involved in directing SAC forces. (When the authorized force of 12 TACAMO aircraft are available, we will be able to maintain one aircraft continuously airborne over both the Atlantic and Pacific Oceans.) Messages could also be relayed to the ballistic missile submarines via general purpose systems on ships at sea, communication satellites, LORAN, etc.

This system of command and control of the strategic offensive forces, however, is not now as survivable as the forces themselves. That is why the Defense Department has proposed, in addition to the improvements in the existing communications networks, the continued development and deployment of the Air Force Satellite Communications System (AFSATCOM), the Advanced Airborne Command Post (AABNCP) aircraft, and the SANGUINE extremely low frequency (ELF) radio relay system. These three special purpose programs offer good prospects for a substantial increase in the survivability and effectiveness of our national command and control system under nuclear attack. They, along with other key systems, are discussed in the following paragraphs.

C. C^3 PROGRAMS

1. Satellite Communications

The DoD is acquiring and deploying communications satellite systems which primarily address three fundamental communications areas, namely:

- o C^3 of nuclear-capable forces for which a general-war survivable system is required. This is the Air Force Satellite Communications System (AFSATCOM).
- o Support of the WWMCCS using a day-to-day global system which provides protected strategic connectivity between major bases and command centers, large Navy ships, and Advanced Airborne Command Posts (AABNCP). This is the prime mission of the Defense Satellite Communications System (DSCS).
- o Fleet communications modernization using a global system to serve the beyond-the-horizon communications needs of ships, antisubmarine warfare aircraft and other mobile forces. This is the Fleet Satellite Communications System (FLTSATCOM).

Satellite communications systems can solve high priority communications problems either not solvable, or more difficult and expensive to solve, or impractical to solve by other means. These systems can also be used as high priority alternate routing for other systems as a means of enhancing survivability. Moreover, the global, changing communications needs of Defense can often be best accommodated by satellite where for modest investment in capacity, great flexibility in geographic allocation can be achieved. Because the price of satellite communications can be high, we stress essential, high priority use of these systems and depend on common carrier lease for the largest percentage of our long-haul routine administrative traffic.

a. AFSATCOM

A general war survivable satellite communications system for C^3 of our nuclear capable forces must withstand massive physical and jamming attacks in the execution of its mission. This is our goal for the AFSATCOM program. AFSATCOM I, provides us with a global system which will have a modest anti-jam capability. The AFSATCOM I space segment will consist of Air Force transponders installed on host satellites. North polar coverage will be provided by AFSATCOM transponders on the Satellite Data System (SDS). Equatorial coverage will be obtained via transponders on the FLTSATCOM satellites scheduled for launching in CY 1977. Proliferation of coverage is being obtained through transponders installed on certain other classified hosts. This redundancy will provide the AFSATCOM I space segment with some degree of survivability to physical attack.

The AFSATCOM I airborne and ground terminal program is currently in its test and evaluation phase. A major goal for CY 1975 is successful completion of this phase and the start of production. $12.8 million is associated with this RDT&E effort in FY 1976.

In the meantime, the Air Force is planning for AFSATCOM II, which emphasizes a major upgrade in anti-jam capability and improvement in satellite physical survivability. In support of this effort, two experimental satellites called LES 8 and 9 are scheduled for launch in October 1975. Based on LES 8/9 and other industry/government studies, the Air Force expects by the end of CY 1976 to define an AFSATCOM II which upgrades the space segment survivability and retains the investment in AFSATCOM I earth terminals.

AFSATCOM will employ short, low-speed (teletype rate) messages for force execution, force report back, and force redirection. The use of such messages coupled with suitable anti-jam techniques will permit relatively simple UHF low power terminals aboard our operational vehicles to reliably and securely communicate via satellites which are stressed by large land-based jammers. The RDT&E requirement for these various technology efforts in FY 1976 is $26.7 Million.

b. Defense Satellite Communications System (DSCS)

The DSCS is a high capacity super-high frequency (SHF) system providing protected (anti-jam) secure voice and data links for the WWMCCS. It also supports terminal deployments for contingencies, restoration of disrupted service overseas, presidential travel, global connectivity for the Diplomatic Telecommunications Service, and transmission to CONUS of some surveillance, intelligence, and early warning data collected overseas.

Substantial progress was made by the DSCS in 1974. The two DSCS II satellites launched in late 1973 are working satisfactorily and are serving the Atlantic and Pacific theatres. Two more DSCS II satellites will be ready for launch in the spring of 1975 and when in orbit will give DSCS global coverage. In 1974 we also contracted for an additional six DSCS II satellites to provide continuity in global coverage in the 1977-80 time frame. Planning for DSCS III satellites which will serve the increased demands of the post-1980 system is in process. This effort will require $12.4 million in FY 1976.

In the DSCS earth terminal area, the modified, upgraded Phase I terminals have been redeployed and are fully operational. Two new heavy terminals are operational and a contract was signed for 15 more heavy terminals for deployment starting in CY 1976. Antennas are being developed for medium and light transportable terminals which employ electronics developed on other terminal programs. Altogether, $13.6 million is requested for DSCS terminal development in FY 1976. By 1979, the DSCS will have over 50 ground terminals deployed globally to provide long-haul communication trunks and fulfill its prime mission, WWMCCS Support.

Early in 1974, a program was approved for the acquisition of highly mobile ground terminals for the support of Army, Air Force, and Marine Corps elements deploying in crisis and limited war situations. This terminal capability will be available in the late 1970s and will use the DSCS space segment. In FY 1976, $7.6 million is associated with developing these terminals.

c. Fleet Satellite Communications (FLTSATCOM)

FLTSATCOM is a major and essential step in modernizing Navy communications. It will help relieve the Navy of its almost total dependence on high frequency (HF) transmission for beyond-the-horizon communications and add needed capabilities not possible at HF, such as the anti-jam fleet broadcast system of FLTSATCOM.

Like the AFSATCOM, FLTSATCOM operates at ultra-high frequency (UHF) where relatively low cost terminals with simple antennas are possible for highly mobile platforms. Unlike the DSCS, FLTSATCOM will have relatively small capacity because of its much lower operating frequency. Consequently, widespread use of voice circuits is not possible and for this reason the Navy is developing automated message handling systems (IXS) for FLTSATCOM. The program includes the terminal equipment for the fleet as well as the satellites. Terminals are currently being installed and will initially operate (CY 1975/76) via leased transponders on COMSAT's MARISAT covering the Atlantic and Pacific Ocean areas. This is an expedient which is not cost effective but is appropriate in view of FLTSATCOM launch schedules.

During 1974, the FLTSATCOM space segment development program experienced substantial technical difficulties which caused delays and cost growth. The problems, however, are mostly solved and the Navy expects to start production of FLTSAT flight articles in CY 1975. Initial launches will not occur until CY 1977; however, we expect that the COMSAT lease will be extended to provide coverage continuity until the FLTSATs are operational. In FY 1976, a total of $23.1 million is associated with the FLTSAT program.

2. AABNCP

The Advanced Airborne Command Post (AABNCP) is being developed in increments to take advantage of our growing understanding of the command and control problems in a nuclear war environment. The aircraft (the Boeing 747, now designated the E-4) has the equipment and people needed for flexible command and control of our forces by the National Command Authorities. The aircraft should have a useful life of 20 to 25 years, and during that period, we anticipate a nearly continuous modernization program as new technology becomes available and needed to support our national policy.

Due to the anticipated changes in command and control technology, the AABNCP program is divided into "blocks." Block I is the currently approved configuration of the AABNCP, and is further divided into three phases. Phase IA will provide an interim National Emergency Air Force Command Post for the NMCS. The first three operational aircraft will be equipped with C^3 packages transferred from the three existing EC-135's. The first of these aircraft was delivered on 7 December 1974. Phase IB provides for development of an advanced C^3 package using one E-4A R&D aircraft, which was funded in FY 1973 Budget, and later acquisition of three operational E-4A's, complete with the new C^3 package. Phase IC of the Block I program consists of retrofitting the first three E-4A aircraft with the new Block I C^3 package for delivery to the Strategic Air Command.

The Phase IB C^3 package, in addition to antennas and terminals for satellite communication, will provide a computer terminal through which the E-4A can connect directly into the WWMCCS ground-based Automatic Data Processing (ADP) system. This equipment will greatly enhance the survivability of Airborne Command Post communications both by providing more powerful communications to overcome nuclear or jamming degradation and by providing interface with the AFSATCOM satellite system and the Defense Satellite Communications System (DSCS). By permitting the aircraft to fly in a larger area, these communications will also enhance its survivability. The new C^3 package, along with greater available space, longer endurance, and other features of the E-4A aircraft will greatly enhance our command and control under nuclear attack.

Block II has yet to be fully defined. Initial studies will define the airborne ADP system and other needed improvements that are technically feasible, and cost-effective.

The R&D funds requested in the FY 1976 and the Transition Budget, will continue the development of the C^3 package and fund the initial increment of a Block II program. The RDT&E portion of Phase IB is $42.2 Million in FY 1976 and $7.8 Million in the Transition Budget.

3. SANGUINE

The effective command and control of our SLBM force, the element of our strategic offensive forces which is the least vulnerable, is of major importance. The present communications links from the NCA to the ballistic submarines are much less survivable than the submarines themselves. More reliable and survivable communications links must, therefore, be provided for these forces.

The SANGUINE system will provide survivable communications to our ballistic-missile and attack submarines as they operate at depth and speed. SANGUINE may also have significant utility in communicating with our other strategic forces. The SANGUINE transmitter site will be less vulnerable to nuclear attack and the signals less susceptible to atmospheric disturbances and enemy jamming than any other known communications system. Also, the SANGUINE system will pose no known environmental, ecological or biological dangers to the area in which installed.

Several years of experience at the Wisconsin test site have demonstrated the operational and technical feasibility of the SANGUINE system. We plan to continue system development and prototype testing on a site independent basis, and make signal propagation measurements in the operational environment. We have tested many potential sites to assist us in final site determination. Further analysis is being accomplished in preparation for a site recommendation. The FY 1976 RDT&E request for SANGUINE is $18.0 million and the Transition Budget request is $4.4 million.

4. Tri-Service Tactical Communications Program (TRI-TAC)

The TRI-TAC program was established in May 1971 as a joint Army, Navy, Marine Corps and Air Force program to achieve interoperability among tactical communications systems, avoid duplication among the Services in the development of equipment, reduce proliferation of different types of equipment, and place in the field, in a timely manner, new tactical communications equipment required by the Armed Forces.

The Joint Tactical Communications (TRI-TAC) Office is developing a system "architecture" to insure that the many subelements fit together and efficiently serve military requirements and national policy. A Land-Based Plan and a Naval-Based Plan for TRI-TAC for the post-1980 period have been completed. Transitional plans which take into account each of the Services' existing inventories are being prepared.

Our objective is compatible equipment to support the Services and joint operations in the early 1980's. The tactical equipment must interconnect with the Defense Communications System (DCS) and interface satisfactorily with our allies, particularly NATO. The latter is to be achieved through coordination rather than through joint development.

A major part of the TRI-TAC program involves multi-channel tactical communications systems for trunking and switching of both voice and record communications and of data transmission for computerized weapons systems.

An increased utilization of digital techniques will permit a high degree of communications security in addition to improved reliability and maintainability, faster transfer of information, and reduced size and weight. Initial designs will accommodate analog signals to permit operation with the large existing equipment inventories of our allies and ourselves during the transition.

The Director, Joint Tactical Communications (TRI-TAC), has over-all responsibility for the program and provides the plans and system design concept. He monitors the development and procurement of equipment which is accomplished by the Services as assigned by the Director, Telecommunications and Command and Control Systems. In general, a single Service is tasked to develop each equipment for utilization by all the Services. The Army, for example, is developing the circuit and message switch, the Air Force the technical control, the Navy a facsimile terminal, etc.

A full-scale engineering development of the AN/TTC-39 family of automatic switches was approved in April 1974. Other equipments currently under development are the secure voice terminals, facsimile terminal, data terminal, short-range wide-band radios, technical control devices and tactical satellite modems.

Contract awards are planned in FY 1976 for tropo-radios, digital group multiplexers, unit level switches and a message composition device. The FY 1976 request for all Services for the TRI-TAC program is $108.8 million.

5. Communications Security (COMSEC)

COMSEC prevents unauthorized persons from obtaining information through the interception of electrical transmission on telecommunications circuits. It is a continuing program involving: (1) the research, development, procurement, maintenance and operation of cryptographic devices; and (2) the supervision and monitoring of DoD telecommunications to assure an acceptable level of communications security.

In FY 1976 we are requesting $83.3 Million in RDT&E funds to continue on-going COMSEC equipment programs and to accelerate the development of voice security. The major effort in FY 1976 is development of the COMSEC equipment for the joint tactical automatic switch being developed under the direction of the Joint Tactical Communications Office (TRI-TAC).

Our current objective is to accelerate development and procurement of (1) COMSEC equipment for Combat Net Radio Systems, and (2) secure voice terminals for the TRI-TAC System. The Combat Net Radio Systems are being tested in FY 1975/1976.

Some of the equipment developed for TRI-TAC may be used in portions of the DCS, particularly in overseas areas. However, the DCS is just initiating a transition from analog to digital facilities. Thus studies, equipment designs and new technology are required for interoperability of fixed and tactical systems during an extended transition period. One of the most critical areas is the development of an improved automatically switched secure voice network during this period.

We are vigorously pursuing development of automatic crypto key distribution concepts and both narrow- and wide-band voice processing terminal equipments. Technology in large scale integrated circuits is a key factor to the complicated voice processing algorithms required for this application. The program is focused at NSA with complementary efforts by the Services at DCA. A narrow-band secure voice consortium, coordinates the narrow-band programs to avoid duplication, address interoperability problems and maximize the prospects for early success.

6. Other Communications Programs and Activities

Included within C^3 are a variety of on-going multi-Service and Service-unique programs, including selective modernization and testing of existing systems and equipments.

The Navy is in the process of developing a comprehensive architectural plan for a future fleet telecommunications system and the supporting telecommunications-system engineering and analysis capability.

The Navy also has new approaches and techniques for solving current fleet communication deficiencies. These include selective automation of shipboard communication centers, development of optical transmissions systems for use by surface, air and submarine units, investigation of the potential of high frequency radio surface wave components, and engineering development of secure man-portable radio systems for flight deck and damage control use. The Navy is also continuing a project-intensive approach to solving submarine communications problems, and is initiating an integrated radio room project designed to improve the technical management of communications and electronic support measures on board nuclear attack submarines.

As part of our effort to modernize and improve the current WWMCCS, we are initiating development of a new, more reliable, more responsive automated C^3 system for CINCSAC. This new system will provide two-way communications between all SAC SIOP executing commanders and the National Command Authorities. In addition, an improved automated C^3 system is being developed and installed for CINCNORAD, primarily to ensure effective processing of critical warning data.

As the WWMCCS becomes more automated, research is required so that the different classifications of defense information can be handled efficiently with a minimal risk of compromise. More efficient means of internetting the computers in the system must also be developed. Both of these areas are being explored by the Joint Technical Support Activity (JTSA) of DCA.

D. C^3 RDT&E RESOURCE SUMMARY

The FY 1976 requirement for RDT&E resources in support of C^3 is $522.5 Million.

For ease of management, the resources are segregated into the following broad categories:

Category	FY 1976 ($ in Millions)
Tactical	114.2
Satellites	126.4
Direct Command and Control	127.6
Long Haul (DCS)	30.4
COMSEC	83.4
General Support	40.6
TOTAL	$522.5

IX. TEST AND EVALUATION

A. TEST AND EVALUATION OBJECTIVES

Last year I emphasized that Defense must use test and evaluation (T&E) aggressively as a major tool in our management of each new system acquisition. The objectives of T&E must be to learn progressively, and as early as possible, through Development Test and Evaluation (DT&E) that design risks have been eliminated, and to determine through realistic Operational Test and Evaluation (OT&E) the system's operational effectiveness and operational suitability. The Secretary of Defense has already directed strong measures to accomplish this. He has established policy in a DoD Directive (DODD 5000.3). He has insisted that the Defense Systems Acquisition Review Council (DSARC) evaluate carefully at each major milestone whether testing was adequately planned and test results sufficiently convincing to support the recommended decision. He has established a strong, OSD level, full-time, test office under a Deputy Director (Test and Evaluation) within DDR&E.

I stressed last year that I supported fully these earlier announced policies and requirements and intended to insure they were followed. In addition, however, I stated my intention to emphasize the following particular aspects:

- Strengthening the DSARC's and Secretary's reliance on completing adequate early testing even before a program is permitted to enter full-scale engineering development,
- Increasing multi-Service testing of new systems of possible use to more than one Service,
- Increasing use of Test and Evaluation (T&E) to assist in the evaluation of Allied designs for possible U.S. applications,
- Increasing the realism of operational testing to include improving as necessary our major ranges and test facilities, and developing more realistic targets and threat simulators,
- Increasing the efficiency and economy of operation of our major ranges and test facilities, and
- Continuing heavy emphasis on the conduct of essential Joint Operational Tests and Evaluations (JOT&E).

B. TEST AND EVALUATION ACCOMPLISHMENTS THIS PAST YEAR

We are making important progress in all these areas.

1. T&E in Acquisition of New Systems.

In the past year we have increased our emphasis on securing adequate T&E results in each program before it advances to a next major stage--particularly into production. All DSARC members and senior Military Department representatives recognize that there is no substitute for adequate T&E to indicate the health of a program's development and its later readiness to enter production. The DSARC at each of its meetings devotes itself heavily to evaluating the state of that T&E health and readiness. It has reviewed 29 major acquisition programs in 34 meetings during Calendar Year 1974. Meantime, the Deputy Director for T&E has provided able counsel in his continual review of nearly 80 "major," and over 20 "less than major," acquisition programs he selected for attention. In this manner OSD assures each program is adjusted as necessary to meet the overall Defense acquisition policies including the T&E requirements set forth in DoD Directives 5000.1 and 5000.3. The Secretary of Defense in his program decisions has supported all T&E recommendations of the DSARC and the Deputy Director (T&E).

2. Early DT&E Before Full-Scale Engineering Development.

Real progress in this area, too, has been made. Decision Coordinating Papers (DCPs) are being revised to require program restructuring

where necessary to ensure that adequate DT&E is performed in high-risk technical areas prior to DSARC approval of full-scale engineering development. Examples of programs which have been so adjusted during the past year are the NAVSTAR Global Positioning System, Defense Satellite Communication System III, Pershing II, SAM-D, Advanced Acoustic Processors, Airborne Acoustic Sensors, Surface Effects Ship (SES), Escort Towed Array Sonar (ETAS), Sound Surveillance System (SOSUS), High-Speed Anti-Radiation Missile (HARM), and the EF-111. We shall continue to adjust other programs as necessary in this regard.

3. Multi-Service and Foreign Systems Testing

During this past year we have increased materially multi-Service testing of U.S. systems which are of possible use to more than one Service, and testing to evaluate foreign systems for potential U.S. application.

- In the multi-Service test area, the Navy/Air Force preproduction, multi-Service testing of the AIM-7F air-to-air missile was completed this year. Multi-Service testing of the AIM-9L is continuing with firings being conducted by both Navy and Air Force. The PQM-102, jointly developed and tested by the Air Force and Army, has successfully transitioned into production. The Army UTTAS helicopter is to be tested by the Navy as a candidate for the Navy's LAMPS program. The Navy and the Air Force will conduct multi-Service joint testing of the High-Speed Anti-Radiation Missile (HARM) to provide better defense suppression capability. The Army, Navy and Air Force are jointly testing for Tri-Service use a number of conventional munitions and related equipments such as aerially delivered anti-armor land mines, an improved illuminating flare for night operations, a binary chemical dispenser for high performance aircraft, and versatile ground laser designators for ground controller designation of tactical targets. The Navy and Air Force will jointly test improved bomb retardation devices, a new fuel-air explosive weapon which can be deployed from high speed aircraft, and a laser seeker version of the MAVERICK missile.
- In the area of test and evaluation of foreign developments, work has been expanded. For the Army's SHORAD program, there has been extensive examination of past testing of candidate French, German and British designs. The Army also has completed military potential testing of the Rheinmetale 20mm automatic cannon for possible application to the Mechanized Infantry Combat Vehicle (MICV). Among the twelve vehicles tested in the Army's Armored Reconnaissance Scout Vehicle (ARSV) program, were the British SCIMITAR and the Canadian LYNX. The Navy is testing the Dutch WM-28 gun fire control system and the Italian Oto Melara 76mm gun in the Patrol Hydrofoil Guided Missile Ship (PHM) and Patrol Frigate (PF) programs. During the past year a combined FRG, UK and U.S. program has been underway developing an assessment plan for the possible selection of a common gun as the main armament for future tanks. The firing trials portion of the assessment begins in the UK in February 1975 and includes the FRG 120mm, the UK 110mm and the U.S. 105mm guns. The Army's Operational Test and Evaluation Agency completed a 1500-mile test program of an FRG Leopard II chassis which had been weighted to represent mounting a 120mm gun and turret. This test was primarily to evaluate the tank's suspension system and power train performance. In January 1975, the Army completed a four-month side-by-side test and evaluation of a modified M16 rifle and a FRG rifle as candidates for the MICV Firing Port Weapon.

4. Increasing Efficiency and Economy of the T&E Facility Base.

The Major Range and Test Facility Base (MRTFB) is comprised of 26 DoD major ranges and test facilities which are managed by the Military Departments and monitored for OSD by the Deputy Director (Test and Evaluation).

A new Uniform Funding Policy became effective on 1 July 1974 for 18 of the facilities deemed to have highest potential for multi-Service use. At these major range and test facilities users now pay the direct costs for the testing they require, and the facilities are institutionally funded for their other costs. Users, because they must bear significant costs, are being motivated thereby to request only testing truly required, and in the facilities that provide the best testing environment, regardless of Service. The policy also facilitates the comparative analysis of range operations and budget submissions for better management. Results to date are encouraging and indicate much more awareness on the part of the user of the cost of support and more emphasis by the facilities to operate efficiently.

Test programs, personnel, and dollar requirements of the major test facilities are monitored in depth by the Deputy Director (T&E). Greater economy of operation is continually sought through system improvement and retirement of capabilities no longer required. Important examples of improvement are the real-time telemetry systems now operating at the Naval Air Test Center and the Air Force Flight Test Center, development of a multiple target precision instrumentation radar for use at many ranges, and telemetry systems capable of simultaneously supporting multiple data links. Examples of retirements in FY 1975 and 1976 of MRTFB capabilities no longer required include three major support ships, the USNS HUNTSVILLE, USNS LONGVIEW and USNS SUNNYVALE and the initiation of mothballing of the Canton Island terminal area.

At the Pacific Missile Range a droned mobile barge has been developed to permit test of close-in defense systems against terminal attack. Instrumented P-3 aircraft have been programmed into the PMR as platforms for the Extended Area Tracking System (EATS). In FY 1976, development will continue on the EATS. Plans have been firmed for the Mobile Sea Range with initial operational capability in the last quarter of FY 1976. Also, the Navy plans to initiate in FY 1976 development of a Wide Area Active Surveillance (WAAS) system to permit more realistic training and fleet readiness exercises in the Atlantic Fleet Weapons Range.

Following the guidance provided by Congress in its denial of FY 1975 funds for the Continental Operations Range (COR), we have reoriented our plans to meet a continuing requirement for realistic, free play, multiple-aircraft, air-to-air, and air-to-ground operational testing and training. We now plan to provide this support through minimum improvements of existing ranges such as Nellis, Eglin, Tyndall, Hill-Wendover, PMR, AFWR, the Naval Weapons Center, and elsewhere. These will include acquisition of minimum additions such as threat simulators, Air Combat Maneuvering Instrumentation (ACMI), Time-Space-Position Instrumentation (TSPI), and more realistic target complexes.

5. Progress in Development of Realistic Targets and Threat Simulators.

With the changing of threats with time, there is continual need to provide for test and training new targets, particularly aerial targets. The target development programs are being actively pursued by

the appropriate Services and closely monitored and supervised by the Deputy Director (T&E). In the aerial target regime, significant progress in increasing test realism was achieved with the recent completion of development, test and initiation of use, of the PQM-102. We are continuing to test the Air Force High Altitude Supersonic Target (HAST) for possible production in limited numbers for future testing. We are examining, too, the possibility of other less costly full- and reduced-scale aerial targets and related infrared and radar augmentation. During the year improved aerial target control systems will have completed development and test (the Integrated Target Control System and Vega Target Control System) as well as a cost effective Army training target which is scheduled into inventory in FY 1976. Additionally, existing targets (BQM-34s and AQM-37s) and the TALOS missile are being modified to provide more realistic threat envelopes for antiship missile defense systems.

In my statement last year I emphasized the need for more simulations of newer enemy systems in order to improve the realism of our operational testing. This need is particularly acute in the field of electronic warfare (EW). The past year has provided steady progress, aided materially by new insights into enemy EW equipment and probable tactics as observed in the Middle East wars. As an example, a tri-Service group, chaired by the Army, has made excellent progress in coordinating development of a family of enemy air defense equipment simulators that represent a significant portion of the ground-based threat to aircraft. The Air Force is coordinating their effort with the Army's and is exploiting the air-to-air EW threat simulator field. The Navy is also pursuing a number of EW simulator programs including several airborne EW simulators in test-bed aircraft. These aircraft, as well as surface EW simulators, are being used in a variety of Navy development programs.

C. COSTS FOR TEST AND EVALUATION

The funding required to carry out Test and Evaluation of new systems is a major element in their costs and in the overall RDT&E budget request. These T&E costs consist of two primary elements, the amounts required for building subsystems and full system prototypes and subjecting these to instrumented technical and operational tests, and the cost of major range and test facilities where these tests occur. Let me give a few figures.

In FY 1976, there are some 79 major weapons systems that are being monitored by the Deputy Director for Test and Evaluation. These will require some $3,790 million RDT&E funding for their development, engineering and test. Of this total, $660 million or nearly 18 percent will be needed for government testing--the building of prototypes for government test, technical development test by the developer, and test items for independent user IOT&E. In the three most recent years, when we have been emphasizing the accomplishment of adequate test and evaluation before production, the figure has been around 20 percent. As would be expected, the majority--nearly two-thirds--of these programs fall into the Group Two category, i.e., those undergoing full-scale system development for potential deployment. Three-fourths of the RDT&E funding for these 79 programs is for those in the Group Two category, and one-fourth of that funding applies to those in Group One category where technical options are developed.

Operation of the major test ranges and other specialized test facilities is for the most part charged to the RDT&E appropriation. Some $686 million in RDT&E will be required in FY 1976 to operate, maintain

and improve 20 of our major ranges and test facilities. However, the 10 largest of these ranges, funded at approximately $500 million provide significant support to Service training missions. The $686 million needed for FY 1976 continues an 8 percent per annum upward trend which has occurred since FY 1974 in spite of the severe efforts to prevent duplicate testing, minimize staffing and retire facilities no longer essential. Increases occur because test facilities are heavily driven by the need for large numbers of personnel to acquire and evaluate instrumented test data, by increased costs of expendables such as POL, by the necessity for a minimum capital improvement program to keep pace with the threat, and by the increasing complexity of systems being tested. All of these costs have had a high rate of inflation in these years.

Although the test activities which I have described come at a high cost, I believe they are worth it. These activities are enabling us to decide during development which systems should be terminated and which systems, based on vigorous evaluation both from performance and military usefulness viewpoints, are sufficiently mature to proceed into production.

D. JOINT OPERATIONAL TEST AND EVALUATION

In its 1970 report to the President, a Blue Ribbon Defense Panel (BRDP) pointed out that no mechanism existed in the DoD to conduct Joint Operational Test and Evaluation (JOT&E) - operational testing where the assets of one Service are used with or against the assets of another Service. The BRDP recommended that productive Joint Operational Testing be accomplished when needed. In 1971, the Secretary directed that the Deputy Director (T&E) be responsible for initiating and coordinating appropriate joint testing. For FY 1973, the Secetary proposed a new Program Element (PE) 65804D be established for the primary purpose of supporting JOT&E. For such operational tests, the appropriation was to be used only for the extraordinary test costs caused by the test--for such things as test definition, test planning, test headquarters operation, special instrumentation, data collection and the like. Normal appropriations to the Services for equipment, pay and maintenance, would pay for the other costs involved. Congress concurred and established this line item under a special RDT&E appropriation entitled, "Director of Test and Evaluation, Defense."

Since initiation of the first JOT&E, that of the joint evaluation of the MAVERICK missile in FY 1972, 13 JOT&Es have been started--seven in FY 1973, three in FY 1974, and three in FY 1975. By the end of FY 1975, seven will have been completed (including the MAVERICK JOT&E); the remaining seven will carry on into FY 1976. In addition, we plan to start four new JOT&Es in FY 1976.

1. Completed JOT&Es in FY 1975.

In summary, the JOT&Es which will be completed through FY 1975 will be the following:

- The MAVERICK Joint Operational Test in FY 1973 determined the ability of close air support (CAS) pilots to acquire and launch MAVERICK missiles effectively against a maneuvering ground armored unit, and the aircraft losses which could be expected due to antiaircraft weapons in the attack.
- The A-7/A-10 Joint Operational Test and Evaluation completed in FY 1974 was a Congressionally directed JOT&E (flyoff) and showed the relative effectiveness and survivability of these two aircraft when engaged in close air support (CAS) against simulated Soviet Block armor and antiaircraft weapons.

- The Hit Probability Joint Test, which was completed in FY 1975, determined the effectiveness (hit probabilities) of Soviet antiaircraft guns against U.S. Close Air Support aircraft employing realistic tactics for attack.
- The Radar Bombing Accuracy Test, which will be completed during the third quarter of FY 1975, provided us with a highly accurate instrumentation system and methodology for evaluating the bombing accuracies of our strike aircraft against realistic targets in cultural surroundings.
- The Aircraft Survivability Joint Test is scheduled for completion at the end of FY 1975. Test results have provided an understanding of aircraft vulnerability to non-nuclear munitions such as 14.5, 23 and 57mm projectiles. This understanding has been verified by actual firing tests (over 300 shots). Test results are being used in connection with modification to existing aircraft and new aircraft designs and in planned Service-funded survivability analyses.
- The Air-to-Air Weapons Effectiveness Joint Test, completed in early FY 1975, provided us with realistic terminal effectiveness data from operational flight test trials of Navy and Air Force aircraft on our present AIM-9 and AIM-7 series missiles. This data is presently being employed to validate a methodology for predicting probability-of-kill performance of air-to-air missiles against threat aircraft attack.
- The Laser Guided Weapon Countermeasures Joint Test will be completed in June of 1975. Static field and captive flight testing of both laser and other guided weapons have been tested against practical countermeasures. Systems tested include the BULLDOG, EO MAVERICK and the IR MAVERICK, as well as coded and uncoded Laser Guided Bombs (LGBs).

2. Funding Requirements for Joint Operational Test and Evaluation for FY 1976.

Of the $28.5 million requested under P.E. 65804D for FY 1976, $27.8 million will be used for JOT&Es. The remaining $0.7 million will be used for preliminary planning of possible additional JOT&Es to be started in later years, and special analyses to determine the course of improvement for our major ranges and test facilities. Table I gives the estimated amount of the $27.8 million to be applied to each of these JOT&Es.

In summary, the objectives of each are as follows:

By the end of FY 1976, four JOT&Es which have continued on from FY 1975 will be concluded:

- The Electronic Warfare Joint Operational Test is to determine the effectiveness of various aircraft formations carrying the most modern airborne ECM in penetrating heavy surface-to-air missile/AA defended areas. Results are still undergoing analysis.
- The Airborne Target Acquisition Joint Test is being conducted to establish aircrew capabilities in acquiring ground targets under operational situations by both aided and unaided visual acquisition means.
- The Close Air Support Command and Control Joint Test is designed to determine more accurately than now known the operational command and control capabilities of the Service organizations involved in close air support.

- o The Laser Guided Weapons in Close Air Support Joint Test will identify the level of density of Laser Guided Weapons (LGWs) that could be employed effectively in close air support, and to identify the command and control problems which might limit their number or effectiveness due to interference.

Three other JOT&E programs started prior to FY 1976 will continue beyond FY 1976:

- o The Forward Area Air Defense (FAAD) Joint Test will assess the operational effectiveness of our FAAD systems in joint field exercises both here and abroad. Testing will continue into FY 1977, with program completion scheduled end of FY 1977.
- o The Operational Resupply Joint Test is designed to assess our offshore and over-the-beach cargo handling equipment and procedures capabilities. Completion is scheduled for FY 1978.
- o The Multiple Air-to-Air Combat Joint Test is designed to measure the effectiveness of multiple aircraft combat engagements and tactics and the frequency at which these engagements resolve into a one-on-one combat situation. Actual testing will be conducted on an instrumented range during FY 1976 and into FY 1977. Program completion is scheduled by the end of FY 1977.

Four new JOT&E programs will be initiated in FY 1976, and each is presently undergoing design definition to scope its size:

- o The Target Engagement Joint Test will provide data to evaluate current and proposed airborne systems used for target engagement. The test will be designed to assess the effectiveness of various aircraft sensors, ground engagement aids and command and control configurations used for detecting, localizing, acquiring and attacking tactical ground targets.
- o The Short Range Air-to-Air Missile Joint Test will assist DoD in evaluating the operational effectiveness of alternative concepts for a short range air-to-air missile (SRAAM) prior to committing one dogfight missile scheme to advanced development.
- o The Electro-Optical Guided Weapons Countermeasures Joint Test will extend through FY 1977 to continue work on newer laser guided systems, and to expand the countermeasures testing of our guided weapons which use electro-optical guidance.
- o The Electronic Warfare During Close Air Support Operations Joint Test will determine the capabilities of our electronic warfare equipments and employment procedures used in close air support against a ground threat. Test results will measure the effectiveness of Army/Air Force mutual support doctrine and point up deficiencies and reveal opportunities for improving air defense suppression capabilities in an ECM environment.

E. IN SUMMARY

We have continued in the past year to improve our use of timely and aggressive test and evaluation in the acquisition of new weapon systems. We are still concentrating heavily on accomplishing, before major production starts, sufficient development and operational tests to prove design soundness, operational performance and readiness for production. At the same time, we have begun this year greatly increased effort to fabricate and test while still in advanced development. We have continued our strenuous effort to maximize the economy and effectiveness of our large test and evaluation range and test facilities. Finally, we have completed several very beneficial joint operational tests and are aggressively pushing forward on others whose results we need.

TABLE I

Joint Operations Tests
Under
Director of Test and Evaluation, Defense Appropriation
(Title V RDT&E)

(thousands of dollars)

Joint Test Activities	FY 1975 Program	FY 1976 Request
Electronic Warfare Joint Test	3,431	200
Hit Probability Joint Test	3,090	-
LASER Guided Weapon Countermeasures Test	2,200	-
Air-to-Air Weapon Effectiveness Test	600	-
Radar Bombing Accuracy Test	776	-
Aircraft Survivability Test	3,518	-
Airborne Target Acquisition Test	3,392	750
Close Air Support Command and Control Test	2,072	600
LASER Guided Weapons in Close Air Support Joint Test	4,196	500
Forward Area Air Defense Joint Test	246	4,000
Multiple Air-to-Air Combat Joint Test	700	3,500
Operational Resupply Joint Test	200	1,500
Electronic Warfare During Close Air Support Operations Joint Test	-	3,800
Electro-Optical Guided Weapons Countermeasures Joint Test	-	3,000
Target Engagement Joint Test	-	3,000
Short Range Air-to-Air Missile Joint Test	-	5,000
Joint Test Instrumentation	-	2,000
Sub-Total	24,421	27,850
Other	579	650
TOTAL	25,000	28,500

X. INTERNATIONAL RESEARCH AND DEVELOPMENT COOPERATION

A. EMPHASIS ON NATO STANDARDIZATION

Effective international cooperation in R&D can be of vital importance to the security of the United States and the Free World--a fact I have become increasingly aware of during my two years as Director of Defense Research and Engineering. In an era when all nations of the Free World are under pressure to reduce or limit military spending, the collective resources of the United States and its Allies must be applied in the most efficient manner to provide greater force cost-effectiveness.

The focus of our efforts in cooperation in R&D is in NATO although our interest is worldwide. It is in NATO that we have our principal treaty commitments and the bulk of the Free World's technological, industrial and military resources. In NATO there is excessive duplication and lack of standardization which seriously reduce the overall performance of the Alliance forces and waste the resources expended on R&D, production and logistics support. This problem has been of serious concern for some time. But so far, there has been too much talk and too little action.

Secretary Schlesinger and I strongly support a vigorous effort in international cooperation in R&D. Operating through the NATO organization, the Secretary--in the NATO Ministers' meetings--and I--at the Conferences of NATO Armament Directors--and both of us at the Bilaterals, continuously press our initiatives for standardization.

The road to international cooperation in R&D is not an easy one. Because of our real competence and a giant technical-industrial base, there is always a tendency to go it alone. But that is not the route

to the long-term strength of NATO. We must not turn excessively inward, and both Defense and Congress are determined not to. In fact, Congressional interest, in the form of specific initiatives by Senators McIntyre and Nunn to focus efforts on the problem, are very helpful.

In this chapter, I will discuss our program in detail:

- Outlining the present situation in NATO;
- Stating the actions we have been and are taking; and finally,
- Presenting concrete examples of progress in our major initiatives.

1. The NATO Problem

Excessive duplication and lack of standardization have become a serious problem in NATO because each of the highly industrialized, technologically advanced countries of the Alliance is responsible for equipping its own NATO units. Separate national procurements result in many duplicative developments that not only generate massive logistic and operational problems for NATO authorities, but also result in inefficient use of collective fiscal, technological and industrial resources of the Alliance. A recent Defense Advanced Research Projects Agency study indicated that several billion dollars are wasted annually in NATO due to unwarranted redundance in R&D, production, and logistic support.

General Goodpaster (recently retired SACEUR) has stated that the proliferation of weapons and lack of standardization in the Alliance has the effect of decreasing the equivalent force effectiveness of Allied Forces in Europe by some 30 percent.

Lack of standardization causes rampant proliferation. For example, currently in Central Europe alone, NATO's forces have:

- 23 different families of combat aircraft;
- 7 different families of main battle tanks;
- 8 different families of armored personnel carriers; and
- 22 different families of antitank weapons.

Similarly, NATO's naval forces have:

- 36 different fire control radars;
- 8 different SAM systems;
- 6 different antiship missiles; and
- over 20 different calibers of weapons of 30mm or larger.

Our recent look at only the area of tactical missiles revealed that there are over 100 separate tactical missile systems within the Alliance.

2. Elements of a Solution

The United States and European efforts to solve this problem have been on the increase since 1970. We have accelerated the process during the past two years. Under U.S. leadership, a number of initiatives to improve the situation have been introduced. In parallel with these U.S. initiatives, the Europeans themselves have formed EUROGROUP, a subset of NATO having as a principal objective the overseeing of cooperation in development and procurement of armaments. Implementing these solutions has proven very difficult and complex. It involves multinational interests, predilections and biases, with no authoritarian structure to insure execution.

To insure long-term efficient and streamlined NATO forces, we need to have three things:

- Mutual planning and execution of national R&D programs within the Alliance are especially important. Properly structured, such programs can furnish competition in their earlier stages to provide options, and efficient production and deployment in their later stages.
- Equitable arrangements for co-production are required, taking into consideration such vital national aspects as the level of employment, the availability of technical know-how, and the balance of payments.
- The deployed weapons system should be common regardless of how many nations are using it. Failing that, interoperability is mandatory. Interoperability among defense-wide systems--communications, command and control, for example--is especially important.

Several approaches toward implementing these standardization objectives are currently in effect: namely, joint developments, interdependency and interoperability.

a. Cooperative Developments

Cooperative joint development and procurement of armaments have been going on for some time. In this concept multinational development, production and deployment are accomplished jointly among the participants. Prorata sharing of R&D and co-production are involved.

This approach has found favor with the Europeans, who tend to have relatively equal industrial bases and levels of technology. However, full participation in these programs has been difficult for the United States for two reasons. First, U.S. technology in most areas is still superior to the remainder of the Alliance. Any major shift of R&D activity to the poorer technology base in Europe could be counterproductive to Alliance defense interest. Joint sharing of technology generally would also result in a substantial technology flow from U.S. industry to European industry.

Second, today the United States develops and produces a major segment of the military equipment needs of the Free World. This has helped to reduce unit costs, and sustain both our industrial and employment base, as well as a matchless technology base, which all contribute so significantly to our leadership in world affairs. An excessive shift toward a prorata distribution could react adversely on our present industrial/technological base.

b. Interdependence

Because of the difficulties associated with cooperative programs, the United States introduced in 1972 a new approach which we called Interdependent R&D. The concept of interdependency is that one nation undertakes R&D of a product to be utilized by a number of Allies. By this approach, the management and cost efficiencies of a single national development can be retained while the mutual benefits of both multinational production/offset arrangements, and standardization are preserved.

Interdependency is presently our basic thrust in cooperative R&D. To make it work, we have introduced several abetting mechanisms. To overcome the problems of requirements rigidity and conflicting performance claims, we introduced competitive prototype testing. To remove U.S. industry from an adversary role with its European counterparts, DoD has encouraged direct U.S.-European industrial teaming through licensing agreements prior to Requests for Proposals rather than using the traditional approach of direct competition between U.S. and foreign industry. To protect the U.S. balance of trade, and remove dependence on off-shore sources for key weapon systems, U.S. production is required.

Interdependency is working. A good example of interdependency in action is the U.S. SHORAD Program which resulted in the U.S. selection of the German-French ROLAND II system. I discuss details of ROLAND II when I review our major initiatives later in this chapter.

To keep interdependency working requires diligence. To persuade our friends and Allies to standardize on the most cost-effective systems, which many times are of U.S. design, we must be prepared to achieve a greater measure of industrial collaboration between European and U.S. firms. This often means entering into expanded co-production and offset arrangements for U.S.-developed systems. Our proposals for a European Multi-National Fighter Program based on our Air Combat Fighter are a good example. We offer the Europeans early production offset concurrent with U.S. production, and a time-phased access to the world's most advanced aircraft, engine and avionics technology. We retain efficient, single-nation management of the R&D program, and time-phased control over release of our advanced technology.

To enable their companies to reach the scale of efficiency of large U.S. industrial enterprises, the Europeans are establishing common trade and financial policies. The United States is facing a much more competitive Europe, and we will have a more difficult time convincing our Allies of the merit of U.S. equipment--unless, of course,

we take steps to share the industrial benefits of collaboration. Properly structured programs of co-production and of U.S. use of selected items from European developments help us deter European moves to become self-sufficient and duplicative in defense equipment. Many in Europe would still prefer to collaborate with us--and I feel strongly that we should grasp opportunities now to sustain and strengthen the voices of those who call for an Atlantic rather than a wholly European solution.

c. Interoperability

The remaining major area of concern is Interoperability. We have made some progress here, as initiatives which I shall discuss later show. But there are real challenges and real pay-offs remaining. When common equipment is not achieved, either because of arbitrary national decisions or because of pressures to retain standards within the country for equipment such as communications and data processing hardware, interoperability is vital. The military effectiveness of NATO can be vastly increased by modest expenditures to insure interoperability of different systems. For example, ships of different navies or ground units of different armies must be able to talk to each other, and aircraft should be able to land, refuel, rearm and take off from any Allied base.

This high-leverage effort, yielding large pay-offs for relatively few resources, has not been sufficiently emphasized in the past. Interoperability is a pervasive and absolutely essential requirement. It needs to be made an issue. I intend to introduce a major initiative at the April 1975 NATO Conference for National Armaments Directors (CNAD), requesting that the NATO Military Committee submit to the CNAD for action by October 1975 a list of ten areas where interoperability will achieve the greatest increase in NATO military forces effectiveness.

B. MAJOR COMMONALITY INITIATIVES

Having outlined the broad thrusts of our policies for improving standardization of NATO armaments, I want now to examine the progress we have already made in our commonality initiatives. We are emphasizing standardization in ground-based air defense missile systems, Airborne Early Warning and Control, an aircraft weapons system to replace the F-105, an IR air-to-air missile, ammunition (from small arms to 155 howitzers), and a future main battle tank, interoperability of communications and data handling equipment, and cooperation in ECM and precision terminal guidance for weapons. Each of these efforts is now under way and some details of progress to date are available.

1. REDEYE-STINGER Man-Portable SAM

The REDEYE is employed by four NATO countries in the forward battle area to protect combat troops against low-level aircraft. It can be fired in a matter of seconds after an enemy aircraft has been detected. Although STINGER is still in the development stage, it will eventually replace the REDEYE. The U.S. is working with our NATO Allies toward acceptance of STINGER as the standard man-portable air defense missile system within NATO.

2. ROLAND II Short Range Air Defense SAM

For its Short Range Air Defense Systems, the U.S. considered four systems: The UK's RAPIER, FR's CROTALE, and the FR/FRG's ROLAND II, and the U.S. all-weather CHAPARRAL. No new U.S. development was permitted until the existing foreign developments were thoroughly evaluated. The three candidate European systems were tested to include actual missile firings to determine their real capability to satify our military needs. ROLAND II outperformed its competition, met our requirements, and was selected in January 1975. Several other NATO Allies were interested in the U.S. selection. We hope that through the cooperative efforts of Germany, France, and the U.S., ROLAND II will become a standard throughout NATO and further encourage interdependency.

It is now important to insure that the remaining German-French ROLAND II development and the remaining U.S. ROLAND II development result in relatively standardized systems. Toward this end, I favor a high-level U.S.-FRG-FR Steering Committee and have already taken steps with our two Allies to establish it.

3. Improved HAWK Medium Altitude SAM

Although three separate medium altitude SAM developments were being planned by several NATO countries, two were dropped, and the improved HAWK was adopted. Through U.S. and German initiatives and diligence, the HAWK Improved Program (HIP) Consortium (FR, FRG, Italy, Netherlands) was formed. The systems of HAWK and IMPROVED HAWK are in operation in at least eight NATO countries and members of the HIP Consortium were able to capitalize on previously developed U.S. technology in adopting the improved version.

4. NIKE-HERCULES/SAM-D High Altitude SAM

The NIKE-HERCULES, which is in use by nine NATO countries, and its potential successor, the SAM-D, complete the air defense surface-to-air missile family. The SAM-D is still in the developmental stage: however, the FRG desires common SAM equipment with the U.S. since approximately 75 percent of SAM capability is maintained by the U.S. and FRG. The FRG has recommended SAM-D as a replacement for NIKE-HERCULES in the early 1980s.

5. AWACS

NATO needs AWACS to provide critical upgrading of Western European Air Defense. The U.S. plans to modify the radar in the SID AWACS prototype by March 1975 so that an enhanced maritime performance can be demonstrated in Europe prior to the April 1975 CNAD. At the October 1974 CNAD, a high level body was appointed to examine funding, management, co-production, ownership, basing and modification aspects of the NATO AWACS. The Chairman will coordinate and integrate the above efforts in time for presentation to the April 1975 CNAD. Following this, the June 1975 Ministerial Meeting will address this issue for decision and national commitment. We are projecting a decision date of November 1975.

6. Air Defense Gun Systems

The U.S. conducted initial tests of the FRG 35mm FLAKPANZER along with other foreign systems during HITVAL (Hit Probability, Joint Test). We plan to obtain a series production version of the OERLIKEN 35mm FLAKPANZER in CY 1976 for extensive U.S. testing. We are also investigating the possibility of side-by-side testing in Europe between the U.S. 25mm GLADS (Gun Low Altitude Air Defense System) test bed and the 35mm OERLIKEN FLAKPANZER. If the U.S. Army establishes a ROC (Required Operational Capability) for the new gun system, possible foreign candidates include the Swedish 40mm BOFORS as well as the FLAKPANZER.

7. Assault Guns

The U.S. Army recently completed an evaluation of the FRG RH 202 20mm gun as a possible alternative to the M-139 interim gun and the BUSHMASTER which is being developed for use with the MICV (Mechanized Infantry Combat Vehicle). We will carefully evaluate the results to see which system will best satisfy the U.S. requirement.

8. F-104 Replacement

We are in the final stages of negotiation with the Multi-National Fighter Program Committee (Belgium, Denmark, Netherlands, and Norway) for standardization of the F-104 replacement. Our F-16 is competing against the FR F-1/M53 and the Swedish VIGGEN. The USAF plans to procure 650 F-16s and deploy some to Europe. If the U.S. aircraft is selected by the Consortium for purchase and co-production, major benefits will accrue to the U.S. and NATO. The aircraft will be of a common configuration, and will have common weapons certification and qualification. Cross servicing, ordnance replenishment, turn-around, maintenance and other logistics will no longer pose the problems they have in the past. In addition, a European Depot and Logistics facility would provide common support to all members of the Alliance.

9. IR Air-to-Air Missiles

The U.S., UK, and FRG all had been developing IR air-to-air missiles for their own uses. However, the UK SRAM has been cut back to a flight demonstration firing program. And, based on U.S. DoD commitment that FRG would be allowed to produce the AIM-9L under license, the FRG decided to cancel its VIPER program. The agreement for FRG production was subject to future offset requirements. At a meeting last summer, EUROGROUP partners were asked to participate in an AIM-9L Consortium. We anticipate that FRG will lead the Corsortium, with Italy and Norway participating as a minimum. Other countries are expected to participate, especially those from the Multi-National Fighter Consortium Countries if they select the USAF's Air Combat Fighter.

10. NATO PHM (NATO Missile Patrol Hydrofoil)

The NATO PHM is a cooperative development and production project between the U.S./FRG/Italy. This cooperative development was encouraged by the U.S. and precluded a parallel European development of a similar hydrofoil craft. The development costs are shared between the three countries. Each of the participants can acquire PHM that have a largely standardized configuration at a fraction of the total cost.

11. Army 6.0mm SAWS (Squad Automatic Weapons System)

On the grounds that it would employ ammunition that was not standard within NATO, we recently cancelled a proposed Army development for a light one-man machine gun (SAWS). The program has been reoriented to develop a weapon which would be standard in NATO and in the United States. Two calibers are being pursued, 7.62mm which is standard in the U.S. and NATO, and 5.62 which is standard in the U.S. and will probably become standard in NATO because of the U.S. and French investment there.

12. 155mm Howitzer Ammunition

The U.S., UK and FRG signed a Memorandum of Understanding governing the standardization of 155mm internal ballistics in 1969. Italy also signed about two years ago. In addition, the signatories agreed to design the new propelling charges with standard muzzle velocities and to accept the U.S. M549 rocket assisted projectile as the standard for future development. As a result of these agreements, three howitzers, the UK, FRG, IT, FH-70, SP70, and U.S. XM-198 will have the same internal and external ballistics, insuring the interchangeability of ammunition among these nations. In addition, the U.S. has actively encouraged the French to modify their GCT gun and ammunition to provide for interchangeability with the U.S. and the trilateral countries' ammunition in emergency conditions.

13. Main Battle Tank Armament

Secretary Schlesinger agreed with FRG Minister of Defense Leber that decisions on armament for future tanks in NATO should be made jointly with the objective of selecting a common gun, and proposed a joint US/UK/FRG shoot-off between the U.S. 105mm with improved ammunition, the UK 110mm and the FRG 120mm. The weapons will be fired against identical targets and evaluated against agreed criteria. The trials began in February 1975 and will be completed by this fall.

14. XM1 LEOPARD II Competition

We have supported the FRG desire to enter a modified FRG LEOPARD II tank in the competition for the U.S. Main Battle Tank XM1.

The FRG contender will incorporate increased ballistic protection, a simpler fire control system and a U.S. night vision subsystem. Although the modified LEOPARD II cannot meet the schedule required of the U.S. competitors, it will be evaluated against the winner of the XM1 competition. The UK has been invited to observe the trials. Side-by-side testing should provide important benefits to both countries and provide significant opportunities for standardization.

15. Electronic Warfare

As a result of JCS and DDR&E initiatives, working groups within NATO are studying both off-the-shelf and new-development approaches to improve NATO Electronic Warfare (EW) capabilities. At the last three meetings of CNAD, the U.S. proposed to assist in improving NATO's major deficiency in airborne EW. The U.S. has offered cooperation for:

- o NATO EW tests
- o Tactics and facility tests
- o EW jamming of NATO Air Defense radars for crew training
- o Chaff dispensers and IR countermeasures.

EW is one area where maximum commonality and standardization of equipment is not desirable. The different national solutions provide a diversified challenge to the Warsaw Pact. However, the U.S. has been encouraging technology transfer to members of the Alliance to help defray the costs of new developments and yet provide some measure of commonality. DDR&E is chairing a Four Power Working Group in EW to explore and identify areas for cooperation.

16. Advanced Scout Helicopter

We are currently in the process of formulating an advanced development program for the Army's Advanced Scout Helicopter. The Army convened a Special Task Force to define operational requirements and investigate alternative systems that might meet these requirements. Among the existing domestic and foreign helicopters being considered as possible candidates is the FRG BO-105 light observation helicopter which the FRG plans to procure.

17. The HARRIER Aircraft (AV-8)

One of the most successful international programs wherein we reaped the benefit of another nation's development was our procurement of HARRIERs from the United Kingdom to fulfill Marine Corps requirements for VSTOL tactical aircraft. Since 1972, the Naval Air Systems Command and the UK MOD have studied jointly the possibility of developing a follow-on HARRIER. Plans have recently been reoriented toward a cooperative program for updating the AV-8. Although the degree of cooperation has not yet been defined, this will be the subject of a meeting in London in early 1975.

18. Interoperability of Communications/Data Handling Equipment

The NATO CNAD is pressing for compatibility among tactical, NATO and national long-haul telecommunications systems. To assist, we have sponsored interconnection of the U.S. defense communications system and NATO's backbone transmission system at several adjacent sites. Eight of the 13 adjacent sites recommended for interconnection by a joint U.S./NATO study group were interconnected in 1974 at virtually no cost to us or to NATO. Two additional sites will be interconnected in 1975. The three remaining sites require microwave links. We are pressing for completion of interconnection and exchange of circuits in CY 1976.

Additionally, on a quid pro quo basis, we are permitting NATO satellite ground terminals in Europe to use our Defense Communication Satellite over the Atlantic.

We have a near-term effort to define complete interoperability of the data handling systems of NATO ships. To improve interoperability of ADPS and Telecommunications Systems, member nations are developing standard information exchange formats, common interface standards, and a common NATO Director System.

C. NEW INITIATIVES

We must exploit the momentum of our recent successes and expand our approaches to standardization/interoperability into a broad-based effort on the part of our three Services, our industries, the Congress, and all their counterparts in the Alliance. To this end, including the interoperability issue I intend to present at the April CNAD, there are several initiatives I intend to press.

1. Request new priorities from the NATO Military Committee, particularly in interoperability.

2. Seek new and innovative avenues whereby government/industry from the U.S. and its allies can cooperate more fully.

3. Continue to seek expanded Congressional support.

4. Directly involve the NATO Ministers of Defense and Foreign Affairs (State) in our interdependency efforts, and present at least one interdependency candidate for their consideration and approval at each of their semiannual meetings.

5. Obtain more broadly-based involvement and support by our three Services. Presently, the initiative of interdependency is primarily at the OSD level, although each of our Services contain strong advocates and supporters. Long-term success requires that the Services initiate and sponsor interdependency candidates in the same manner as the normal candidates for U.S. R&D.

D. CONCLUSION

Despite formidable problems, we are making significant progress toward improved effectiveness of the NATO Alliance through R&D and production cooperation. Some of this progress is directly attributable to our focusing attention on achievable goals in a few areas. Given the support of the Congress and wise management on our part, we can look forward to achieving our goal of greater Alliance force effectiveness for a lesser burden on the resources of our allies and ourselves.

APPENDIX

Statement of Principles for Department of Defense Research & Development.....

RDT&E Program by Budget Category.....

RDT&E by Type of Performer.....

RDT&E Program by Budget Activity.....

RDT&E Program by Mission Area.....

RDT&E Program by Services & Agencies.....

Percentage Distribution by Mission Area.....

Percentage Distribution by Component.....

Percentage Distribution by Type of Work.....

Percentage Distribution by Performer (Estimated).....

DEPARTMENT OF DEFENSE

Washington, D.C.

STATEMENT OF PRINCIPLES

for

DEPARTMENT OF DEFENSE RESEARCH AND DEVELOPMENT

ROI CONSCIOUSNESS. *We must develop and use a deeper and more explicit consciousness of Return on Investment in management of Defense Research and Development.*

This return lies in demonstrated deployable capabilities that can be acquired and owned at minimum and affordable cost, and which can be sufficient in performance and numbers to accomplish necessary military and deterrence missions.

TECHNOLOGY BASE. *Our greatest long-range asset is our Technology Base. It must be nurtured and managed so that it:*

- *gives us great leverage in terms of Return on Investment;*
- *constitutes a fully integrated Department of Defense tri-Service activity;*
- *searches out substantial increases in military capability and consciously uses technology to reduce costs.*

PROGRAM PLANNING. *The success of a program is often established or destroyed in its initial stage — by its concept, its request for proposal, the program plan and its funding. We must give this part of the process more explicit attention.*

VIABLE OPTIONS. *It is essential to create viable options which will allow timely low risk development of new systems when the need arises. This can be accomplished by:*

- *Forcing, as appropriate, the development and consideration of alternative paths to the same goal;*
- *Developing and testing "brass board" or experimental configurations, prototypes, advanced development models and advanced components in response to anticipated need but well in advance of the establishment of firm operational requirements.*

COMPETITION. *Controlled competition wherever possible — between technical approaches and developers — is a powerful management tool for maximizing Return on Investment.*

SELECTIVITY. *We must be vigorously selective among competing solutions. In selecting programs, we must insure that:*

- *Technical feasibility is used as a necessary but far from sufficient criterion for proceeding with a program.*
- *Program progress is geared to demonstrated performance milestones rather than arbitrary schedules or contract constraints. We will support a strong Test and Evaluation program, at the component as well as systems level, to insure performance demonstration throughout development.*
- *Unnecessary duplication of equipment designed for similar purposes is eliminated.*
- *Inter-Service developments are used to reduce development, procurement, logistics and support costs.*
- *Greater emphasis is placed on product improvement as a potentially effective alternative to a new development.*

PROGRAM MANAGEMENT. *Improved program management is central to our future and should be recognized and rewarded. We will encourage the building of strong career-oriented technical/business management cadres and will delegate wherever feasible.*

ASSESSMENT OF NEEDS. *Defense R&D goals should be determined by a combination of the potential contribution of the available new technology to specific military needs and the best possible calculated long-term costs.*

DESIGN-TO-COST. *Design-to-Cost must be evolved as a fundamental and flexible approach to our programs — it can be a central management tool and communication channel between Department of Defense and industry.*

INDEPENDENT RESEARCH AND DEVELOPMENT. *A strongly supported IR&D Program is essential. It must be well directed, mostly by industry, and the benefits must be clearly visible.*

Malcolm R. Currie
Director Defense Research & Engineering

Robert N. Parker
Principal Deputy Director
Defense Research & Engineering

Norman R. Augustine
Assistant Secretary of the Army
(Research & Development)

D. S. Potter
Assistant Secretary of the Navy
(Research & Development)

Walter B. La Berge
Assistant Secretary of the Air Force
(Research & Development)

RDT&E PROGRAM BY BUDGET CATEGORY

($ Millions)

CATEGORY	FY 1974	FY 1975	FY 1976	FY 1976T	FY 1977
Research	304.1	308.3	340.1	86.8	354.4
Exploratory Dev	1,062.4	1,080.5	1,228.8	314.4	1,321.0
Advanced Dev	1,416.1	1,697.8	2,129.9	664.6	2,962.0
Engineering Dev	2,540.0	2,929.1	3,783.4	912.0	3,516.0
Mgt & Support	1,118.7	1,179.4	1,343.3	354.1	1,417.7
Oper Sys Dev	1,753.5	1,420.4	1,411.1	351.0	1,436.4
TOTAL RDT&E	8,194.8	8,615.5	10,236.6	2,682.9	11,007.5

RDT&E BY TYPE OF PERFORMER

($ Millions)

	FY 74	FY 75	FY 76	FY 7T	FY 77
Industry	5,416.2	5,683.1	7,171.0	1,906.6	7,889.1
Govt In-House	2,376.0	2,519.0	2,625.6	662.8	2,653.4
FCRC's	202.3	214.6	229.9	58.0	245.9
Universities	200.3	198.8	210.1	55.5	219.1
	8,194.8	8,615.5	10,236.6	2,682.9	11,007.5

RDT&E PROGRAM BY BUDGET ACTIVITY

($ Millions)

BUDGET ACTIVITY	FY 1974	FY 1975	FY 1976	FY 1976T	FY 1977
Military Sciences	427.0	432.7	485.9	127.2	516.8
Acft & Rel Equip	1,667.3	1,616.2	2,123.2	529.6	2,103.8
Msle & Rel Equip	2,121.3	2,107.5	2,488.5	654.3	2,682.8
Astronautics	590.0	523.6	625.5	144.6	736.2
Ships & Small Craft	634.1	665.2	664.6	180.6	745.5
Ord Cmbt Veh Rel Equip	426.5	464.6	569.7	183.5	713.7
Other Equipment	1,596.6	1,843.6	2,195.6	576.9	2,360.6
Mgt & Support	732.0	962.1	1,083.6	286.2	1,148.1
TOTAL RDT&E	8,194.8	8,615.5	10,236.6	2,682.9	11,007.5

RDT&E PROGRAM BY MISSION AREA

($ Millions)

MISSION AREA	FY 1974	FY 1975	FY 1976	FY 1976T	FY 1977
Tactical	2,878.4	2,949.3	3.674.7	961.5	4,090.3
Strategic	1,924.4	2,141.0	2,534.7	674.4	2,453.1
Defensewide Systems	682.6	659.2	744.5	181.8	841.9
Technology Base	1,386.5	1,415.5	1,610.5	413.2	1,731.8
Mgt & Support	1,122.5	1,195.3	1,357.0	360.6	1,455.3
Adv Tech Devel	200.4	255.2	315.2	91.4	435.1
TOTAL RDT&E	8,194.8	8,615.5	10,236.6	2,682.9	11,007.5

RDT&E PROGRAM BY SERVICES & AGENCIES

($ Millions)

DEPARTMENT	FY 1974	FY 1975	FY 1976	FY 1976T	FY 1977
Army	1,942.3	1,749.4	2,189.4	585.6	2,405.9
Navy	2,704.5	3,051.6	3,517.7	903.8	3,798.1
Air Force	3,061.9	3,298.9	3.903.2	1,034.0	4,110.9
Defense Agencies	486.1	515.6	626.3	159.5	692.6
TOTAL RDT&E	8,194.8	8.615.5	10,236.6	2,682.9	11,007.5

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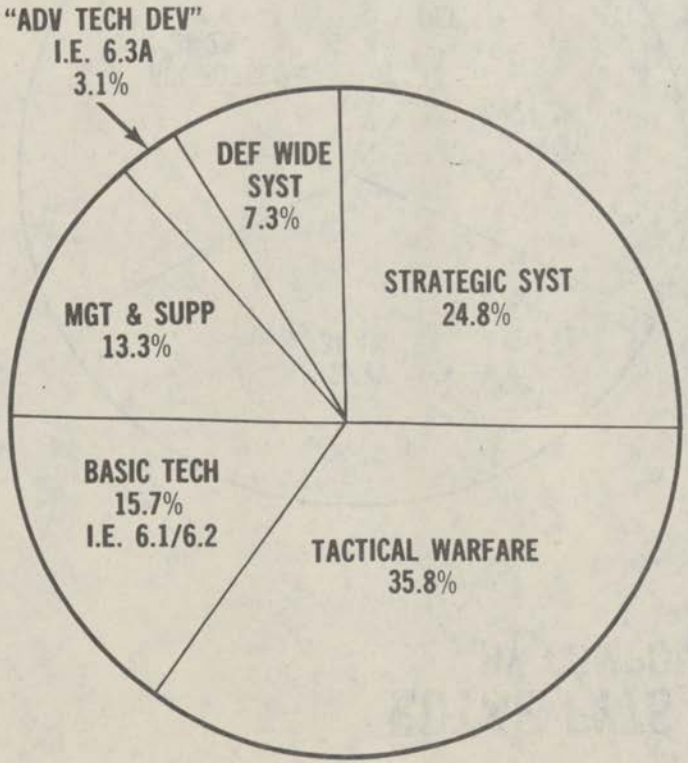
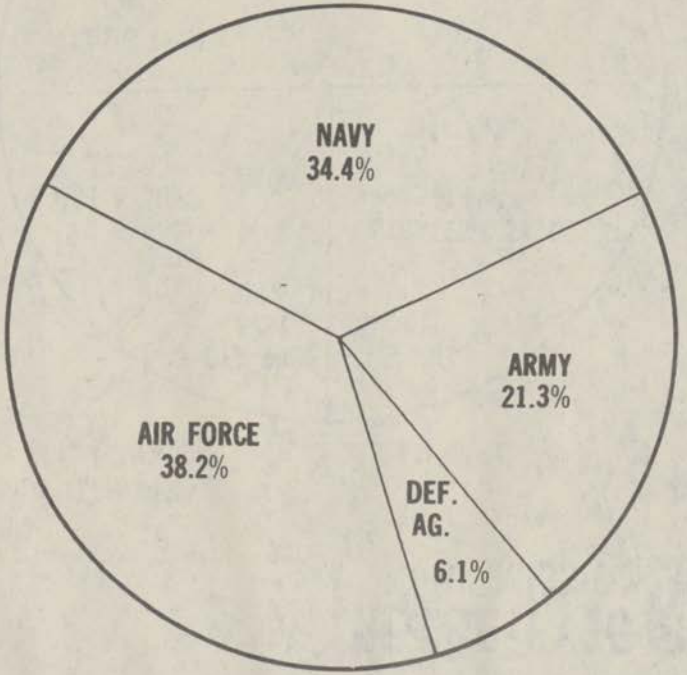
RDT&E FY76 BUDGET
BY MISSION AREA



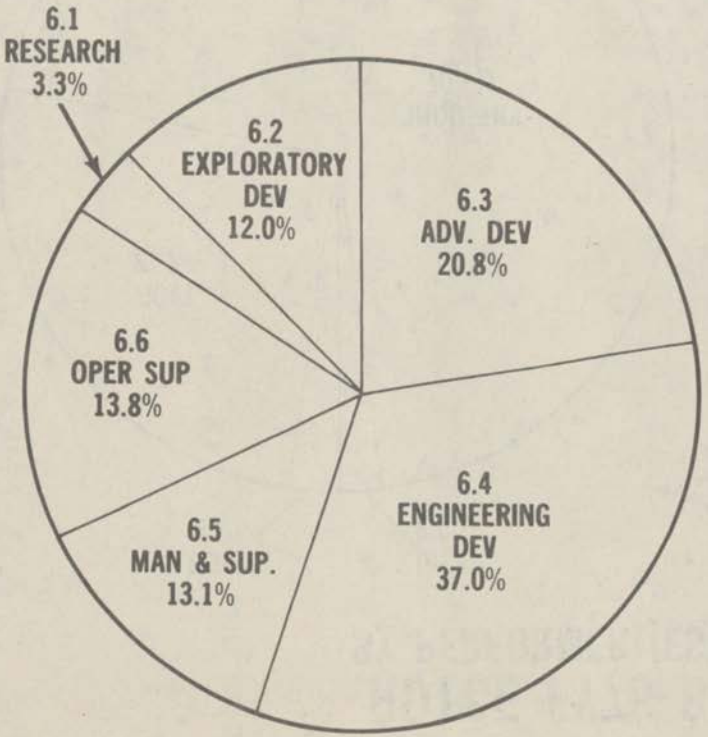
	[MILLIONS]
TACTICAL WARFARE	$ 3,674.7
STRATEGIC SYSTEMS	2,534.7
DEFENSE-WIDE SYSTEMS	744.5
BASIC TECHNOLOGY	1,610.5
MANAGEMENT & SUPPORT	1,357.0
ADV TECH DEV	315.2
TOTAL	10,236.6

RDT&E FY76 BUDGET
BY COMPONENT



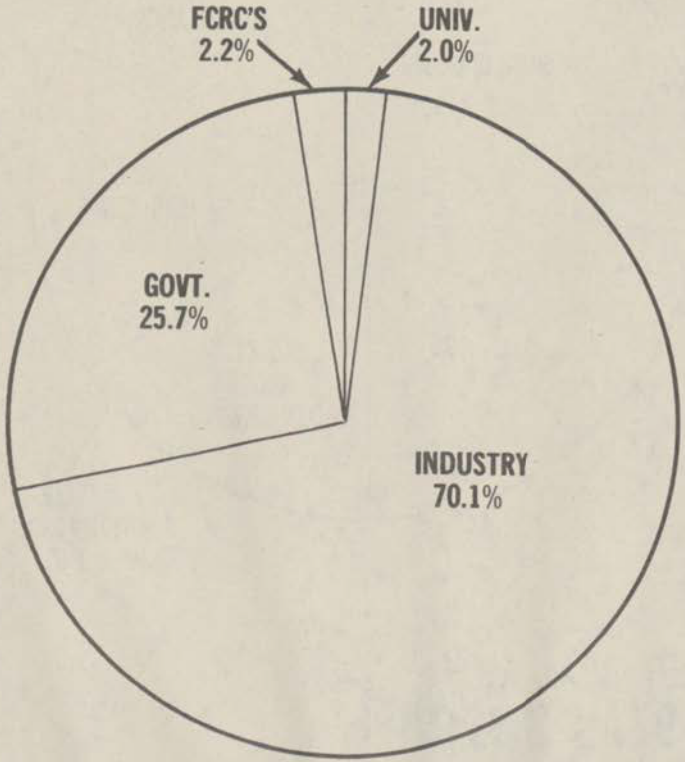
	[MILLIONS]
ARMY	2,189.4
NAVY	3,517.7
AIR FORCE	3,903.2
DEFENSE AGENCIES	626.3
TOTAL	10,236.6

RDT&E FY76 BUDGET
BY TYPE OF WORK



	[MILLIONS]
RESEARCH	340.1
EXPLORATORY DEV.	1.228.8
ADVANCED DEV.	2,129.9
ENGINEERING DEV.	3,783.4
MANAGEMENT & SUPPORT	1,343.3
OPERATIONAL SYS DEV	1,411.1
TOTAL	10,236.6

RDT&E FY76 BUDGET
BY PERFORMER [ESTIMATED]



	[MILLIONS]
INDUSTRY	7,171.0
GOVT. IN-HOUSE	2,625.6
FEDERAL CONTRACT RESEARCH CENTERS [FCRC'S]	229.9
UNIVERSITIES	210.1
TOTAL	10,236.6

BUDGET REQUEST

Chairman McCLELLAN. You may highlight your prepared statement, Doctor, as you see fit.

Dr. CURRIE. Thank you very much, Mr. Chairman.

Mr. Chairman and members of the committee, it is my pleasure to be here this afternoon to present to you the Defense Research, Development, Test and Engineering Budget for fiscal year 1976.

The budget request is for a total of $10.2 billion. After about $1 billion accounting for inflation and including a number of items which have been transferred into the research and development account from procurement in general accordance with the wishes of Congress this budget request still allows for some real growth in Defense Research and Engineering.

I should like to put into perspective, if I may, for a few moments here why even in the difficult economic climate now prevailing this investment in my view represents one of the wisest and most highly leveraged investments that this Nation can make for its future.

That is a pretty strong statement, but I believe it, and I would like to support it.

In short, this program of research and development in the Defense Department is designed to maintain for this Nation now and for the future one of the Nation's priceless assets, and that is our technological initiative.

TECHNOLOGICAL INITIATIVE

I would like to talk a little bit about this technological initiative, exactly what it is, because I feel that it is important that we understand it. In my view it is absolutely fundamental not only to our military support but in a more general sense to our broad economic security in the future.

This technological initiative is something that is increasingly perishable in the world environment that we foresee in the next decade or so.

Now in an increasingly uncertain and competitive world I believe that Americans have no other real choice than to rely on and to build aggressively on technology, as we have for that matter for the last two decades and more.

Chairman McCLELLAN. Doctor, are you speaking exclusively in the military field, or in all areas?

Dr. CURRIE. No, sir, I am talking about the broad technological initiative. I want to address that and then come down to the Defense Research and Development and how that contributes.

Chairman McCLELLAN. All right. Proceed.

Dr. CURRIE. Clearly we do not have the choice in this country to make available to ourselves unlimited supplies of raw materials, unlimited supplies of manpower and cheap labor. Rather, we must rely on our ability to enhance the human resources and the natural resources that we do have. I believe this applies both in the military sphere and, as I mentioned, the broad economic sphere.

NATIONAL POLICY

Now I think we can all agree that there will be very rapid, perhaps increasingly technological change over the next decade, and the decade

beyond that. I would point out that that is a global fact of life. It is not necessarily an American choice. Nevertheless, we must respond to this. So, I am urging here the clear articulation of a national policy, and that policy should in my humble view be to maintain this broad technological initiative.

Now, Defense Research and Development by its very nature, the kinds of problems that it addresses and its whole approach, is a central and perhaps the most important element in maintaining this technological initiative. I will come back to that a little later. It must be led and managed well.

But we must also be prepared to invest accordingly in it. I feel that this budget request represents that prudent level of investment, and that it will be returned many times over to the American people.

Now we all know that we are living in a very tough decision environment. We have a strained economy, as you gentlemen are aware, even more than I, and there are many pressing demands, social demands and others, on available resources.

We live in an uncertain world. We view with increasing concern our dependence on other nations for the effective maintenance of our economy. It is a world of changing leadership, power status, of access to raw materials. We have détente. Détente hopefully will lessen the near-term tensions between the superpowers, but as these tensions are reduced, the long-range economic and technological competition will persist, and in fact, it will intensify. So that renewed emphasis must be given, I believe, at this time to the allocation of our resources to our longer range security. And I am still talking about security in a very broad sense.

RISING COST OF DEFENSE MANPOWER

We have in this decision environment also the hard fact of rising costs of Defense manpower, in operations and maintenance. These accounts together make up more than 60 percent of the Defense budget.

That part of the budget devoted to modernization—that is, modernization investment consisting of research and development and procurement—makes up about 30 percent of the budget.

Now, this should be contrasted with conservative estimates in the Soviet Union in which about 55 percent of their military budget is devoted to this modernization investment, R. & D., and procurement of the weapons and capability that results from the R. & D.

This investment is critical. If you will just imagine in your mind the forces we have today and their capabilities matched against those of only a dozen years ago, one can see the very great effects of technology advances year by year, and the effect on force effectiveness and the use of manpower.

And we have a paradox here because these rising costs of manpower reduce proportionately the amount we can spend on research and development. Yet research and development has within it the potential to reduce manpower, to make more effective use of it in the future.

I am stating something very simple. We have to make a critical decision, if you will, between near-term readiness on one hand, which is very highly manpower dependent, and on the other hand, the investment that will insure our long-range security.

EFFECT OF VLADIVOSTOK

Another fact of the environment we are making these decisions in today is Vladivostok, a very recent event. This places a lid on total numbers, but inevitably, whether by our choice or not, it will place an increasing premium on technological progress and on quality. So that in this decision environment that I am talking about in which there are many conflicting demands, I believe that we must have the perception and the resolve nationally to build on those strengths we do have.

Gentlemen, one of the great strengths of this Nation is our technological initiative. Right now I believe that we do have this initiative. Broadly speaking, we have technological initiative in this world, but as I mentioned, it is perishable. It is a critical commodity, and the balance can change rapidly.

I am not talking about in any one year, but over the course of a few years it can change. The half life, if you will, of any technological development these days is measured in the 3- to 5-year time period.

TECHNOLOGY ASSESSMENT

Now, in the posture statement I think for the first time I devoted a chapter to broad technology assessment in this Nation, and particularly vis-a-vis the Soviet Union. My statement that we have the broad technological initiative is based on that work, and I will develop that in the future and report to you on an annual basis where we stand and get this dialog going.

Let me give one interesting finding here when we studied some of this in the last year. It came as a surprise to me, I didn't know this. The Soviet Union [deleted] has conducted more [deleted] missile firings than our total. [Deleted.]

It is an unprecedented level. [Deleted.]

Chairman McCLELLAN. Does that fact indicate they are so very far behind us, or does it indicate that they are unable to match us in such development?

Dr. CURRIE. Mr. Chairman, it indicates to me a recognition some years ago that they were behind us, and the deliberate strategy, the resolute strategy by the highest leadership in the Soviet Union to catch up.

Chairman McCLELLAN. They are concentrating and giving it a high priority, in order to match our technology?

Dr. CURRIE. Yes, sir, it is a massive investment of resources to catch up.

Now, as the numbers of nuclear delivery vehicles are fixed, they may feel that by their strategy they have established a greater inherent capability because of their larger throwweight.

Now, I view that as a potential. Just because they have larger throw weight per se does not mean that they have superior capability, but it gives them time to use that throwweight in a technologically better way year by year. And that is the effort that they are making.

SOVIET APPROACH

In this chapter on technology assessment, I have also tried to outline how the whole approach of the Soviet Union to research and devel-

opment contrasts with our own approach. I think this needs to be understood.

Our approach, for example, I would characterize as one that is seeking always a newer level of technology. It is the revolutionary approach to the solution to problems, if you will. It is done in a highly competitive environment where we foster competition, we foster innovation, and our whole system, our technological climate, industrial as well as the Government in this country, is keyed to innovation and rapid technological change.

I think that one can criticize this approach, but I accept it as something that is really a reflection of our national character, something that can be modified, but it stood us well in the past.

Now, coming down again to the interrelationship between Defense R. & D. and the civil sector, we do Defense R. & D. for only one reason, it is to support military security. To directly produce those forces, those tools we need to maintain our security. But because of this leading edge of technology approach to Defense R. & D., the Nation has reaped a tremendous benefit that is not generally understood.

Senator YOUNG. May I ask a question at this point?

Dr. CURRIE. Yes, sir.

DEFENSE RESEARCH SPINOFFS

Senator YOUNG. Isn't the computer a spinoff of Defense research?

Dr. CURRIE. Yes, sir, very definitely. The computer industry, the jet engine industry, nuclear power industry, all these industries had their genesis in Defense Research and Development.

But even beyond that, even that is too narrow a view, the fact that we have this benefit by spawning these new industries that can lead the world, the way Defense R. & D. is done creates a climate in this country—I have been in both Defense-related business and commercial business—it is very clear when I was in the commercial business, for example, the climate produced by Defense R. & D. permeated the whole industry atmosphere and really was fundamental in our gaining world industrial leadership.

SOVIET "CONSERVATIVE INCREMENTALISM"

The Soviets, by contrast, have traditionally followed a practice of what I call "conservative incrementalism." They have been willing increasingly over the last decade and a half to put massive resources into their research and development, but they do it on an incremental basis. They are willing to take a 5-percent improvement every year, incrementalism. I think it fits their system, and it has produced some massive capability for them.

But there is strong evidence, as we discussed earlier, Mr. Chairman, that the Soviets are changing, subtly changing, in their approach to research and development. They are shifting from this very conservative policy to a more independent, more innovative policy. They are still putting in the massive resources.

This gives credence to a statement made almost exactly 1 year ago by the Communist Party Central Committee—this was a resolution

they passed—and in it they stated explicitly that the Soviet scientific and technological revolution has become the most important area in the competition between the two opposed world systems. That is a pretty strong statement of intent.

Based on what I know, however, and evaluating where we are now, and evaluating our relative approaches, I am not discouraged. I have no doubt in my mind that the Soviet Union, left uncontested by perhaps the end of this decade, could wrest from us this technological initiative that I am talking about.

But we have many things going for us, and unless either by default or national intent we slacken our efforts, I think we can maintain the initiative.

We also have a very strong and healthy relationship between Defense Research and Development and civil research and development which is virtually nonexistent in the Soviet Union.

RESEARCH CATEGORIES

Now I would like to broadly describe our research and development program from sort of a top overview point of view. I divide all of our programs mentally into two general categories. In one category we spend about 40 percent of our resources, that is projected for next year, $4 billion, in this category we called the creation and demonstration research and development options. It is our whole technology base effort, the Defense Advanced Research Projects Agency is in that effort. It includes not only our more exploratory development and basic research efforts but then it particularly encourages competitive prototyping, competitive solutions to the same military program.

Sometimes the projects get fairly large. For example, the lightweight fighter competition would be characterized as an effort designed to create an option, that is to make available a hard bedrock of technology from which we can select.

It also runs probably counter to the whole approach to R. & D. a decade or so ago in the sense that it encourages hardware rather than paper competition.

Chairman McCLELLAN. Pardon me, Dr. Currie. That signal indicated that a rollcall vote is being taken on the Senate floor. You'll have to excuse us for a few minutes.

[Voting recess taken.]

RESEARCH AND DEVELOPMENT OPTIONS

Chairman McCLELLAN. We will resume.

You may proceed, Dr. Currie.

Dr. CURRIE. Mr. Chairman, I was describing how we characterize our programs. I was pointing out that about 40 percent of the dollar value of our programs are in what I call group 1, to create research and development options, to create competitive solutions and so on. Now in that phase of program, one can do a lot of work for very little money.

Chairman McCLELLAN. May I interrupt just to clarify this before you proceed?

Dr. CURRIE. Yes, sir.

Chairman McClellan. Would the development of two prototype planes come into that category?

Dr. Currie. Yes; competitive airplanes. Most of the competition is on a subsystem level, radars, components of radars, to have available to us demonstrated solutions from which we can choose.

Now there is a catch to this whole thing which I will come to in a little while. Incidentally, these programs are relatively inexpensive. That whole lightweight fighter program in which two airplanes were prototyped and flown against each other during the past year was less than $100 million. To bring two new high-technology airplanes into being.

FULL-SCALE DEVELOPMENT

Now the second group, group 2, of our programs, is comprised of those programs which go into full-scale development, and the implication is that those programs will lead to our deployed capability. If they meet their cost objectives and their technical objectives the implication is that they will be manufactured and deployed.

There will be relatively many fewer programs there because programs in this category are very expensive. To take a prototype through engineering development costs many more times what the original cost of the prototype was. So that we draw a very sharp management line between group 1 and group 2, and we ask different kinds of questions. In group 1 we ask whether the technology is really demonstrated, whether the quality of the effort is high, whether there is sufficient competition.

In group 2 we have to address very rigorously, and I might point out that this is milestone two in our Defense System Acquisition Review Council. We rigorously examine cost effectiveness. We assess the threat. We define the adequacy of the test and evaluation program. We look at alternative solutions before making this commitment. It is a very large commitment when a program goes into full-scale development because of its implications.

Now there are 79 programs under the DSARC/DCP review process, Defense System Acquisition and Review Council, and 66 other programs which are examined on almost as rigorous a basis. I believe that this management technique is working. It has made solid progress in the last several years. It certainly, in my year and a half here, made very measurable progress.

Senator Inouye. How much do you spend for basic research?

BUDGET CATEGORIES

Dr. Currie. We have the budget categories of research, exploratory development, advanced development. All those are in group 1. Then engineering development is in group 2. The research part is the smallest part of the budget, and it is about $300 million. I think it is projected for fiscal year 1976 at $340.1 million.

Senator Inouye. Do you have some examples of that in your statement?

Dr. Currie. Yes, sir.

Senator Inouye. That is what opponents of this type of activity will pick out to show that you are involved in what they consider crazy projects with no goal in mind.

Dr. CURRIE. There has been criticism from time to time, but I can assure you that in the last year or year and a half we have spent a long time creating a management framework for the management of the research effort to make certain that all the efforts are very relevant to the Defense mission.

This is really the issue, whether the effort is a hobby shop or whether it is directed to have leverage and potential for the military mission.

Chairman MCCLELLAN. You have recently made revisions in it to be certain you are concentrating on what will be beneficial to the service?

Dr. CURRIE. Yes, sir. In the technology base effort consisting of research and exploratory research this comes to about $1.5 billion and encompasses about 20,000 separately identifiable work units. We have broken them down into 11 management categories. We have written a series of Defensewide Technology Coordinating Papers. We have held defensewide triservice reviews on many of them; and, we have weeded out many, many programs, and deployed those resources in areas of obviously new potential for the Defense Department.

EMPHASIZED AND DEEMPHASIZED AREAS

Mr. Chairman, in more explicit response to your question, I would like to insert for the record some concrete examples of this.

Chairman MCCLELLAN. Very well, that may be done.

[The material follows:]

Among the areas deemphasized were solid state microwave phased array radar modules, thermonuclear power technology, laser radiation analysis instrumentation, memory technology, solid propulsion technology applicable to air-to-air rockets, small arms technology, and polycrystalline graphite technology. Among the areas emphasized were the laser gyro inertial navigator, microwave tubes, computer software, semiconductor technology, training simulators, nerve agent antidotes and prophylaxis items, ramjet propulsion, aircraft engine technology, advanced medium caliber guns and titanium technology.

Dr. CURRIE. I am pointing out in group one and group two we need to ask different kinds of questions. I want to invite Congress to inspect our program from that point of view.

When we go into the engineering development program I believe that the program should be reassessed every year by Congress. We should look at a B–1 program or a new helicopter program to make certain that it maintains its cost effectiveness and that there aren't better solutions to the problem. We should always have that flexibility to do it.

STRATEGIC PROGRAMS

Now, if I may, Mr. Chairman, I would like to comment on some main program thrusts we have as part of the fiscal year 1976 proposal. First in the strategic area.

The strategic programs out of this $10.2 billion amount to about $2.5 billion. Now recently we have the Vladivostok Accord, and it is clear, as I mentioned earlier, that evolution and performance will be even more so a key motivator on both sides as a result of this accord.

I want to make absolutely clear, and I think Secretary Schlesinger has done this before, that a prime objective of the Defense Department is to arrive at a situation where we can draw down the total size of our strategic nuclear forces. But to do that we have to maintain

technological strength in the interim. There has to be a motivation to draw down those forces eventually.

There was speculation in the press last fall after Vladivostok that the DOD will greatly increase its spending in the strategic area as a result of that accord. I want to state that as far as the research and development budget is concerned this is not so.

REDUCED STRATEGIC FORCES

As a matter of fact, the budget that I am presenting to you today and which is contained in this statement is at a level in the strategic area below that which we had projected in early October, and it is done deliberately. We have paced the programs. But that deliberate pacing notwithstanding, we do have to maintain the broad spectrum of these technological options.

I emphasize that the creation of these options in no way commits either the Defense Department or Congress to support their continued development. It takes management strength to do this, but I think that this is the only way we can get a real payoff from research and development, to create options and then to have a management system, the management discipline and strength, with congressional concurrence, to select out from those options and to go forward with just a few of them.

Now in the strategic area we are continuing in the improvement of missile accuracy, in the improvement of yield to weight ratio for the warheads. We have not decided what we will do with this capability as we have evolved it yet, but it must be there.

Chairman McCLELLAN. May I ask a question at this point?

Dr. CURRIE. Yes, sir.

PRODUCTIVITY OF RESEARCH FUNDS

Chairman McCLELLAN. Is there any way to accurately determine what percentage of the research funds expended are affirmatively productive?

Dr. CURRIE. It is a very difficult question, but let me try to get at that in a little indirect way, if I may, Mr. Chairman.

Chairman McCLELLAN. All war is waste, but we do spend a great deal in research that produces only negative results; proving only what is not wanted. Is there any way to determine how much of our appropriations are really productive, affirmatively so?

Dr. CURRIE. I think a surprisingly high percentage is productive. In commercial business, in a high technology company, it goes something like this. One starts a lot of projects, and some companies will say that if you have a winner, a real winner on the market, it might be 1 in 20. I used to use one in five or six as a guideline. That means you start five or six things and only one of them pays off. Now the whole trick of making it is to cut off the five that are not going to be productive at an early stage. But it has been necessary to spend that money to explore those avenues.

If indeed you can get one out of six real winners, a real winner will more than pay for all those losers that you have to start. I think generally speaking we do better in Defense than commercial business often does.

Chairman McClellan. Of course. I was trying to illustrate that if you had known in advance that four of the five projects weren't going to work, you would not have spent as much money. But you did not know, without performing the research.

There is no way to make progress—make discoveries and develop technology—without experimenting. But I do not understand how you can separate, with any degree of accuracy, the amount of money wasted, and the amount that proved useful.

Dr. Currie. I think it just takes constant judgment and the willingness to make hard decisions on things that are started and won't pay off.

Senator Inouye. Even in those five or six projects that do not succeed, there are some uses that come out of them.

Dr. Currie. Yes, sir.

Senator Inouye. You do learn a few things from them, so they cannot be considered total losses?

Dr. Currie. You learn a great deal. Some people would like to think that everything that one starts ought to be successful. In our overall approach that just is not in the cards. If we guaranteed that everything would be successful we wouldn't do anything. We would make a 1-percent improvement, or a 2-percent improvement.

Senator Young. Could I ask a question along that line?

Chairman McClellan. Certainly.

LASERS

Senator Young. The laser may be the weapon of the future. Could you discuss laser developments and what the Soviets are doing? I understand they may be ahead of us in that area.

Dr. Currie. We have studied a great deal of intelligence concerning what the Soviets may be doing with a high-energy laser. I am separating out the high-energy laser to be used as a weapon from the small lasers that are used for weapon delivery and for a whole host of things now in DOD.

So what I am talking about here, and the things you are addressing, are the high energy lasers—the very large machines that produce power levels of 500,000 to 1 million watts of optical power. [Deleted.] They operate under such a cloak of secrecy, of course, that [deleted].

I do know from a scientific point of view that they are every bit as advanced as we are across the board. They have good scientists. Our ability in this country is to take basic science and translate it into something that works through the whole manufacturing process. We are approaching the high-energy laser in that way.

Senator Young. Do you think that this could be a breakthrough?

Dr. Currie. [Deleted.]

As far as I can tell, the Soviet Union is about equivalent to us scientifically in the high-energy laser field. [Deleted.]

Senator Inouye. [Deleted.]

Dr. Currie. [Deleted.]

We now have pointing and tracking brassboard systems, and we will demonstrate whether or not—in the real world versus in the laboratory—we can actually acquire targets, put the laser beam on them, and shoot them down.

Chairman McClellan. I am sorry for the interruption, Dr. Currie, but we are being summoned to vote again.

I expect that the supplemental appropriations bill will be taken up immediately following this vote. If so, I will be detained in order to manage the bill on the floor. Senator Inouye, if possible, I would appreciate your continuing this hearing; I don't want to postpone it.

Dr. Currie, if I am unable to return, I want to thank you now for appearing today. I will be submitting questions for you to answer for the record. Thank you.

[Voting recess taken.]

STRATEGIC PROGRAMS

Senator Inouye. The chairman will be on the floor for a little while. He has asked me to convey his regrets and wishes for you to proceed, sir.

Dr. Currie. Fine. Let me continue then with some of the strategic programs. I mentioned the continued work on improvement of accuracy, on the improvement in the yield-to-weight ratio of our warheads. These are needed to counterbalance the superior Soviet throw weight as I mentioned, and with that throwweight the inevitable accuracy improvement that they are making.

Senator Inouye. How do we compare in the missile accuracy category?

Dr. Currie. We feel that we are ahead qualitatively in that area. The whole premise of SALT I, those negotiations and that agreement, was that we had a qualitative advantage over the Soviet Union, primarily in the accuracy area, and that made up for greater throwweight and greater numbers on their part.

Senator Inouye. Are we far ahead of them?

Dr. Currie. The question of how far ahead is a highly subjective question because we don't really know what their accuracy is.

MIRV

Senator Inouye. What about MIRV? Are we not ahead of them?

Dr. Currie. The Soviets during the last 1½ years or a little more have demonstrated a MIRV capability. Of their new generations of missiles—they have four new missiles, as you know—which they will start deployment of, at least three of them have MIRV capability.

Now, the question is, how much accuracy goes with that MIRV capability? [Deleted.]

Now, accuracy in the end depends on how good one can make an inertial guidance system. Our technology for accelerometers, gyroscopes, and computer technology navigation computer, we know was considerably ahead of the Soviet Union a decade ago. But that is a maturing technology.

There is only so much one can do within the realistic laws of mechanics to make a gyroscope better, or an accelerometer. That is why I say with a massive effort the Soviet Union can progress along a learning curve and improve their accuracy, whereas if we followed that approach we are limited.

Now, in research and development we are following some radically new approaches to gain accuracy that one day hopefully will provide that capability, but they don't right now. These involve maneuvering reentry vehicles, terminal guidance, and perhaps the use of navigation satellite systems to provide greater accuracy. We talk in terms of CEP's, and we have nominally, for examples, a [deleted] nautical mile CEP circle in which on a statistical basis about half of the shots will fall. The Soviet Union, we believe, is in the [deleted] nautical-mile capability.

I should point out that that is just a rough estimate. They could be much better than that, and I am from the school of thought that would think they probably are.

Their new SS–19 missile, which has six MIRV's, it has embodied all the things we have learned to make ours more accurate. [Deleted.] It has on board computers for the first time.

Of course, we don't know the quality of the accelerometers and the gyroscopes, [deleted]. That is why we are very concerned about this situation, and why from a research and development point of view we have to explore new evidence in the future.

Senator INOUYE. What does CEP stand for?

Dr. CURRIE. Circular error probable. It is a technical term for the radius of a circle in which half the shots will fall in a very wide statistical sample.

Senator INOUYE. Excuse us, Dr. Currie, we will have a short recess while we vote. It should take only a few minutes.

[Voting recess taken.]

ADVANCED PROPULSION WORK

Senator INOUYE. Proceed, please.

Dr. CURRIE. In addition to those programs we carry out under sort of a generic title Missile X, advanced work on propulsion, on basing modes that would lead to greater survivability. All of these things could be incorporated in a next generation ICBM, that is the successor to Minuteman III, if and when we mutually decide to go forward with such a program.

We are continuing programs in cruise missile technology both in the Air Force and the Navy. The object here is to create very low flying, within a few hundred feet of the surface [deleted] long-range missiles that can follow the terrain and get in under the air defense network of the Soviet Union to hit their targets.

This is as a complement to the submarine forces and the strategic bomber forces. What it does in the last analysis is cause the Soviet Union to spend a lot of money upgrading their air defense system. We would rather have them spend their resources on defense rather than offense.

CRUISE MISSILE

Senator INOUYE. What is the status of research on the cruise missile?

Dr. CURRIE. All the components are available, the propulsion, the aerodynamics, the new type of guidance system, and we are putting

them together to demonstrate complete prototype systems in calendar year 1976. Before going ahead with full-scale engineering development, we want to demonstrate that the entire system works, what its range will be, and what its accuracy will be.

Senator INOUYE. What is the practical range?

Dr. CURRIE. The range on the short end will be about [deleted] nautical-miles, and on the long end about [deleted] nautical miles, depending upon the configuration. If one carried one of these in a bomb rack of a B–52, for example, one could only make it a certain length and it would have a range of [deleted] to [deleted] miles. If one carries it on the pylon of the wings of a B–52, it would have a range of around [deleted] nautical-miles by incorporating a belly tank. The submarine version will have a range of about [deleted] nautical-miles.

Now, the two largest programs in the strategic area are, of course, the B–1 and Trident. These are the two large full-scale engineering development programs, and together they account for about 60 percent of the proposed strategic budget of $2.5 billion.

I won't comment explicitly on the Trident program other than to say technically it is coming along well and will meet or better its contract delivery date.

B–1 PROGRAM

In the B–1 program, we have conducted over the last year under the auspices of D.D.R. & E. something called the joint strategic bomber study. It is joint because other parts of DOD, including the Air Force, participated. It has been an extensive study in which the B–1 has been compared with other possible forces, consisting of upgrading B–52's, stretched FB–111's, and so on. They have been studied extensively, and by extensively, I mean it has been probably the largest computer program of its kind in recent years. It has consumed over 5,000 hours of prime computer time. But it has provided some real insights into the B–1.

What it has told me about the B–1 is that in comparing these various equal cost forces that the B–1 is the cost-effective solution if one agrees with the threat that is presented in the late 1980's. I think this puts the B–1 in the proper perspective.

For the threat we have right now, if it stayed statistically the same as right now, then the investment in a B–52, in putting new engines and new wings on a B–52 is adequate. But if one accepts the threat that is projected for the late 1980's, then on a cost-effective basis, the B–1, as costly as it is, appears clearly to be the route to go as compared with a B–52 upgraded force, and particularly as compared with an upgraded FB–111 force.

PROJECTED UNIT COST

Senator INOUYE. Will your further research under this program add to the projected unit cost? The Air Force this morning submitted its statement on the B–1 and predicted what the program unit cost would be. Now you are saying further study will be made; that further research will be carried out.

Dr. CURRIE. Right now the B–1 is in full-scale engineering development. Fiscal year 1976, as a matter of fact, is about its peak year. There

is $672 million in the budget for the B–1 program. There is not yet, however, a commitment to manufacture the bomber. The efforts to be carried out during the next year are involved with extensively testing the prototype airplanes that we do have and doing that engineering which will be needed to pin down the manufacturing costs on an even more solid basis. When we come up to a decision for commitment to manufacturing, we will have this extensive test and evaluation on real aircraft under our belts as well as cost estimates and a reassessment of the threat.

Senator INOUYE. Do you anticipate any major change in development which might affect the cost?

Dr. CURRIE. In my view right now, we have a pretty good handle on the cost, and we are doing everything possible in the program of development to bring those costs down. I do not see them escalating further.

Senator INOUYE. You do not anticipate anything major?

Dr. CURRIE. No; I don't. We have examined this very carefully. I think the Air Force has done a rigorous job. They have taken things out of the B–1 to make it less costly. For example, the inlets to the engines had a very complex variable geometry that varied with speed and altitude. This has all been taken out during the last year. There was a very expensive crew escape module which has been taken out of the production design. These things will reduce the cost, or at least keep the cost where it is now.

COST OF B–1 AS COMPARED TO ANGLO-FRENCH CONCORDE

Now, let me put the cost of the B–1 into a little perspective here. It is a very expensive airplane. It is about the same size as the Anglo-French Concorde. The Anglo-French Concorde has some of the same characteristics. It is roughly the same size and it is supersonic. It costs roughly $3 billion on the part of the French and British Governments to develop their airplane. It will cost us about $3.9 billion to develop the B–1. The cost of the Concorde as nearly as I can ascertain it in fiscal year 1975 dollars is between $45 and $50 million. This is without development funds amortized over the cost. That is just the purchase price with the Governments absorbing the development.

Now, in 1975 dollars, the cost of the B–1 is roughly in that same category. Call it $50 million. Of course, the price in future years will depend on the year in which it is manufactured, the rate of manufacture, and what inflation takes place between now and then. That is why we hear all of these numbers.

I think comparing it with the Anglo-French Concorde puts it in some kind of perspective anyway. Ultimately, of course, it has to be related to the threat. I think the Joint Strategic Bomber Study has provided this insight. And it is a matter of the risk we want to take. If we really felt that the threat wouldn't change between now and 15 years from now, an adequate solution would be to put new engines and new wings on the B–52.

If one thinks the threat will develop, the air defense threat from the Soviet Union, and the submarine threat, then as long as we can continue the B–1 program within its presently projected limits, then it is a cost-effective solution, as expensive as that is.

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STRATEGIC COMMUNICATION COMMAND AND CONTROL

I would like to point out a couple of other programs in the strategic area. One is what we call the strategic communication command and control area. This is very critical.

The problem is one of the highest priority in the Defense Department, to get a command and control communications system between the national command authority and our nuclear forces wherever they are in the world, which is impregnable, which is survivable in case of nuclear attack.

So, we have several satellite improvement programs, satellite communications programs, the SANGUINE system which is an extremely low-frequency system to communicate with nuclear submarines which will address this problem.

In general, space systems are constituting an increasingly pervasive and important part of the overall DOD capability. I call your attention to one program called the NAVSTAR global positioning system which will reach for its feasibility demonstration a peak funding next year of about $90 million. It has within its concept the possibilities of not only saving a couple hundred million dollars a year for DOD in navigation systems but could also be used potentially in civilian navigation. Even more importantly, it can revolutionize in the 1980's, the late 1980's, both tactical weapon delivery and strategic weapon delivery.

OTHER STRATEGIC PROGRAMS

Senator INOUYE. What sort of projects would come under your supervision in the command and control area? AWACS?

Dr. CURRIE. No, AWACS is regarded as a tactical system.

In the Strategic Command and Control area one would be the advanced airborne command post program.

Senator INOUYE. The E–4A?

Dr. CURRIE. Yes; the 747 with the communications equipment.

Another would be something called the defense satellite communications system. This communications satellite, there are two of them in synchronous orbit right now that provide a specialized communications system to our forces worldwide. There will be an attempt to make this more and more secure, to make these satellites less vulnerable to physical attack or electronic attack, jamming and so on.

There is a program called AFSATCOM which has transponders on various satellites that the Air Force can use to communicate with its strategic bomber force.

SANGUINE is a proposed system which we will carry on some of the early R. & D. next year, which is a buried system at extremely low frequencies which can survive a nuclear attack and by which we can communicate with the submarine forces.

Those are the kind of things under the strategic command and control.

Obviously it is not tenable to make our strategic forces highly survivable unless we can communicate with them in an equivalent survivable method.

If I may, I would like to turn to the general purpose forces. I have talked about the strategic forces.

GENERAL PURPOSES FORCES

The general purpose forces for conventional warfare, if you will, are becoming more and more important in our overall deterrence posture because, as we arrive at a situation of general strategic nuclear equivalence and parity, then we can turn to our conventional forces for deterrence, and we want that deterrence again to be very strong, to raise the threshold for any conflict, much less nuclear conflict.

Tactical warfare is undergoing a transformation. I think that we hold the initiative in such potentially revolutionary areas, and I use that word in a considered way, such as first shot destruction with precision guided ordnance delivered at a great distance, standoff control of battlefield weapons, night vision, powerful new techniques for surveillance and command and control, and certainly AWACS would fit in that category.

Let me touch on the ground forces as part of this overall capability. Ground warfare in the future certainly will have several characteristics, and several of these one could begin to see in the Middle East conflict of a year ago. The forces will be highly mobile. The armor will be very densely deployed or there will be dense deployment of air defenses. There will be an unprecedented concentration of firepower.

Electronic warfare, which had its infancy in World War II, and has been slowly maturing over the years, is now very clearly organic. It has to be regarded as part of our organic capability, and it will be pervasive and sophisticated.

And, as I mentioned, the precision weapon control and targeting capability will be present. We are addressing all these areas.

The XM–1 tank prototype tank program, for example, will come to fruition next year. There will be two U.S. prototypes and maybe a Leopard II prototype modified to meet XM–1 goals. They will be tested against each other. They will present what I would call valid options and we will have to decide whether we go forward or not. They will demonstrate whether we can meet certain technical goals and certain cost goals. Both of these have to be achieved.

In the meantime, while the prototype program is going forward, we do have improvement programs on the assets we do have, the M–60 series of tanks. I just use that as an example of programs in the ground warfare area.

SAM–D is a very expensive but very capable new generation air defense equipment for the Field Army. It embodies in it a technology that I think will be absolutely needed in the 1980 to 1990 time period. It is undergoing a very rigorous program of test and evaluation to test this concept out during the next year before proceeding with the full-scale development of that system.

TACTICAL AIR FORCES

Going from the ground warfare to our tactical air forces, I think clearly we have a superiority, we have an edge in tactical air. But tactical air represents a huge investment by any standard. So that our whole thrust in this area is to use the resources we have more efficiently, both the investment resources we have for future capability and in order to enhance the assets that we have deployed now.

One thrust in this direction, of course, is the Air Force air combat fighter program, the F–16, the turning away from increasingly heavy, complex, sophisticated air combat fighters to a much more specialized, lighter, less costly solution to that problem, so that we can maintain our force levels in the future with constrained resources and, in fact, increase our force level hopefully and decrease the cost of ownership.

Another way we can use our tactical air assets, that is the forces we have, more effectively is through a capability like AWACS. AWACS is a controversial program right now, and it is not a very well understood program. Basically, AWACS is a command and control system that is airborne. It has a revolutionary type or radar in it that gives it that capability, but it is not a weapons system by itself. It controls billions of dollars' worth of assets that we have now.

If one can take 1 billion dollars' worth of assets and clearly increase their effectiveness by 20 percent, then that has a value and that is the value that should be looked at in looking at the cost of the AWACS system, and we have addressed it on this basis.

Another way of making our tactical air forces more efficient by using those investments we already have is through precision weapons. We are giving rise to a generation of precision weapons some of which were demonstrated in their rudimentary form in Southeast Asia and others more recently in the Middle East, which will permit extremely accurate surgical delivery of ordnance at a standoff range and therefore make our tactical air forces more efficient, less vulnerable, and hence of more value.

DEFENSE SUPPRESSION AREA

In still another thrust in this area is the whole defense suppression area. Clearly, attrition in modern warfare is extremely high. The Soviets have very powerful mobile ground air defense systems, as was evident in the Middle East war. These defenses must be suppressed. There is a whole series of programs and techniques to use them in suppressing those air defenses. Electronic jamming, antiradiation air-to-ground missiles, precision ordnance, and so on. The use of RPV's.

NAVAL FORCES

Let's go on to the Naval forces. One of the many disturbing trends, of course, is the very large buildup in the Soviet nuclear attack submarine force. They are building a very large force.

We, as the Nation who has to keep our sea lines of communication open to many parts of the world for many reasons, view that with concern. So we are providing renewed emphasis to the whole antisubmarine warfare area.

Ship defense is also a critical problem.

Senator INOUYE. You mentioned the F–16 for the Air Force. You have a special category for the Navy. Am I correct in assuming that the Navy has decided upon something other than the 16?

Dr. CURRIE. I should have covered that. The Navy is in source selection right now. It is studying whether a derivative of the F–16 is appropriate for the Navy mission. This selection will be made during the coming month. It remains to be seen. I am not optimistic frankly that a very close derivative of the F–16 will be bought by the Navy.

Whether the Navy comes up with a cost effective solution as something that Congress and DOD can accept as a reasonable solution to their problem remains to be seen.

SHIP DEFENSE

Ship defense in the Navy is a chronic problem against proliferating Soviet antiship missiles. We are addressing that. I don't have any simple solutions to it.

The problem of developing antimissile missile systems and then, during the long construction period of naval ships, integrate those systems in and give us a capability in the near term is very difficult just because of the time spans involved.

I think from an offensive point of view the one thing that has emerged from the research and development program last year is the HARPOON missile. Clearly this will provide them maybe with a new kind of offensive punch.

Senator INOUYE. This ship defense I believe becomes very important because every time the Senate takes up the matter of large aircraft carriers, we have a significant number of Members pointing to it as a floating target. Looking at it, it is a huge thing.

Dr. CURRIE. It certainly is.

Senator INOUYE. Do you have the means to protect such a huge investment?

Dr. CURRIE. I wish I could give you a short answer that we have a solution. I think we have a means to protect it in a reasonable scenario.

We do have the F–14 which is deployed now, and the F–14 with its avionics capability and its missile capability does provide a long-range defense against antiship missiles, although they are difficult against a saturation raid. I think we are in pretty good shape against either missile raids or air raids against a carrier with its escorts in reasonable numbers.

But if the adversary wishes to send a hundred bombers against the aircraft carrier or from various angles, from submarines or from surface ships, saturate the defenses with 60 or 80 missiles simultaneously, that is a very difficult problem and we don't have a solution to that yet.

TECHNOLOGY BASE

We talked a little earlier and, Senator, you asked a question about the technology base, about the research effort, research and exploratory development. Ultimately the whole future capability of the Department of Defense flows from that effort. The quality of that effort, how it is coupled to the defense mission, the mission of national security, and how it is managed, has great leverage on our future.

That is why I am particularly interested in the technology base. This effort accounts for about $1.5 billion of the budget. It has been level funded for about a decade. My great concern, and this concern is shared by a number of Members of Congress in correspondence and conversations during this last year, is that this effort in real terms has eroded considerably because of the impact of inflation. For example, the level funding over the last decade in terms of the number of technical people involved is down about 40 percent.

The Chairman asked about the management of this area, how well is it managed? How well it is coupled to the defense mission?

I stated to the Congress a year ago that before asking for an increase to redress this balance over the last decade, that I wanted to be assured that we had a management framework that which I could certify made certain that that effort was a first-class effort, and that it was headed in the general areas of importance to us. I can make that statement now.

It has been reviewed extensively throughout the laboratory system in DOD, and with industry, and internally, and I think we are ready now to recognize the value of the technology base and set forward a long-term plan before Congress to at least not let it degenerate any further.

The Secretary has supported guidance to the services which would allow both research and exploratory development to increase by a certain percentage every year [Deleted] percent over inflation. [Deleted] So it does represent a regaining of some of that——

PERCENTAGE OF WORK PERFORMED BY INDUSTRY

Senator INOUYE. What percentage of your effort is carried out under contract, and what percentage by in-house or by DOD personnel?

Dr. CURRIE. In this technology base effort, in this $1.5 billion, about 41 percent is done in industry, about 43 percent is done internally in the DOD laboratories, about 13 percent or so is done in universities. I think that just about accounts for it.

Senator INOUYE. Under your supervision?

Dr. CURRIE. Yes, sir. Under my general supervision.

Senator INOUYE. Even in industry you approve the projects?

Dr. CURRIE. We review the projects. The projects are administered directly and planned by the services, by the Air Force, by the Navy, and by the Army, and by Dr. Heilmeier as Director of the Defense Advanced Research Projects Agency which accounts for about $220 million of that. These are all reviewed by my office and approved.

At the outset of this planning cycle we have a large number of meetings internally, seminars, if you will, in which we point out areas of technological opportunity for the Defense Department and other areas in which the marginal return on investment, if you will, is probably declining. So we approve in the aggregate the program from this point of view.

Senator INOUYE. Off the record.

[Discussion off the record.]

CHEMICAL WARFARE

Dr. CURRIE. It is evident that chemical warfare and defensive biological warfare equipment are an organic part of the Soviet ground force structure. You have seen equipment, for example, their armored personnel carrier which has complete filtering systems in it for biological warfare, for example. This is a matter of concern.

Senator INOUYE. Do we have anything comparable?

Dr. CURRIE. We do not have anything comparable. We have chosen over the years not to make the investment in pieces of equipment, like

armored personnel carriers or ships or airplanes or whatever, tanks, to put in those complete chemical warfare filtering systems. We have rather concentrated on the individual, on the clothing for the individual, masks and so on.

We are examining again this year whether this policy is a good one, the huge investment that would be implied in our changing the policy notwithstanding.

Our total effort for the fiscal year 1976, to scale it for you, is about $47 million. About $8 million of this is for offensive weapons, for an 8-inch artillery shell, and for a 155-millimeter shell using the binary concept that has low toxicity, various chemicals which form embodying chemical agents. Much of our effort is for defensive purposes, that is protection for the individual, for the medical research for vaccines and so on. The total expenditures for this year incidentally are somewhat in excess of $30 million, and we are really going back and agonizing and examining this problem to see whether we have the proper posture or not.

Senator INOUYE. Does the fact that this type of equipment is organic in the Soviet force lead you to conclude that they have an offensive capability?

Dr. CURRIE. There is no question in my mind that they have an offensive capability.

Now what their doctrine is, how they are going to use this capability is another matter. Our position is that we should have a strong defensive capability, and we must have that size of offensive capability to provide for credible deterrence.

As you probably know, we are detoxifying some of our inventory, existing inventory, that part which is located at the Rocky Mountain Arsenal. We are bringing along these new capabilities using binary chemicals. They are much safer to handle and will be much safer for the future. So we view it as a deterrent capability.

DETERRENT AGREEMENTS

There have been two agreements recently. One is the Geneva Protocol which has been recently ratified which disclaims any intent for first use of chemical warfare. As you know, we have ratified this. But it does not prohibit development of offensive capability, nor maintenance of offensive capability in inventory.

The other agreement has to do with biological warfare. It is a more complete disclaimer. A disclaimer of any use of biological warfare whatsoever.

Senator INOUYE. Offensive or defensive?

Dr. CURRIE. Offensive. It disclaims having in existence any inventory of offensive weapons in biological warfare. We have been in compliance with this for a long time, although it has been ratified by the United States only recently.

Senator INOUYE. Do you know if the Soviets are complying with this?

Dr. CURRIE. I do not know of my own knowledge. Of course the equipment that you referred to has very complete filtering in it from a

defensive point of view that would apply to either chemical or nuclear operations, radioactivity products as well as chemical or biological products. I think that one would need to get an updated assessment from the intelligence community on that question.

I would just like to summarize by reiterating that I stated at the outset that the technological initiative is of prime importance to this Nation, and we just must maintain it. The technological competition worldwide, and not only on a military basis, with the Soviet Union, but worldwide in an economic sense, is clearly intensifying. It is a fact of life.

I believe that in the military technology area in this competition the stakes are very high, and ultimately it is national survival whether we maintain this initiative or not. The tough decisions that always have to be made are decisions between allocating resources to satisfy near term needs as compared with the allocation of those resources, some of those resources for our long-range needs. It is always a difficult choice.

I would point out for the reasons that I presented earlier that the Defense Research and Development program as a crucially important part of our overall technological effort in this country is our future. That is our future.

EFFECT OF 10-PERCENT REDUCTION

Senator Inouye. I am certain if he were here, the chairman would ask this question. Based on the political facts of life today there is much pressure on the Congress to keep down costs, and I think the subcommittee has, over the past few years, indicated its concurrence with this view, and it has cut costs. If this subcommittee decided to reduce your request by 10 percent, what sort of projects would have to be set aside or postponed or cancelled? I am not saying that it will be done, but what if it were done?

Dr. Currie. If it had to be done, the temptation always in a cut is to cut across the board. I don't think we can tolerate that. The technology base that I referred to, the advanced development programs, already have been scrubbed. In looking at the overall objectives of the Defense Department as related to our foreign policy or national objectives, we have over the last year generated a research and development program in responsible response to that guidance which even after the Services did their scrubbing on it amounted to over $11 billion. We have taken that down consciously to the $10.2 billion level.

In the event of a further cut by Congress I would not recommend a cut across the board. I would say that rather than hurting the broad scope of this effort, we would have to look at large programs that should be cut out surgically rather than affecting the forward effort of the entire program.

I am not offering programs because I feel we have already exercised that responsibility internally in the Department.

INTERNAL REDUCTIONS

Senator Inouye. You just indicated at the first stage all the Services submitted a budget exceeding $11 billion.

Dr. CURRIE. In research and development it exceeded $11 billion. In other words, sitting down responsibly over a period of time to meet the objectives of the Services as they perceived them, responding to secretarial guidance, and that in turn relates to our overall foreign policy and national objectives, they scrubbed down their programs and it came out to over $11 billion.

My staff agreed that technically and from a management point of view those programs did make sense. They intrinsically made sense. We then went through a period of inter-services review, program by program and scrubbed that down to the $10.2 billion level.

I should mention one thing in this connection, that when the services propose to DOD a program amounting to $11 billion it is very difficult for them to do. The reason is very simple. The Services have to think about their force levels as they exist today, their readiness posture, the problems of this year, not 5 or 6 or 7 years from now. So it takes a great deal of vision on the part of our military leaders when they cut back on their force levels to make room for research and development. It takes a degree of vision.

Now it is doubly hard because in the past some of them regarded research and development as sort of losing in Congress. Then they lost twice. Because if they have already cut their force levels down to make room for research and development, then if that is cut they have lost both ways. That is generally how it is perceived.

Senator INOUYE. Are you satisfied that the effort on the part of the services is sufficiently coordinated so that there is no overlapping or duplication?

Dr. CURRIE. In a program of this magnitude there is some overlapping and duplication. But I want to assure you and I want to assure this committee, and the Congress, that my primary responsibility is to come to grips with that and to manage the overall research and development program so that needless duplication is taken out.

We have addressed this explicitly during the last year. We have 45 joint research and development programs between the services. We have already cut out many programs that the Congress has never seen because of this duplication, and I think we are coming to grips increasingly with that problem.

QUESTIONS SUBMITTED BY CHAIRMAN M'CLELLAN

Senator INOUYE. Thank you very much for appearing today, Dr. Currie. I have some questions from Chairman McClellan and from Senator Young. In their absence, I will ask that you reply to them for the record.

[The questions and answers follow:]

ADVANCED TECHNOLOGY SALES TO RUSSIA

Chairman MCCLELLAN. You mention in your statement that Russia is behind the United States in certain technology areas as evidenced by her attempts to purchase the technology. What is your position relative to the sale of advanced technology by the U.S. and other NATO countries to Russia?

Dr. CURRIE. Sales of advanced technology to Russia by companies in the U.S., Western Europe, and Japan create difficult problems for us. To the companies concerned, these sales often look like easy sources of income—an expanded market

for their products, license fees and royalties from the sale of design and manufacturing know-how, and engineering contracts for plant construction. They see the opportunity for profits with little or no investment, especially when the Soviets offer payments substantially above the going market rates, as they have done for integrated circuit technology.

Our position is that such sales should be carefully controlled to protect our mutual and collective national security interests, and that such controls should be applied more broadly than just to arms-related technologies. We take this position because the transfer of advanced technology for ostensibly civil purposes to the Soviets can directly benefit their military technology efforts.

Even sales of advanced technology end products which have only civil applications may help the Soviets. We believe that their capability to exploit technology for civil purposes is far less efficient than our own. When we sell them products representing a certain investment—man-years of engineering talent, for example—we are in effect freeing up a substantially greater number of man-years of their engineering effort for military work. Sales of some high-technology end products for civil purposes give their military technologists the opportunity to reverse-engineer, or copy, the designs for production of military equipment. An important example of this is air traffic control equipment, which contains much of the technology needed to achieve automated coordination and control of air defenses against low-flying aircraft. Sales of such equipment may help them build hardware which they could not otherwise produce, or could only produce at inordinate cost.

An important part of our problem is that if we do not sell some advanced-technology items to the Soviets, they will approach other developed nations, including our NATO allies and Japan, who may not perceive the potential threat that we do. We have a real problem in persuading our friends to be more careful and selective in dealing with the Soviets. There are two ways we can use to solve this problem.

First, we must recognize—and persuade our friends to recognize—what constitutes a fair price for advanced technology. I believe we often forget, when we contemplate the sale of production know-how and advanced technology, the long period of guilding that technology up to the point where it becomes attractive—the risks taken during development, the re-investment of earnings and writing off developmental equipment to provide and evaluate the options that did not pay off, and the long, agonizing process of developing a market for the product and consumer confidence in it. We, and our friends, should understand that when we sell that technology to the Soviets, an established market and a proven capability is included in the deal, that we are creating a future competitor, and that we may be directly or indirectly helping their military capability. In other words, we and our friends should more conscientiously balance the quick profits against the future consequences.

Finally, we have to recognize that there is no way to prevent the diffusion of technology which is exploited, even if we were to make drastic changes in our way of life, from an open society to a closed one. What we can do is maintain our technological initiative by continuing to advance our technology. In this way, our technology and the options we create in both the civil and military sectors will continue to offset what diffuses to the other side.

Congressional Approval of Future Programs

Chairman McClellan. The Defense Department urges the Congress to keep hands off pure technology efforts, called Group I programs in your statement. How do you suggest that the Congress prevent large programs blossoming into later development stages without its knowledge or approval? Many of these programs have gained a life of their own by the time Congress becomes aware.

Dr. Currie. The "blossoming into later development stages" is in essence the transitioning from Group I to Group II that I described. This was a real problem prior to the establishment of the DCP/DSARC management process. There is normally some 3 to 5 years between the approval of program initiations, DSARC Milestone I and the Milestone II transition to full-scale development. Since each program is presented and briefed to the Congress each year during this phase of development there is ample opportunity to change or halt a program prior to this key decision point. Programs that pop-up all ready to go in to full-scale development was a problem in the past but I believe that we now have this situation under adequate control.

Design-to-Cost Techniques

Chairman McClellan. During the past several years, the Defense Department has touted the technique of design-to-cost for new systems. Several of the systems which were supposedly design to cost, such as the A–10 aircraft and the Patrol Frigate, appear to develop a need for more sophisticated equipment after Congress approves the basic program. Are you simply costing out a shell and slipping in the weapon capability later?

Dr. Currie. We are trying very hard not to let this happen except in clear cut cases of capability improvements clearly outweighing the corresponding cost increases. We must keep in mind that during the development of these weapon systems, which can take up to 8 to 10 years, there are many changes in available technology and the projected capabilities of our potential adversaries. We try to include only those subsystems that are required to meet the most realistic projection of requirements at the time we start a program and then again at the transition to full-scale development. We would rather err on the side of less sophisticated equipment and increase capability later than to over specify the requirement at the start of a program. Design to cost does force us to evaluate added equipment and sophistication from a cost vs. worth and need standpoint and also to keep an audit trail of increased capability and cost decisions.

R. & D. Savings

Chairman McClellan. In your statement you claim to reduce redundancy between the various weapon systems. You also note that the in-house laboratory effort is excessive. Why do we not see some savings in the total R&D request as a result of cutbacks in these two areas?

Dr. Currie. We have achieved cost savings as the direct result of reduced redundancy and I am sure that our efforts to control proliferation will continue to produce savings. However, these savings to date have not been of sufficient magnitude to reverse the long term trend of reduced RDT&E real funding. The only way to reverse this situation is to increase the total R&D budget request. As for the in-house laboratory effort, the request in real terms is reduced but accompanied by a more than offsetting increase in RDT&E contracted out to industry. In the past we have been accused of industry taking the larger share of RDT&E budget reductions. Conversely, this year's increase, in real terms, goes mostly to industry.

Level Funding of Technical Programs

Chairman McClellan. The Department appears concerned that technology programs have been level funded. When you voice this concern, do you consider the greatly expanded efforts by research organizations such as the National Science Foundation and many others in areas where Defense formerly carried the primary burden?

Dr. Currie. The Department of Defense is keenly aware of the programs of other government agencies which contribute to our defense strength. There are major contributions from joint DoD/NASA and DoD/ERDA programs. There are contributions from the U.S. industrial and academic communities which the Department of Defense also uses directly to perform its scientific and technology programs. The National Science Foundation support of university science is vital in this area. Without all of these areas of additional support, the DoD could not maintain a viable research program at the present level of funding.

Basic research is a very good example of the interaction in funding between Federal agencies. In 1951, a majority of federal obligations for basic research came from the Department of Defense and defense related programs in other agencies. Since then, the research programs of the National Science Foundation, Health, Education, and Welfare, and the space efforts of NASA have resulted in federal funds for basic research far greater than that from the Department of Defense.

The transfer of funding has occasionally resulted from a related transfer of mission responsibility, i.e., the DoD was divested of specific programs and the related resources when they became more appropriate for some other Federal agency. For example, immediately after World War II, the Congress assigned the responsibility for general health research to the DoD, there was no other agency to handle this task. As the Federal Government became more organized in this area, this responsibility was allocated to HEW.

Thus, over the years, the Department of Defense program has become more specialized and is now restricted to those tasks relevant to the DoD military mission. We work very closely with other agencies to assure that the DoD still benefits from such transferred research. As a result, the DoD basic research budget has grown considerably slower than total federal expenditures in this area.

The DoD no longer supports science for its own sake. That mission is elsewhere. We support a research and technology base as necessary to the Defense mission and we would increase this portion of the budget because it is one of the best investments to assure the maintenance of an adequate defense posture. Further, this investment is made with detailed consideration of the support provided by other government agencies and by universities with their own resources.

B–1 Program

Chairman McClellan. You suggest that the B–1 program should be continued as a development program. I notice that advance funds for production are included in the budget. Are these funds being requested contrary to your recommendation?

Dr. Currie. No sir. The $77 million requested in fiscal year 1976 is for the long lead material procurement necessary to support a production decision in November 1976.

SANGUINE development

Chairman McClellan. Why do you continue to push for development of SANGUINE when you lack an acceptable site for the system?

Dr. Currie. Effective Command and Control of our submarine forces is of great concern to us. We believe that extremely low frequency radio signals are the only known way to provide communications to our submarines at the depths and speeds which are best for their operations. SANGUINE is one way of providing these signals, therefore we need to continue the project even though we do not yet have a site selected. The activities we have planned for FY 1976 and the transition period are not dependent on any particular site. We are presently conducting a review of the ELF communications program within the DoD. This review will be completed before the first of March and the Navy will be able to give you the results after this date.

Number of Missiles Planned for Procurement

Chairman McClellan. What procedures are in effect to ensure that the SAR reflects the total quantity of missiles planned for procurement?

Dr. Currie. The DoD Instruction governing SARs (DoDI 7000.3) requires that the report reflect the "total number of units the DoD Component intends to buy through the life of the program as approved by the DoD Component Chief and the Secretary of the DoD Component after appropriate recognition of established fiscal constraints." The quantity shown in the SAR must be consistent with DoD approved programming documents. It should be recognized, however, that the quantity reflected in the SAR is that of a given point in time. As circumstances change, force structure and inventory requirements may change, which leads to a revision in planned procurement.

Tri-service Task Group

Chairman McClellan. Testimony was presented to this committee last year to the effect that a Tri-Service Task Group under the Joint Logistics Commander was established to prevent proliferation of night vision devices. I understand it established a policy of *developing* a set of common module components for their imaging devices.

I am concerned that *production* contracts are being planned for "one of a kind" custom infrared designs. Specifically on the Army TOW/Dragon night sight a competition is still being held between a custom design and the common module approach. I suppose on the large production volume of the TOW/Dragon sight program a custom design could possibly be justified as cost effective. However, I question the wisdom of deviating from the plan of producing common modular equipment. Is the Army considering the cost impact of their TOW/Dragon selection on other Army, Navy, and Air Force night vision/FLIR programs?

Dr. CURRIE. We do not intend to deviate from the principle of maximum commonality, consistent with the lowest life cycle costs which meet the performance requirements. Because of the wide variety of applications, the Tri-Service Task Group established classes or "families" of FLIRs for similar applications. Within these classes nearly all of the internal module will be common to all systems. Some modules may be common to all classes.

The TOW and DRAGON night sights are both in the manportable class of systems and both of the competitive modular approaches, i.e., "parallel" or "serial" scan, employ common modules which would be used by all systems of this class.

Concerning your specific question regarding the Army consideration of the cost impact of their TOW/Dragon selection, production cost estimates are a major evaluation factor. The cost portion of the evaluation is being based on production buys of TOW/Dragon/NODLR in combination with other Tri-Service FLIR production estimates. The cost analysis will address not only acquisition costs, but will include life cycle cost factors such as spare parts, training, technical manuals, and special support equipment.

COORDINATED PROCUREMENT PLAN

Chairman MCCLELLAN. Gen. Deane testified last year to the effect that Joint Technical Coordinating Group under the joint logistic commands was developing a coordinated procurement plan for thermal night vision devices, did a plan result which will eliminate duplicative development and procurement activities in and among the services?

Dr. CURRIE. A coordinated procurement plan has been drafted. The Joint Technical Coordinating Group (JTCG) has proposed the following courses of action relative to the major classifications or "families" of thermal imaging systems:

(1) The Manportable class of systems consists of TOW Thermal Night Sight, DRAGON Night Sight, Night Observation Device Long Range (TTNS/DNS/NODLR) and other small sights for Navy, Air Force and U.S. Marines use in shipboard surveillance and base defense applications. The recommended procurement plan is to complete the on-going competitive development and select the best approach. Both approaches utilize modular components which will enable either of them to meet all requirements of this class.

(2) Combat Vehicle applications include night sights for the M–60 A1E3 Tank, the XM–1 Tank and possibly other Army and Marine Combat Vehicles.

The competitive development of advanced engineering hardware will be evaluated. That evaluation will be influenced by results of other technical evaluations with regard to the use of common module hardware.

(3) The Airborne class of equipments includes Army, Navy and Air Force FLIR Systems. The Air Force is currently involved in a competitive development of two types of common modular FLIRs. The recommended Army policy is to capitalize on the selected approach rather than consider other candidates for the planned Army Attack and Scout Helicopter programs.

The FLIRs within each of these three classes or "families" will utilize common modules. However, these modules may or may not be common across the classes. The extent of this interclass commonality is dependent upon which basic and competitive scan technique, i.e., "parallel" or "serial", is ultimately selected for the FLIR equipment.

A Joint Army/Air Force/Navy policy effective on 15 July 1974 identifies the parallel scan common modules as a baseline for any near-term procurements. This is to be adhered to with allowable exceptions and continuing developments subject to JTCG approval. Mandatory coordination of all programs by the JTCG Thermal Imaging Systems is required.

HIGH VOLUME MANPORTABLE EQUIPMENT

Chairman MCCLELLAN. Has the Army determined that the common module approach is acceptable in the high-volume manportable equipment?

Dr. CURRIE. Yes. A field evaluation is in process to assess two candidate technologies. Result of this evaluation are not complete at this time. Tests and evaluation will be completed in July 1975 and a decision will be made at that time to select the best approach.

Common Module FLIR Approach

Chairman McClellan. What is the status of the common module FLIR approach relative to Tri-Service acceptance?

Dr. Currie. The common module FLIR approach has been widely accepted by the three Services. The following on-going programs are committed to the same common module FLIR approach:

A7–E TRAM FLIR	Navy
P–3	Navy
Mark–68 Electro-Optical Sensor for Mark–68 GFCS	Navy

Each of the following on-going programs are being competed between two technologies. Each program will employ a common module approach within its own class:

TOW/DRAGON/NODLR	Manportable sights	Army
M60A1E3	Tank thermal sight, gunner	Army
PAVETACK, RF4C	Common FLIR	Air Force

Established FLIR Specification

Chairman McClellan. Do any of the services have to relax established FLIR specifications to accomodate the common modular FLIR?

Dr. Currie. No, not to date. Technical specifications have been reviewed by working groups from each service. The worst case conditions for system performance and environmental exposure have been compared to modular component specifications. The common modules will meet these worst case requirements.

Module Interchangeability

Chairman McClellan. Has OSD addressed any advantages in cost savings or military readiness to be gained through module interchangeability between ground, sea, and airborne equipments?

Dr. Currie. The Army estimates that the life cycle cost savings for Army programs alone through the common module approach would be on the order of $100 million or more. Additional savings in the programs of the Air Force and Navy are expected, but estimates have not yet been completed.

Chairman McClellan. Is the TOW Night Sight the first high volume procurement of any system with the potential of utilizing the common module approach?

Dr. Currie. Yes.

Chairman McClellan. If the modular approach is not chosen for TOW production, what is the expected cost impact on Navy and Air Force procurements?

Dr. Currie. Both contractors in the present competition have been required to use the common module approach. An estimate of the dollar impact of not using common modules in the TOW/Manportable class of FLIRs was presented in testimony last year. The Night Vision Laboratory is in the process of a cost analysis to "fine tune" the cost numbers presented. More definitive information will be available in late summer after the TOW/Manportable evaluations are completed.

Tri-Service Savings/TOW/Dragon Evaluation Criteria

Chairman McClellan. How is Tri-Service savings addressed in TOW/Dragon evaluation criteria?

Dr. Currie. Production costs estimates are a major evaluation factor. The cost portion of the evaluation is being based on production buys of TOW/Dragon/NODLR in combination with other Tri-Service FLIR production estimates. The cost analysis will address not only acquisition costs but will include life cycle cost factors such as spare parts, training, technical manuals, and special support equipment.

DOD Policy for Utilizing Common Modules

Chairman McClellan. If there has been a DoD policy established for utilizing common modules for FLIR requirements, how does the OSD assure that program managers and the source selection authorities in the services implement this policy in competitive developments or procurements?

Dr. CURRIE. A Joint Army/Air Force/Navy policy, effective on 15 July 1974, identifies the common modules as a near-term technical baseline. In addition, mandatory coordination of all programs by the Joint Technical Coordination Group on Thermal Imaging Systems under the Joint Logistics Commander is required.

Chairman MCCLELLAN. Would not the DoD-wide savings potential be jeopardized if the Army delays making a procurement commitment solely to the common modules for the TOW Night Sight?

Dr. CURRIE. Yes, any significant delay in the development program could jeopardize the common module approach. However, management emphasis is being placed on the TOW Night Sight program to insure its timely completion. It is on schedule now. In addition, contracts to develop second source suppliers for common modules are planned so that competition will be available during the production phases of this program.

MAVERICK MISSILES

Chairman MCCLELLAN. Why have total Air Force requirements for Maverick missiles increased from 21,600 to over [deleted]? Are further increases expected?

Dr. CURRIE. My office does not have primary responsibility for procurement quantity decisions, especially when the system is well along in production. However, I can indicate the general methods involved and some of the specific factors affecting MAVERICK procurement planning. The total Air Force requirements for MAVERICK, as well as for all other war reserve munitions, are based upon estimated expenditures during sustained combat for a specified period in a specified theater of operations. The war reserve inventory must be sufficient to last until U.S. production can expand to match consumption. All war reserve munition requirements are reexamined annually. They change with the threat, the availability of more effective munitions, the introduction of new platforms, our ability to mobilize quickly, and a host of other factors. The electro-optical (E/O) MAVERICK requirement increase corresponds to the planned employment of all MAVERICK-capable aircraft (A7D, A–10, F4D and F4E). A primary factor is the increased reliance on the planned fleet of A–10s in the Central European theater. MAVERICK is the primary guided weapon employed by these aircraft, and the total sorties planned for the A–10 have quadrupled. The 1973 Middle East War demonstrated the MAVERICK is a highly effective weapon against armor, and the threat theaters of operation will have armor-rich targets. Moreover, the additional MAVERICKs planned for procurement arean improved version (with scene magnification) which will make them even more effective.

Finally, the increase you referred to was planned to support the FY 80 force structure. The FY 81 force structure is currently under review and could change; however, I do not anticipate further increases in the planned procurment of E/O MAVERICK.

Chairman MCCLELLAN. Have increases in Maverick requirements been offset against decreases in requirements for the other weapons? Why?

Dr. CURRIE. Because MAVERICK constitutes an entirely new anti-armor capability, the MAVERICK requirements have not been offset against specific decreases in requirements for other weapons. As stated in the Selected Acquisition Report, the MAVERICK replaces no existing weapons system. However, as the MAVERICK becomes more generally available, less effective munitions are phased out of the war reserve stockpile requirements. For example, the Air Force no longer has a requirement for BULLPUP, and that weapon has been offered as a candidate for foreign military sales out of Air Force inventory.

Chairman MCCLELLAN. What is the current status of the tri-service program involving the laser seeker for the Maverick and Hellfire missiles?

Dr. CURRIE. As you know, the Air Force was appointed lead Service for the tri-Service laser seeker development. In June of last year an RFP was released for a laser seeker which would satisfy both MAVERICK and HELLFIRE requirements. Three contractors responded. The source selection evaluation was done jointly by the Army, Navy and Air Force. It was extraordinarily thorough and a contract was awarded on 25 March 1975. The decision on engineering development of HELLFIRE is scheduled for December of this year. If HELLFIRE is approved for E.D. it will employ the laser seeker developed under this contract.

Compass Cope

Chairman McClellan. The Air Force plans to start full scale development of the COMPASS COPE in January 1976. What is the scope, and characteristics of the planned contract.

Dr. Currie. The full scale engineering development contract will be awarded to one contractor; based on a competitive source selection between the Boeing Company and Teledyne Ryan Aeronautical Company. The engineering development effort will include fabrication and testing of six flight test and one structural test preproduction vehicles. These vehicles will utilize the engine configuration selected for follow-on production, improved flight control avionics, an automatic approach and landing system, and an operational payload. Testing will include an initial operational test and evaluation phase. We are planning on contract award in January, 1976 and we expect the development and testing to take slightly over three years at a total program cost of $74.1 million.

Centralized O.T. & E.

Chairman McClellan. What is the feasibility of centralizing the direction and management of operational test and evaluation (OT&E) activities of the military services to achieve maximum OT&E capability at minimum cost?

Dr. Currie. I believe that your question is directed to the possible centralization of the direction and management of the Operational Test and Evaluation (OT&E) support provided by the 26 Major Ranges and Test Facilities which are the responsibility of the Deputy Director for Test and Evaluation (DD(T&E)), DDR&E. In carrying out his responsibilities for OSD the DD(T&E) provides overall policy direction and planning guidance to the Military Departments who are responsible for management of their facilities. Continuous interface goes on with the Services to insure the adequacy of the facilities to meet requirements and to avoid unnecessary duplication and retention of unused assets. Annual in depth budget and apportionment reviews are conducted that are directed to more general reviews of dollars requirements, personnel, workload and improvement programs. In addition, guidance on priorities is provided as required relative to assignment of test programs to these range and facilities.

In varying degress the subject activities support Development Test and Evaluation (DT&E) and operational training in addition to OT&E and it has not appeared practical to separate the facilities and personnel supporting these sometimes interrelated missions either physically or managerially. These organizations now function in a manner which assures both OSD and Military Department involvement to the necessary extent and with a minimum of personnel. Centralization of responsibility for only the DOD OT&E activities probably would serve to divide installation management and possibly create the need for increased manning levels. It would not, in my opinion, increase OT&E capability.

Chairman McClellan. With the dissolution of the Test and Evaluation Systems Planning Office, how does the Air Force intend to provide for management of its OT&E capabilities needed in the future?

Dr. Currie. The Test and Evaluation Systems Program Office (TESPO) is an 85 man Air Force Systems Command Office created primarily to engineer and manage development and acquisition of the Continental Operations Range (COR). In addition, the office was given responsibility for certain closely related system acquisitions of special equipment for other facilities. This latter function involved possibly some 50 percent of the total TESPO effort. The cancellation of COR and other Air Force realignment actions have resulted in a decision to dissolve TESPO during FY 1976. Equipment required to improve Air Force capability for conduct of operational testing and training at its ranges will continue to be the responsibility of the Air Force Systems Command (AFSC). Air Force Headquarters will task AFSC to manage, engineer, acquire and install specific resources for the ranges involved. In turn, AFSC will assign the tasks to their other field activities where the appropriate expertise exists. They expect most of the work to go to the Armament Development and Test Center, Eglin, AFB, Florida.

Range Improvements

Chairman McClellan. What is the nature and cost of planned range improvements during the next five years at the Hill, Wendover and Dugway ranges?

How will the capability derived from these improvements compare with that which was to be developed/acquired during mid-term COR?

Dr. CURRIE. The table I shall provide below outlines the improvements the USAF now programs at these ranges through FY 1977. These improvements will provide a minimum essential capability (tracking, communications, command and control) to conduct RPV/Drone testing. At this time, no funds are programmed for improvements in FY 1978 or beyond. Any additional requirements which may arise will be considered on a case by case basis during the normal programming/budgeting process.

[In millions of dollars; fiscal years]

Item	1975 and prior	1976	197T	1977
Integrated target pointing/acquisition system				0.1
Mission control center		0.1		.7
Multiple object tracking system	0.3	1.4		
Communications	0.7			0.2
Total	1.0	1.5		1.0

The COR plan contemplated providing in this area a threat environment including enemy acquisition radar simulators, command communications links, anti-aircraft simulators, advanced SAM, enemy jamming systems, and typical ground targets. In addition, communications and an integrated instrumentation system would have been expanded to support the increased mission. All of this would have been linked as a subarea to the Nellis Central Control and function as an air-to-air and air-to-ground complex of the COR. These improvements would have provided the capability to expand air-to-air, air-to-ground, and electronic warfare operations into or out of the Hill/Wendover/Dugway ranges in an integrated manner with operations on the Nellis Complex.

Program and Cost Estimates at Hill/Wendover/Dugway associated only with COR included:

[In millions of dollars; fiscal years]

	1977	1978	1979
Threat systems	1.5	13.8	5.6
Scoring/instrumentation	5.8	4.0	2.0
Range control	2.8	6.8	2.8
Comm/data links	2.8	4.5	4.1
Total	12.9	29.1	14.5

The Hill, Wendover and Dugway Complex will now be considered principally in its more limited role of supporting RPV developments and Air Force Logistics Command support operations.

CANCELLATION OF COR

Chairman MCCLELLAN. What is the loss in operational test capability with the cancellation of COR, the effect on future weapon system operational testing and the Air Force's plan to satisfy future test requirements?

Dr. CURRIE. The Continental Operations Range (COR) was to be a multi-Service test and training environment linking and improving the individual Service test facilities at the USAF Tactical Fighter Weapons Center (TFWC) Range (Nellis AFB, NV), the USAF and Army Hill/Wendover/Dugway test complex (near Salt Lake City, UT), and the Navy Fallon Range (near Reno, NV). It was planned that a Central Range Control facility would be located at Nellis AFB with communication links extending to the other ranges. Improvement emphasis through FY 77 was to be primarily at the TFWC Range followed by major improvements at Hill/Wendover/Dugway in FY 78 and 79 and later at Fallon. This total environment would have provided an in depth ground defense and ground target area that was well instrumented and relatively encroachment free. This improved range capability would have enabled the Military Departments

to conduct periodic shallow and deep penetration operations and large-scale (up to wing size) joint exercises with two sided engagement. To acquire this capability, the COR program concentrated on; equipment improvements for range control, integration of widespread instrumentation, improved and increased numbers of threat simulators and mission control capabilities. A key part of the COR development and acquisition was to use centralized management to build upon existing multi-Service assets and create a better range for multi-Service use.

The cancellation of COR results in the loss of the early integration of separate test areas with a large integrated free-play arena. The individual military departments will now budget for and operate their own smaller facility areas. Interchange of usage by other Services will be lessened. Training and test will be somewhat less effective but a measure of the degree cannot be given.

To satisfy its future testing and training requirements, the Air Force is planning to improve the TFWC ranges in Nevada proper, as well as other distant ranges, to accommodate most of their weapon system operational testing and training. The Dugway/Hill/Wendover area will be developed only to handle specialized RPV development activity and not as an overall manned aircraft and RPV facility.

Chairman McCLELLAN. Since the Air Force still feels that many of the improved test range capabilities that were planned for COR are urgently needed, what is the current plan for obtaining these capabilities?

Dr. CURRIE. The current plan for obtaining improved capabilities consists of proceeding to improve and modernize the Tactical Fighter Weapons Center (TFWC) ranges at Nellis AFB, the Air Defense Weapons Center (ADWC) at Tyndall AFB, and other operational test and training ranges. The most significant improvements in FY 76 include threat systems, communications and instrumentation equipment at TFWC, and Air Combat Maneuvering Instrumentation (ACMI) at ADWC. Additional ACMI systems and other instrumentation systems are planned in FY 77 and beyond for operational facilities such as Luke AFB Ranges and McDill AFB Ranges. The funding budgeted in FY 76 and programmed for the out years is as follows:

[Fiscal years]

	1976	197T	1977	1978	1979	1980
Training equipment (PE-71112F)	22.0	11.3	24.0	24.0	24.0	24.0
Range improvement equipment (PE-27429F)	17.0	0	16.0	16.0	16.0	16.0
Improved capability for O. T. & E. (PE-65735F)	2.8	.9	9.8	13.2	11.9	11.9

COORDINATION OF RPV JOINT TECHNICAL COORDINATING GROUP WITH D.D.R. & E.

Chairman McCLELLAN. What can be done to increase coordination between the RPV Joint Technical Coordinating Group or joint service groups, and the DDR&E to provide increased visibility of RPV activities?

Dr. CURRIE. The Joint Technical Coordinating Group (JTCG) mechanism was created by the Joint Logistics Commanders (JLC) for the purpose of coordinating technology, principally laboratory efforts. The JTCG on RPV's provides the means for the exchange of technical and program information at the working level and it is functioning very well in that capacity.

DDR&E does interact with the JTCG only on an informal basis since the JTCG is a JLC organization. DDR&E formally interacts with all Service RPV programs twice a year; at the Topical Reviews in the fall, and at the budget apportionment reviews in the spring. My staff also interacts on a continuous but informal basis throughout the year with all the Services on their RPV programs.

Due to the anticipated growth of RPV program activity in the technology base, DDR&E is planning to hold a comprehensive Joint-Service Topical Review exclusively on RPV's during the fall of this calender year. Previously the RPV programs have been reviewed as a part of our Topical Review on Target Exploitation.

Chairman McCLELLAN. Why haven't RPV programs been made subject to the DSARC review process to determine suitability to enter full scale development or production?

Dr. CURRIE. Since the DSARC process began, no RPV program which meets the DSARC criteria has progressed to the full scale engineering development or

production decision phase. The Compass Cope RPV program will be the first to be reviewed by the DSARC, currently scheduled for late calendar 1975.

Chairman McClellan. Why haven't total program estimates been established for RPV programs?

Dr. Currie. Most of our past RPV projects have been exploratory and advanced developments where we are concerned with investigating ideas and proving concepts, rather than establishing total program costs. For those few programs that have progressed beyond the concept validation phase we have developed more comprehensive program cost estimates. Specifically, for programs that reach the full scale engineering development phase, such as the BGM-34C, total program cost estimates have been made and provided to Congress.

Chairman McClellan. Why haven't RPV programs been included under the acquisition policies and procedures of DoD Directive 5000.1?

Dr. Currie. DoD Directive 5000.1 covers acquisition of major defense systems. Thus far no RPV program has met the criteria for a major defense system as established by that Directive. As programs meet these criteria, they will be subject to the policies and procedures of that Directive. COMPASS COPE is expected to be the first such RPV program.

Electronic Counter Measure Environment

Chairman McClellan. Have studies been made to assess potential capability in a dense electronic counter measure environment?

Dr. Currie. Theoretical studies have been made in connection with the Drone Control and Data Retrieval System (DCDRS) to determine the susceptibility of data links to jamming and the countermeasures necessary to promote effective communications with RPV's. Other studies have investigated the capability of RPV's to operate in a preprogrammed mode using self-contained navigation. This mode obviates communication links subject to electronic countermeasures.

DARPA has been working with the Air Force to examine, both theoretically and experimentally, the performance of a wideband data link in the presence of several jammers. DARPA is planning more realistic tests with the Army's mini-RPV during FY 76 and FY 77.

Chairman McClellan. In analyzing RPV potentials to date, DoD officials have stated that RPV's are to complement, not replace manned aircraft. Are any studies planned, or have been completed, which address the impact of RPV's on the force structure of manned aircraft?

Dr. Currie. Some studies have been made regarding the missions that RPV's can perform, particularly in the areas of reconnaissance and electronic countermeasure support. These studies have included some cost effectiveness analyses. More work is planned to define the costs of RPV's and their associated capabilities before making major decisions regarding the mix of manned and unmanned aircraft.

RPV Mission Options

Chairman McClellan. The Air Force completed an RPV "mission analysis" in January 1974 which identified seven RPV mission options. The options are to be ranked in order of importance in January 1975. What are the relative priorities assigned and how does the assignment relate to specific operational capability requirements?

Dr. Currie. The Air Force assessed the relative importance of the seven options by determining the major command interest in them. As a result of that assessment it is evident that the multimission tactical drone, the high altitude, long endurance drone and the tactical expendable drone are accorded high priority while the remaining options received little command support. A more refined prioritization showing individual ranking has not been made and is not planned. The options receiving the most command interest relate to specific operational requirements.

Short-Range Missile Short-Fall

Chairman McClellan. In view of the projected Air Force short-range missile short-fall, what would be the advantages/disadvantages of (1) replacing Air Force aircraft launchers to accommodate the Navy's AIM-9H, or (2) procuring a modified version of the Navy's AIM-9H which could be used with existing Air Force launchers?

Dr. CURRIE. Mr. Chairman, the Air Force has looked at the AIM–9H alternative quite closely as it has appeared to be a near-term solution to the Air Force inventory problem. There are disadvantages to this course of action. Procurement of the Navy LAU–7 launchers for the F–15 and F–4E fleet alone would cost approximately $19 million, not including support costs. In addition, all F–4Es would require modification to provide cockpit control of the AIM–9H and associated cryogenics. This modification would also apply if we were to procure the AIM–9H with cryogenics in the missile like the AIM–9L. It would cost about $5 million to modify these aircraft; moreover, the mod program would be conducted during the 1978–1981 time frame which negates the near-term aspects of the proposal. At that time (1980), the cost of the AIM–9L, a much more capable missile than the AIM–9H, will approach that of the 9H. Therefore, we believe that the best solution is to purchase the AIM–9L, assuming its continued successful development, for the newer fighter aircraft and to modernize the current SIDEWINDER inventory for the other fighters. This course of action allows the Air Force to avoid introducing another missile and its support and training requirements into their inventory; puts the best available missile on their air superiority aircraft; and equips the remainder of their fighter aircraft with a satisfactory missile at the lowest possible cost.

ACF

Chairman MCCLELLAN. How will the ACF be used in relation with other aircraft and what impact will this relationship have on the need for currently planned quantities of F–15 and A–10 aircraft?

Dr. CURRIE. The F–16 will be a versatile fighter which will effectively complement the other more specialized aircraft that will comprise our active tactical force in the 1980s. Armed with short range infrared missiles and an internal 20mm cannon, the F–16 will be exceptionally effective in visual, close-in maneuvering air combat complementing the full spectrum capabilities of the F–15 air superiority fighter.

The F–15 is designed for the complete spectrum of air combat including all-weather while the F–16 is optimized for close in maneuvering air combat tasks. The F–15 has greater top speed than the F–16, more rapid supersonic acceleration, longer range radar, a beyond visual range missile (AIM–7) kill capability, a greater air-to-air armament payload, and an advantage in maneuvering at high supersonic speeds. The F–15 has a broader systems capability for air-to-air and therefore has the ability to defeat enemy aircraft in any environment regardless of weather conditions. The F–16 has an advantage in subsonic, transonic and low supersonic turning performance, in radius of action with a comparable payload, in ferry range, and can generate twice as many combat missions for a fixed supply of POL.

While the F–15 will provide the USAF with a qualitative edge over known and projected threat aircraft, the projected procurement of only 729 aircraft will not overcome the quantitative deficiency. By virtue of its reduced sophistication and lower life cycle costs, the F–16 permits a modernization and expansion of the Air Force tactical fighter force structure. The F–16 low visibility ground attack capabilities will also complement the A–10 in close air support and the F–111 in the battlefield interdiction and counterair attack roles. This combination of F–16 capabilities will permit employment in both offensive and defensive roles. However, the A–10 was designed to meet the special requirements of close air support where the need is for a weapon system which can effectively counter the massive number of tanks and armored vehicles possessed by the Warsaw Pack nations. The A–10 with its 30mm cannon and extensive armor and other survivability features will provide this desired close air support capability. The total planned procurement of 733 A–10s was based on an integrated assessment of the need for such specialization.

The F–16 will enhance the achievement of air superiority and will be capable of exploiting that achievement by swinging rapidly to the ground attack role even under conditions of poor visibility. This will provide our air commanders with the flexibility needed for the conduct of air operations and will significantly increase the effectiveness of our tactical force.

Chairman MCCLELLAN. Is the production of additional quantities of F–15's more cost effective than developing a new aircraft (ACF)?

Dr. CURRIE. The mid-60's criteria of "cost-effectiveness" which was appropriate in the budget environment and situation at that time has been abandoned in an attempt to maximize "force effectiveness" within a constrained budget. Force effectiveness is much a function of force depth. The F–16 program is one attempt to provide an alternative of force expansion and a means of closing the gap between NATO and Warsaw Pact in numbers.

Development and procurement of 650 F–16's is less costly than procurement of an additional like quantity of F–15's. The lower basic procurement cost of the F–16 combined with lower operating costs compensate for its development cost and provide significant overall savings compared to additional F–15 procurement.

Chairman MCCLELLAN. Was the ACF development and production program undertaken primarily because of its foreign sales potential?

Dr. CURRIE. No. There is a continuing need for modernization of the Tactical Fighter Force of the USAF. In view of the current and projected threat capabilities, an affordable fighter is required to expand and modernize these forces in the 1980's. To fulfill this requirement, a fighter aircraft is needed which will reverse the upward trend in the investment and operating/maintenance costs of new weapon systems. The F–16 is intended to fulfill these requirements.

The age and the changing role of the F–4 force is a major factor in these considerations. In FY 1980, the average age of the F–4 will be: F–4C—15 years; F–4D—13 years; and F–4E—10 years. Current USAF planning indicates that [deleted.] Modifications to extend the service life of the F–4 are under way; however, there are no forecast improvements to enhance its air superiority capability.

Fortunately, the availability of the F–16 affords the U.S. an opportunity to provide the hardware for modernization of our NATO forces. The benefits are at least: (1) broadens the common support base for the NATO force and USAF aircraft deployed to Europe; (2) increases combat operational flexibility relative to basing; (3) further cements the US/NATO force relationships; (4) impresses the deficit payment relationships in favor of the U.S.

Chairman MCCLELLAN. To what extent will the ACF fulfill the Air Force's fighter needs?

Dr. CURRIE. The USAF initial program planning has been for 650 F–16's or six wings. The Air Force is currently analyzing training and attrition aircraft requirement to support this six wing force, and it is possible that we need to increase the number of F–16's to 729, the same number as programmed for the six wing F–15 force.

ACF FOREIGN SALES

Chairman MCCLELLAN. What are the military, economic, and political advantages and/or disadvantages of the proposed ACF foreign sales program?

Dr. CURRIE. The prime military advantage is standardization of aircraft between allies which will enable deployment of our aircraft to standby fields (allies) that can offer immediate services. An economic gain is surely evident although its size and impact is not known at this time. I do not see any military or economic disadvantages that would outweigh the advantages.

Insofar as political advantages/disadvantages are concerned, I would like to defer to Secretary Kissinger's office.

ACF FLYOFF

Chairman MCCLELLAN. Why the Air Force did not conduct a flyoff as requested by the Senate Committee on Appropriations?

Dr. CURRIE. It was determined that a direct, air combat flyoff would not have been fair due to the differing levels of engine development (the YF–17 prototype engine thrust levels were somewhat below those estimated for production) and the resulting difficulty for evaluation pilots to qualitatively assess projected performance increases.

Moreover, the Lightweight Fighter (LWF) prototype flight test program was an objective and comprehensive, comparative evaluation which met, and in most every category, exceeded the requirements of a direct flyoff. Many aspects of the LWF flight test program contributed to this assessment. Air Force pilots, and in particular Tactical Air Command pilots, interfaced early into the program and

flew over one-half of the flights. Quantitative data obtained during flight testing verified comparative performance and extensive operational factors evaluations were qualitatively assessed on all Air Force flights. Both aircraft were evaluated against identical development and operational test criteria, including air combat maneuvers against various types of contemporary fighters.

Chairman McCLELLAN. Why were the ACF's performance requirements not derived from the expected threat aircraft?

Dr. CURRIE. The performance requirements specified in the ACF proposal instructions were based upon an integrated assessment of both demonstrated prototype performance and the level of performance necessary to ensure an adequate margin of superiority over the known and projected threat. This has not been the standard method, as seldom have we been so fortunate as to have demonstrated prototype performance data upon which to confidently base the expected performance of the operational aircraft.

Chairman McCLELLAN. Why the Air Force did not include a design-to-cost goal in the ACF request for proposal?

Dr. CURRIE. While design-to-cost goals were not an explicit part of the proposal instructions, the General Dynamics contract does specify a design-to-cost goal. The contract states that "a prime objective during full scale development is to design to a cumulative average unit production flyaway cost of $3,842,525 expressed in FY 75 dollars for a total of 1,000 aircraft at a maximum production rate of 15 aircraft per month." The GD portion, which excludes the engine, radar, and government furnished aeronautical equipment, of this goal is $2,323,074.

The ACF proposal instructions were very explicit in stressing the importance attached to achieving low life cycle costs. The objective, as stated in those instructions is "to produce the lowest life cycle cost aircraft with acceptable performance." The contractors were encouraged, through the incentive of award fees, "to make cost/performance trades, military specifications/standards deviations and peculiar program tailoring to improve productibility at minimum cost." Those design features offering potential for reducing operating and support requirements and associated costs, which, incidentally, constitute over 50% of the system's life cycle costs, received special emphasis in the assessment of each contractor's proposal.

Additionally, Life Cycle Cost/Design-to-Cost trade studies are being conducted during full scale development in two parts. The first part addresses air vehicle design and acquisition cost reduction opportunities developed in cost/design trade studies conducted prior to the Critical Design Review. A second part will address supportability, including ground support equipment, maintenance and acquisition cost reduction opportunities conducted prior to the flight of the first DT&E aircraft.

Chairman McCLELLAN. Why are the Air Force and Navy ACFs planned with radars of different ranges even though both aircraft have a designated air superiority mission?

Dr. CURRIE. The Navy ACF configuration is still not firm, and will depend on data received in the source selection process.

COPRODUCTION PLAN

Chairman McCLELLAN. Does the DOD plan to offer a coproduction plan to countries other than the Consortium countries?

Dr. CURRIE. To my knowledge, the Department of Defense has not been approached by any other countries that are interested in coproduction arrangement. Should such a request be forthcoming, the DOD would, no doubt, give due consideration to an additional coproduction program.

Chairman McCLELLAN. Will the price paid by the Consortium countries include a share of the following costs: F100 engine development, LWF prototype program, and ACF full-scale development?

Dr. CURRIE. In the DOD negotiations with the Consortium countries our policy has been to ensure that all nonrecurring recoupment costs charged to the Consortium are fair and equitable. Accordingly, in the early negotiations which occurred prior to the ACF source selection, the DOD agreed to waive all Lightweight Fighter Prototype Program costs except those for engine development. The DOD position, which was fully understood by the Consortium, was that a pro rata share of all engine, either YJ101 or F100, development costs as well as all ACF full scale development costs would be recouped. There has been no change in that position.

COST RECOUPMENT ON FOREIGN SALES

Chairman MCCLELLAN. That is the origin of the DOD instruction regarding recoupment of costs on foreign sales of military items? How was a factor of 4 percent derived for recovery of nonrecurring RDT&E cost?

Dr. CURRIE. The Department of Defense's recoupment policy was instituted pursuant to a memorandum from former Secretary of Defense McNamara to then Deputy Assistant Secretary of Defense Kuss (February 29, 1964), which called for inclusion of "an appropriate charge for all research and development costs" in future major weapon sales. This policy was codified in the Department of Defense Directive 2140.2 of March 15, 1967.

On October 4, 1971 Assistant Secretary of Defense for International Security Affairs Nutter sent a memorandum to the Director, Defense Security assistance Agency which set the four percent guideline. It was stated "while we must continue to charge for our investment in R&D, it is suggested that the surcharge should not in any case exceed four percent of the sale price. . . ."

Through the insistence of my office (Director, Defense Research and Engineering) in 1973, the Department of Defense revised 2140.2, effective January 23, 1974. The revised directive provided two alternatives for recovering nonrecurring costs:

"Nonrecurring research and development (R&D) costs applicable to the model under consideration normally will be applied in an amount not greater than four percent of the total FMS or Direct Sale price for a major defense equipment."

The other provision permitting the Director, Defense Research and Engineering an option of obtaining a greater recovery of R&D costs for selected items, especially when they had been in production for less than five years. The Director can establish the cost on ". . . a pro rata basis by applying identifiable R&D costs for the model under consideration to the total anticipated production, past and projected, for DOD and FMS."

We are continuing to look at even more optimum means to obtain fuller recovery on our R&D investments and the value of our technologies. At the present time DOD is participating in an Interagency Working Group to determine appropriate fair market pricing policy and procedures. The purpose of the study is to describe a policy designed to achieve a return on government investment; to entail proportionate (i.e., pro rata) cost recovery on product sales; to allow a fair market recovery on technology sales; and to allow reasonable agency flexibility and discretion in implementation. The current DOD Directive 2140.2 will be revised, if necessary, to comply with Congressional and Interagency guidelines and to assure that fair market value for products and technology are recovered.

FOREGIN SALES/MAVERICK

Chairman MCCLELLAN. In evaluating potential foreign sales of the Maverick, what consideration was given to:

a. economic factors such as balance of payments,

b. security over critical technologies, and

c. views and comments from the Air Force, Department of Commerce, Department of the Treasury, any others?

Dr. CURRIE. The answers are as follows:

a. The cardinal consideration in evaluating foreign military sales is overall U.S. national security interest, including foreign policy. In the foreign military sales of Maverick, economic considerations are not separately analyzed and evaluated because such sales are known to be economically advantageous to the U.S. (since the missiles are produced and shipped from the U.S.).

b. The question of safeguarding critical technologies is a primary consideration in the sale of defense equipment; this issue was carefully assessed by my office and the Air Force in the sale of Maverick. There is no question that the sales of Maverick involve the risk of technological disclosure. However, such disclosure is limited to the hardware and does not reveal design technology and manufacturing "know-how" to design and produce the missile. Moreover, the technology of the electro-optical seeker of the missiles being sold is a first generation design-although, still quite effective. The newer versions incorporate scene magnification and other improvements in the electro-optical seeker, and two entirely new seekers: a laser seeker and an imaging infrared seeker. These newer versions have not been offered for sale. On balance, the mutuality of

benefits gained by the U.S. and the countries involved in the say of the Maverick outweighed the disadvantages, especially Maverick's contribution to NATO's increased effectiveness against the Warsaw Pact tank threat.

c. The coordination activity for the foreign military sales of Maverick and the export of such systems (including technical data) is primarily between State and Defense. The Department of State is responsible for determining what items can be sold to which countries, subject to Defense review for military and security considerations. Within DOD, the views of the appropriate OSD offices and the Air Force were considered by the Secretary of Defense.

TRI-TAC

Chairman MCCLELLAN. The TRI-TAC program includes multiple interdependencies and the schedules of the various systems may be adjusted to maintain integration of the numerous programs. For example, the AN/TTC–39's development must coincide with the development of four other TRI-TAC equipments. What are the most critical interdependencies and how will they be managed to minimize schedule adjustments?

Dr. CURRIE. While there are a large number of interdependencies among the entire catalog of TRI-TAC equipment programs, only certain of these interdependencies are currently characterized as "most critical". These are the funding and technical interdependencies among the AN/TTC–39, TENLEY, Tactical Communications Control Facilities (TCCF) and Digital Group Multiplexer (DGM) programs.

An Interface Control Working Group (ICWG) has been established. Membership is constituted from the TRI-TAC Office, the Military Services, DCA, NSA and appropriate acquisition program contractors. The ICWG is responsible for the identification and maintenance of engineering interface/interoperability integrity among the equipment programs.

A schedule interdependency network is maintained which depicts major milestones and their planned occurrence dates applicable to the programs. Through this medium anticipated "slips" in major events can be translated into probable impacts on other programs and appropriate action taken.

These management tools, in conjunction with scheduled In Process Reviews and Program Reviews, provide a basis for management of interdependencies to minimize schedule adjustments.

Chairman MCCLELLAN. Since funds for TRI-TAC are individually requested by the services, how is the impact of a cutback of funds in one program on other TRI-TAC programs minimized?

Dr. CURRIE. Although TRI-TAC funds are individually requested by the services, the Director, TRI-TAC is constantly aware through periodic review of Services'/Agencies' budget position during the PPBS Cycle. Recommendations by Director, TRI-TAC to DTACCS are made whenever it is apparent that funding levels are inadequate when related to either schedule or amount. Impact on TRI-TAC programs are minimized during the budget planning phase by insuring that appropriate funding levels, consistent with the interdependent schedules, are maintained by each Service.

If late identification of required funding occurs, and no relief can be offered from the Services' other programs, then all interdependent schedules are examined and adjusted to gain relief.

Subsequent to award for cost type development contracts, periodic reviews are conducted to determine contract expenditures to date and costs planned to completion. Cost Performance and Contract Fund Status Reports are also used in the determination. Contractor expenditures are examined against current year and planned future year budgets to ensure adequacy of funding to complete developments as planned.

Chairman MCCLELLAN. Why haven't estimated unit costs for the TRI–TAC systems other than the AN/TTC–39 been developed?

Dr. CURRIE. At the present time, four programs (TTC–39, DGM, TCCF, TENLEY) have cost estimates for the full scale development phase. The other programs are in earlier stages of definition and their associated cost estimates are as accurate as that stage of development presently allows. The Services, with the TRI–TAC Office, are continually developing and refining in-house unit cost estimates for the TRI–TAC programs for Budget Planning purposes. Unit cost estimates are first developed along with the postulation of a need during the initial planning process. These in-house cost estimates are refined through

engineering estimates based on similar designs or concepts and then are progressively refined as the specification is further defined in preparation for release to industry for bid. With each refinement these cost estimates become better management tools and are used for cost trade-off studies. All estimated costs will be further refined through the inclusion of Design to Unit Production Cost (DTUPC's) in development contracts.

Chairman McCLELLAN. Has all work stopped on tactical communications systems in the services that could be considered alternates to TRI–TAC equipments but which are not under the control of the TRI–TAC Office?

Dr. CURRIE. There are tactical communications programs that exist in the Services that could possibly be considered alternatives to TRI–TAC equipments, but generally these programs are so unique (i.e., very few users of very specific and highly specialized devices) that it is more efficient and cost effective to handle these programs as exceptions.

A number of other Service programs, some major in scope, have been cancelled or converted into Joint Programs under TRI–TAC management.

A continual review of Service research and development programs is conducted by the TRI–TAC Office to determine if program duplication will occur, or if there is a need for the establishment of a joint program to satisfy a tactical communication need common to the Services and DoD agencies.

Senator McCLELLAN. The TRI–TAC Office is a unique management experiment in that an OSD level office is directly involved in the planning, generation of specifications, configuration control, and in integrating and directing the individual service's efforts. This experiment offers the possibility of better coordination and utilization of DOD resources. In what other areas are OSD level offices with responsibilities similar to the TRI–TAC offices planned? In what other areas could such an office be organized?

Dr. CURRIE. There are presently no plans in the Telecommunications and Command and Control area for establishing any other TRI–TAC-like offices or organizations.

REQUIREMENTS FOR ALCM/SLCM

Chairman McCLELLAN. None of the DoD studies reviewed by GAO have identified a requirement for either the Air Force ALCM or the Navy's SLCM. What is the requirement for cruise missiles?

Dr. CURRIE. The principal requirements for cruise missiles are those of complementing the manned penetrating bomber by (a) increasing the mass of the attack, thereby diverting defenses, and (b) for bomber delivered cruise missiles reducing the bomber penetration distance. The DoD studies have measured the effectiveness of these concepts and found that effectiveness of the manned penetrating bomber is improved.

REMAINING LIFE OF B–52'S

Chairman McCLELLAN. The remaining useful life of the B–52's has not been definitely established and SAC does not plan to employ the ALCM with the B–1's. Studies have shown the ALCM used in a penetrating role is not competitive with a penetrating bomber. How does the Air Force plan to employ the ALCM?

Dr. CURRIE. As best as we can determine the service life of the B–52's should extend well into the 1990's. Even though SAC has no plans at this time to employ the ALCM with the B–1's, the ALCM is being designed to be compatible with the B–1. A penetrating force is more effective than a pure stand-off force with cruise missiles, but a mixed force which can selectively stand off or penetrate is the most effective. The Air Force plans to employ the ALCM initially internally carried in the B–52 as an aid to the penetrating bomber. As the threat increases, consideration will be given to external carriage of the longer range ALCM by the B–52 in a stand-off role. Ultimately some ALCMs may be carried internally by the B–1 to reduce penetration distance.

Chairman McCLELLAN. In view of potential performance limitations, would an ALCM be a cost effective addition to our airborne strategic deterrent?

Dr. CURRIE. I believe that the ALCM is cost effective with the present performance estimate. It is relatively low in cost since the carriers are already available, and it forces the defense to pay many times its costs to defend against it. There is also growth potential in the ALCM in regard to engines, fuels, and size for the extenrnal version if this is required.

Chairman McCLELLAN. Currently the Navy plans to carry some SLCMs on attack submarines. How would the attack submarines' present tactical mission be degraded when strategic SLCMs replace tactical weapons?

Dr. CURRIE. We do not believe the inclusion of some strategic SLCMs in the weapon load out of attack submarines will degrade their mission in any significant way.

Chairman McCLELLAN. Inconsistencies in the studies reporting the results of flight tests on the Terrain Contour Matching System (TERCOM) affect the credibility of flight test results and prevent a proper evaluation of TERCOM performance. Have the capabilities of TERCOM, which is critical to a successful cruise missile program, been fully evaluated and demonstrated?

Dr. CURRIE. The Cruise Missile Project has achieved a high degree of accuracy with Terrain Contour Matching (TERCOM) against flat terrain [deleted]. Two Navy contractors with different TERCOM equipment have both proved their ability to fix over relatively flat terrain. During their tests the contractors established the limit of terrain roughness. A computer program has been developed to test for terrain suitability before flight. Data to date indicates that the terrain selection computer program gives an accurate assessment of fix points suitability for TERCOM. This validation effort will continue in FY 76.

DEFENSE MAPPING AGENCY

Chairman McCLELLAN. Defense Mapping Agency needs to be furnished the number and location of the desired targets far in advance of the Cruise Missile IOC dates. To what extent has the Defense Mapping Agency been furnished this information? What are the DMA cost estimates for supporting this effort?

Dr. CURRIE. The Defense Mapping Agency (DMA) has prepared maps [deleted] showing those areas suitable for TERCOM. Using these maps it has been found that, [deleted]. The DMA maps also indicate that point to point navigation [deleted] will not be difficult. The number of [deleted] matrices, used in the TERCOM system, to be prepared will depend upon the number and location of the targets selected for possible cruise missile strike. The cost to prepare these matrices is estimated at about $2000 each. If 2000 to 10,000 matrices are required, then the cost projections would be $4–20 million.

AGILE AND CLAW MISSILES

Chairman McCLELLAN. The Navy's AGILE and the Air Force's CLAW missiles were planned to be the successors to the AIM–9L. Both programs, however, were terminated by Congress and the Services were instructed to develop a joint requirement and subsequently a joint missile for use by both Services. DoD instead proposed an alternative plan, which was approved by the Congress, for the development and testing of alternate advanced development hardware based on AGILE and CLAW technology. The objective of the approved DoD plan should be the development of a single most cost effective missile for use by both the Services. In this regard, what has DoD done to ensure that this objective is being achieved?

Dr. CURRIE. Mr. Chairman, the objective of our current plan is to obtain the information needed to determine the operational utility of off-boresight and forward acquisition functions, cost and technical aspects of a common short range air-to-air missile (SRAAM). We believe that the evaluation of various SRAAM seeker types on the Air Combat Maneuvering Ranges at Nellis and the development of technology hardware will provide a sound basis to determine these factors and their individual impact as pertains to a common SRAAM. The program is a joint effort with Navy having the lead on the ACMR evaluations and the Deputy Director Test and Evaluation (OSD) having overall cognizance for the ACMR evaluation effort. In summary, we intend to determine the characteristics of a common SRAAM and we believe the plan and our method of management will ensure the achievement of the objective.

AIM–9L

Chairman McCLELLAN. Since a successor to the AIM–9L is not planned for the future, what would be the advantages/disadvantages of continuing development of the AIM–9L to achieve the capabilities which AGILE technology would have provided?

Dr. CURRIE. Mr. Chairman, such action at this time does not appear necessary in view of our current plan for evaluation of seekers on the ACMR and the planned parallel technology hardware effort. It should be noted that much of the technology to be evaluated in our current plan to determine off-boresight utility is based on both the AIM-9L missile and the technology efforts which were pursued in the AGILE program.

QUESTIONS SUBMITTED BY SENATOR YOUNG

GROWTH VERSUS INFLATION INCREASES IN R. & D. BUDGET

Senator YOUNG. How much growth as opposed to inflation increase is included in the budget for research and development?

Dr. CURRIE. The amount of growth as opposed to inflation increase between the FY 1975 appropriation and the FY 1976 budget request for RDT&E is about $400-800 million. The inflation increase is something between $700 million and $1,000 million, depending upon the exact inflation factors used.

SOPHISTICATION OF WEAPONS SYSTEMS

Senator YOUNG. Has the Defense Department studied our weapons systems sophistication to determine when it would be prudent to develop weapons with less sophistication and cost?

Dr. CURRIE. Yes, we have studied this. It was as a result of such studies that we have adopted the "hi-lo" force mix concept. We no longer look at cost-effectiveness alone since we recognize that there are minimum forces that we must maintain. The A-10, PF, ACF and the Low Cost EW Suite are examples of defense systems where we thought it prudent to develop systems with lower sophistication and cost and as a result be able to afford more of them.

PERSONNEL ENGAGED IN R. & D. PROCESS

Senator YOUNG. The Defense Department is criticized for the number of people engaged in research and development, as well as for the number of laboratories and test facilities it operates. How many people are assigned, and how many laboratories and test facilities does the Department of Defense maintain?

Dr. CURRIE. During FY 1975, approximately 117,000 people are engaged in research and development activities in the Department of Defense; 110 laboratories and test facilities are maintained. In recent years, both RDT&E people and facilities have declined. This trend is expected to continue.

FEDERAL CONTRACT RESEARCH CENTERS

Senator YOUNG. How many Federal Contract Research Centers are to be funded in the budget? Please identify them for the committee.

Dr. CURRIE. There are nine Federal Contract Research Centers funded in the budget. They are The Aerospace Corporation, Analytic Services Inc. (ANSER), Applied Physics Laboratory (Johns Hopkins University), Applied Research Laboratory (Pennsylvania State University), Center for Naval Analyses (CNA), Institute for Defense Analyses (IDA), M.I.T. Lincoln Laboratory, MITRE Corporation, and Rand Corporation.

COLLEGES AND UNIVERSITIES RECEIVING R. & D. PROJECTS

Senator YOUNG. Please provide the Committee a list of colleges and universities receiving research and development projects and the associated funding for 1975.

Dr. CURRIE. The information you requested will not be available for FY 1975 until after the Fiscal Year is completed. I have provided this information for FY 1974 in the attached document.

[The information follows:]

EDUCATIONAL AND NONPROFIT INSTITUTIONS
RECEIVING PRIME CONTRACT AWARDS OF $10,000 OR MORE FOR
RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

DEPARTMENT OF DEFENSE PRIME CONTRACTS TOTALING $639 MILLION WERE AWARDED TO 366 EDUCATIONAL AND OTHER NONPROFIT INSTITUTIONS IN FISCAL YEAR 1974 FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK. OF THIS TOTAL, $625 MILLION WAS AWARDED TO 319 INSTITUTIONS IN THE UNITED STATES, $11 MILLION TO 12 U. S. GOVERNMENT AGENCIES, AND $3 MILLION TO 35 FOREIGN INSTITUTIONS AND GOVERNMENT AGENCIES. THESE FIGURES COMPARE WITH SIMILAR DATA FOR FISCAL YEAR 1973 AS FOLLOWS:

TYPE OF INSTITUTION	FISCAL YEAR 1973 NUMBER	FISCAL YEAR 1973 AMOUNT (MILLIONS)	FISCAL YEAR 1974 NUMBER	FISCAL YEAR 1974 AMOUNT (MILLIONS)
U. S INSTITUTIONS				
EDUCATIONAL	193	$350	191	$323
OTHER NONPROFIT	138	245	128	302
SUBTOTAL	331	595	319	625
U. S. GOVERNMENT AGENCIES	14	10	12	11
FOREIGN INSTITUTIONS AND GOVERNMENT AGENCIES	54	4	35	3
TOTAL	399	$609	366	$639

THERE ARE THREE SECTIONS TO THIS REPORT. THE FIRST SECTION LISTS 191 EDUCATIONAL AND 128 OTHER NONPROFIT INSTITUTIONS IN THE U. S. THE SECOND SECTION LISTS THE 12 U. S. GOVERNMENT AGENCIES, AND THE THIRD SECTION LISTS THE 35 FOREIGN INSTITUTIONS AND GOVERNMENT AGENCIES.

THE LOCATIONS SHOWN ARE THOSE WHERE THE WORK WAS EXPECTED TO BE PERFORMED. GENERALLY, THE LOCATION IS AN INSTITUTION'S LABORATORY OR OTHER FACILITY. HOWEVER, IF THE WORK WAS SCHEDULED TO BE PERFORMED AT A DEFENSE ACTIVITY, SUCH AS AN AIR FORCE BASE, THE LOCATION IS THE DEFENSE ACTIVITY RATHER THAN THE INSTITUTION'S FACILITY. THE DOLLAR AMOUNTS SHOWN INCLUDE ONLY CONTRACT AWARDS FOR RDT&E WORK. THEY EXCLUDE ANY OTHER SERVICES, SUCH AS TRAINING SERVICES, OR ANY SUPPLIES FURNISHED BY THESE CONTRACTORS.

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

RECEIVING MILITARY PRIME CONTRACTS OF $10,000 OR MORE FOR

RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
ACADEMY INTERSCIENCE METHODOLOGY		138 *
CHICAGO	ILLINOIS	138
AEROSPACE CORP		58,732 *
EL SEGUNDO	CALIFORNIA	58,584
LOS ANGELES	CALIFORNIA	148
AIRLIE FOUNDATION		18 *
WARRENTON	VIRGINIA	18
AKRON UNIVERSITY OF		75 *
AKRON	OHIO	75
ALABAMA A & M COLLEGE		55 *
NORMAL	ALABAMA	55
ALABAMA UNIVERSITY OF		676 *
BIRMINGHAM	ALABAMA	148
HUNTSVILLE	ALABAMA	411
UNIVERSITY	ALABAMA	117
ALASKA UNIVERSITY OF		2,181 *
BARROW VILLAGE	ALASKA	293
COLLEGE VILLAG	ALASKA	1,591
FAIRBANKS CITY	ALASKA	297
ALBUQUERQUE CITY OF		15 *
ALBUQUERQUE	NEW MEXICO	15
ALBUQUERQUE UNIVERSITY OF		28 *
ALBUQUERQUE	NEW MEXICO	28
AMERICAN DENTAL ASSOCIATION		57 *
CHICAGO	ILLINOIS	57
AMERICAN FOUNDATION BIOLOGICAL		108 *
ROCKVILLE	MARYLAND	108
AMERICAN INSTITUTE BIOLOGICAL		127 *
WASHINGTON	DC	127
AMERICAN INSTITUTE FOR RESEARCH		1,585 *
	KOREA	136
WASHINGTON	DC	318
BEDFORD	MASS	41
KENSINGTON	MARYLAND	502
SILVER SPRING	MARYLAND	588
AMERICAN MUSEUM OF NATL HISTORY		15 *
NEW YORK	NEW YORK	15
AMERICAN UNIVERSITY		1,172 *
WASHINGTON	DC	1,172
ANALYTIC SERVICES INC		2,897 *
FALLS CHURCH	VIRGINIA	2,897
ANDREWS UNIVERSITY		14 *
BERRIEN SPRING	MICHIGAN	14
ARIZONA STATE UNIVERSITY		88 *
TEMPE	ARIZONA	88
ARIZONA UNIVERSITY OF		2,226 *
IGLOO MARYS IG	ALASKA	105
TUCSON	ARIZONA	2,121
ARKANSAS UNIVERSITY OF		21 *
FAYETTEVILLE	ARKANSAS	21
ATHENS COLLEGE		89 *
ATHENS	ALABAMA	89
AUBURN RESEARCH FOUNDATION		15 *
AUBURN	ALABAMA	15
AUBURN UNIVERSITY		234 *
AUBURN	ALABAMA	234
BATTELLE MEMORIAL INSTITUTE		8,468 *
COLUMBUS	OHIO	7,853
RICHLAND	WASHINGTON	407
SEATTLE	WASHINGTON	70
LONG BEACH	CALIFORNIA	138
BAYLOR UNIVERSITY		387 *
HOUSTON	TEXAS	387
BEHAVIORAL TECHNOLOGY CONSUL INC		180 *
SILVER SPRING	MARYLAND	180
BETH ISRAEL HOSPITAL		30 *
NEW YORK	NEW YORK	30
BIOLOGICAL ABSTRACTS		95 *
PHILADELPHIA	PA	95
BISHOP COLLEGE		14 *
DALLAS	TEXAS	14
BLOOD RESEARCH INSTITUTE INC		65 *
BOSTON	MASS	65
BOSTON AREA ACADEMIC CONSORTIUM		97 *
BOSTON	MASS	97
BOSTON COLLEGE		1,381 *
CHESTNUT HILL	MASS	1,129
WESTON	MASS	253
BOSTON UNIVERSITY		181 *
BOSTON	MASS	181
BRIDGEPORT UNIVERSITY OF		22 *
BRIDGEPORT	CONN	22
BRIGHAM YOUNG UNIVERSITY		169 *
PROVO	UTAH	169
BROOKLYN POLYTECHNIC INSTITUTE OF		1,115 *
BROOKLYN	NEW YORK	1,100
FARMINGDALE	NEW YORK	15
BROWN UNIVERSITY		533 *
PROVIDENCE	RI	533
BRYN MAWR HOSPITAL		43 *
BRYN MAWR	PA	43
BUREAU OF SOCIAL SCIENCE RESEARCH		17 *
WASHINGTON	DC	17
CALIFORNIA INSTITUTE OF TECHNOLOGY		1,310 *
PASADENA	CALIFORNIA	1,310
CALIFORNIA STATE COLLEGE		35 *
HAYWARD	CALIFORNIA	35
CALIFORNIA STATE OF		59 *
BERKELEY	CALIFORNIA	59

- = MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

RECEIVING MILITARY PRIME CONTRACTS OF $10,000 OR MORE FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
CALIFORNIA STATE UNIVERSITY FOUND		24 *
LONG BEACH	CALIFORNIA	29
NORTHRIDGE	CALIFORNIA	18-
SAN JOSE	CALIFORNIA	13
CALIFORNIA UNIVERSITY OF		19,188 *
BERKELEY	CALIFORNIA	4,690
DAVIS	CALIFORNIA	262
EDWARDS AFB	CALIFORNIA	40
IRVINE	CALIFORNIA	585
LA JOLLA	CALIFORNIA	2,550
LOS ANGELES	CALIFORNIA	3,450
RIVERSIDE	CALIFORNIA	52
SAN DIEGO	CALIFORNIA	6,040
SAN FRANCISCO	CALIFORNIA	244
SANTA BARBARA	CALIFORNIA	368
SANTA CRUZ	CALIFORNIA	15
WRIGHT PATTERS	OHIO	980
CARNEGIE INSTITUTION OF WASHINGTON		25 *
WASHINGTON	DC	25
CARNEGIE MELLON UNIVERSITY		1,212 *
PITTSBURGH	PA	1,212
CASE WESTERN RESERVE UNIVERSITY		869 *
CLEVELAND	OHIO	869
CATHOLIC UNIVERSITY OF AMERICA		753 *
WASHINGTON	DC	753
CEDARS OF LEBANON HOSPITAL		55 *
MIAMI	FLORIDA	55
CENTER FOR APPLIED LINGUISTICS		117 *
ARLINGTON	VIRGINIA	117
CENTER FOR COMMUNICATION RESEARCH		26 *
ROCHESTER	NEW YORK	26
CHICAGO MEDICAL SCHOOL		16 *
CHICAGO	ILLINOIS	16
CHICAGO UNIVERSITY		868 *
CHICAGO	ILLINOIS	853
SEATTLE	WASHINGTON	15
CHILDRENS CANCER RESEARCH		125 *
BOSTON	MASS	125
CHILDRENS HOSPITAL RESEARCH FOUND		33 *
WASHINGTON	DC	33
CINCINNATI UNIVERSITY OF		781 *
CINCINNATI	OHIO	513
WRIGHT PATTERS	OHIO	268
CITY UNIVERSITY OF NEW YORK		184 *
NEW YORK	NEW YORK	184
CLARKSON COLLEGE OF TECHNOLOGY		189 *
POTSDAM	NEW YORK	189
CLEMSON UNIVERSITY		152 *
CLEMSON	SCAR	152
COCHISE COLLEGE		11 *
DOUGLAS	ARIZONA	11
COLORADO SCHOOL OF MINES		76 *
GOLDEN	COLORADO	76
COLORADO STATE UNIVERSITY		364 *
FORT COLLINS	COLORADO	364
COLORADO UNIVERSITY		578 *
BOULDER	COLORADO	506
DENVER	COLORADO	64
COLUMBIA UNIVERSITY		3,132 *
NEW YORK	NEW YORK	3,112
PALISADES	NEW YORK	20
CONNECTICUT UNIVERSITY OF		143 *
HARTFORD	CONN	60
STORRS	CONN	83
COORDINATING RESEARCH COUNCIL INC		52 *
NEW YORK	NEW YORK	52
CORNELL UNIVERSITY		1,194 *
ITHACA	NEW YORK	1,064
NEW YORK	NEW YORK	130
DARTMOUTH COLLEGE		84 *
HANOVER	NH	84
DAYTON UNIVERSITY OF		5,442 *
DAYTON	OHIO	2,183
WRIGHT PATTERS	OHIO	3,259
DELAWARE UNIVERSITY OF		168 *
NEWARK	DELAWARE	168
DENVER UNIVERSITY OF		1,471 *
DENVER	COLORADO	1,471
DEPARTMENT OF HEALTH & HOSPITL.INC		50 *
BOSTON	MASS	50
DETROIT UNIVERSITY OF		34 *
DETROIT	MICHIGAN	34
DRAPER CHARLES STARK LAB INC		77,795 *
CAMBRIDGE	MASS	77,795
DREXEL INSTITUTE OF TECHNOLOGY		203 *
PHILADELPHIA	PA	203
DUKE UNIVERSITY		619 *
DURHAM	NCAR	619
EAST JEFFERSON GENERAL HOSPITAL		10 *
METAIRIE	LOUISIANA	10
EASTMAN DENTAL DISPENSARY		16 *
ROCHESTER	NEW YORK	16
EDUCATIONAL TESTING SERVICE		229 *
PRINCETON	NEW JERSEY	229
EMMANUEL COLLEGE		380 *
BOSTON	MASS	365
LEXINGTON	MASS	15
EMORY UNIVERSITY		42 *
ATLANTA	GEORGIA	42
ENVIRONMENTAL R & D FOUNDATION		46 *
KANSAS CITY	MISSOURI	46

* = MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

RECEIVING MILITARY PRIME CONTRACTS OF $10,000 OR MORE FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
ENVIRONMENTAL RSCH INST OF MICH		1,585 *
ANN ARBOR	MICHIGAN	1,289
WILLOW RUN	MICHIGAN	176
YPSILANTI	MICHIGAN	120
FACTORY MUTUAL RESEARCH CORP		64 *
NORWOOD	MASS	64
FAR WEST LAB FOR EDUC RES & DEV		57 *
BERKELEY	CALIFORNIA	57
FELS RESEARCH INSTITUTE		25 *
YELLOW SPRINGS	OHIO	25
FISK UNIVERSITY		35 *
NASHVILLE	TENNESSEE	35
FLORIDA ATLANTIC UNIVERSITY		63 *
BOCA RATON	FLORIDA	63
FLORIDA INSTITUTE OF TECHNOLOGY		98 *
MELBOURNE	FLORIDA	98
FLORIDA STATE UNIVERSITY		346 *
TALLAHASSEE	FLORIDA	346
FLORIDA TECHNOLOGICAL UNIVERSITY		88 *
ORLANDO	FLORIDA	88
FLORIDA UNIVERSITY		1,943 *
EGLIN AFB	FLORIDA	29
GAINESVILLE	FLORIDA	1,914
FORD HENRY HOSPITAL		25 *
DETROIT	MICHIGAN	25
FRANKLIN INSTITUTE OF	PENNSYLVANIA	781 *
PHILADELPHIA	PA	781
GEOPHYSICAL INSTITUTE OF	ALASKA	724 *
COLLEGE VILLAG	ALASKA	724
GEORGE WASHINGTON UNIVERSITY		1,237 *
WASHINGTON	DC	1,237
GEORGETOWN UNIVERSITY		282 *
WASHINGTON	DC	282
GEORGIA INSTITUTE TECH		1,281 *
ATLANTA	GEORGIA	1,281
GEORGIA STATE COLLEGE		34 *
ATLANTA	GEORGIA	34
GEORGIA TECH RESEARCH INSTITUTE		1,618 *
ATLANTA	GEORGIA	1,618
GEORGIA UNIVERSITY OF		139 *
ATHENS	GEORGIA	139
GERMANTOWN LABORATORIES INC		137 *
CLVERSON	PA	80
PHILADELPHIA	PA	57
GULF UNIVERSITIES RESEARCH CORP		88 *
GALVESTON	TEXAS	88
HAHNEMANN MEDICAL COLLEGE & HOSPIT		129 *
PHILADELPHIA	PA	129
HARBOR GENERAL HOSPITAL		49 *
TORRANCE	CALIFORNIA	49
HARVARD UNIVERSITY		2,156 *
BOSTON	MASS	84
CAMBRIDGE	MASS	2,072
HASKIN LABORATORIES INC		110 *
NEW HAVEN	CONN	110
HAWAII UNIVERSITY OF		1,704 *
HONOLULU CITY	HAWAII	1,704
HEKTOEN INSTITUTE FOR MEDICAL RSCH		25 *
CHICAGO	ILLINOIS	25
HOUSTON UNIVERSITY OF		163 *
HOUSTON	TEXAS	163
HOWARD UNIVERSITY		68 *
WASHINGTON	DC	68
HUDSON INSTITUTE		1,340 *
CROTON ON HUDS	NEW YORK	1,340
HUMAN RESOURCES RESEARCH ORGN		3,924 *
ALEXANDRIA	VIRGINIA	3,863
COLUMBUS	GEORGIA	22
FORT BENNING	GEORGIA	39
I I T RESEARCH INSTITUTE		12,471 *
ANNAPOLIS	MARYLAND	7,639
CHICAGO	ILLINOIS	4,198
ROME	NEW YORK	405
WRIGHT PATTERS	OHIO	327
IDAHO UNIVERSITY OF		30 *
MOSCOW	IDAHO	30
ILLINOIS INSTITUTE TECHNOLOGY		58 *
CHICAGO	ILLINOIS	58
ILLINOIS UNIVERSITY OF		6,827 *
CHAMPAIGN	ILLINOIS	29
CHICAGO	ILLINOIS	223
URBANA	ILLINOIS	6,576
INDIANA UNIVERSITY		64 *
BLOOMINGTON	INDIANA	64
INDIANAPOLIS CTR FOR ADVANCE RSCH		28 *
INDIANAPOLIS	INDIANA	28
INSTITUTE FOR BEHAVIORAL RESEARCH		66 *
SILVER SPRING	MARYLAND	42
LAFAYETTE	INDIANA	24
INSTITUTE FOR DEFENSE ANALYSIS		12,212 *
WASHINGTON	DC	2,154
ARLINGTON	VIRGINIA	10,058
INSTITUTE FOR RESEARCH INC		75 *
STATE COLLEGE	PA	75
INSTITUTE OF ENVIRON MED & PHYSOC		54 *
SEATTLE	WASHINGTON	54
INSTITUTE OF PAPER CHEMICALS		45 *
APPLETON	WISCONSIN	45

- * MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

RECEIVING MILITARY PRIME CONTRACTS OF $10,000 OR MORE FOR RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
INTERNATIONAL ASSN POLICE CHIEFS		33 *
GAITHERSBURG	MARYLAND	33
IOWA STATE UNIV OF SCIENCE & TECH		87 *
AMES	IOWA	87
IOWA UNIVERSITY OF		513 *
IOWA CITY	IOWA	513
JERSEY CITY MEDICAL CENTER		17 *
JERSEY CITY	NEW JERSEY	17
JOHN CARROLL UNIVERSITY		40 *
CLEVELAND	OHIO	40
JOHNS HOPKINS UNIVERSITY		86,184 *
BALTIMORE	MARYLAND	1,159
SCAGGSVILLE	MARYLAND	78,728
SILVER SPRING	MARYLAND	6,217
KANSAS STATE UNIVERSITY OF AGR		53 *
MANHATTAN	KANSAS	53
KANSAS UNIVERSITY OF		136 *
LAWRENCE	KANSAS	136
KENTUCKY RESEARCH FOUNDATION		58 *
LEXINGTON	KENTUCKY	58
KENTUCKY UNIVERSITY OF		265 *
LEXINGTON	KENTUCKY	265
LAB FOR COMPARATIVE BIOCHEMISTRY		11 *
SAN DIEGO	CALIFORNIA	11
LEHIGH UNIVERSITY		391 *
BEAUFORT	NCAR	17
BETHLEHEM	PA	374
LENOX HILL HOSPITAL		28 *
NEW YORK	NEW YORK	28
LIGHTNING & TRANSIENTS RESRCH INST		24 *
ST PAUL	MINNESOTA	24
LOGISTICS MANAGEMENT INSTITUTE		120 *
WASHINGTON	DC	41
SEVERNA PARK	MARYLAND	79
LONG BEACH STATE COLLEGE FOUND		58 *
LONG BEACH	CALIFORNIA	53
LOS ANGELES STATE COLLEGE		25 *
LOS ANGELES	CALIFORNIA	25
LOUISIANA STATE UNIVERSITY OF		670 *
BATON ROUGE	LOUISIANA	509
NEW ORLEANS	LOUISIANA	161
LOUISVILLE UNIVERSITY OF		107 *
LOUISVILLE	KENTUCKY	107
LOVELACE FOUNDATION		461 *
ALBUQUERQUE	NEW MEXICO	461
LOWELL TECH INSTITUTE		184 *
LOWELL	MASS	184
LOYOLA UNIVERSITY		51 *
CHICAGO	ILLINOIS	29
HINES	ILLINOIS	22
MAINE UNIVERSITY OF		11 *
ORONO	MAINE	11
MARYLAND UNIVERSITY OF		1,960 *
BALTIMORE	MARYLAND	884
COLLEGE PARK	MARYLAND	1,076
MASSACHUSETTS COLLEGE OF PHARMACY		56 *
BOSTON	MASS	56
MASSACHUSETTS GENERAL HOSPITAL		50 *
BOSTON	MASS	50
MASSACHUSETTS HEALTH RSCH INST INC		11 *
BOSTON	MASS	11
MASSACHUSETTS INSTITUTE TECHNOLOGY		79,162 *
CAMBRIDGE	MASS	7,646
LEXINGTON	MASS	71,516
MASSACHUSETTS UNIVERSITY OF		317 *
AMHERST	MASS	285
BOSTON	MASS	32
MAYO FOUNDATION		86 *
ROCHESTER	MINNESOTA	86
MEDICAL COLLEGE OF GEORGIA		25 *
AUGUSTA	GEORGIA	25
MEDICAL COLLEGE OF SOUTH CAROLINA		14 *
CHARLESTON	SCAR	14
MEDICAL COLLEGE OF VIRGINIA		91 *
RICHMOND	VIRGINIA	91
MEDICAL COLLEGE OF WISCONSIN		72 *
MILWAUKEE	WISCONSIN	72
MEDICAL RESEARCH FOUNDATION		15 *
BEAVERTON	OREGON	15
MEMPHIS STATE UNIVERSITY		548 *
MEMPHIS	TENNESSEE	548
METAL PROPERTIES COUNCIL INC		41 *
HELLERTOWN	PA	41
MIAMI UNIVERSITY		178 *
OXFORD	OHIO	38
WRIGHT PATTERS	OHIO	140
MIAMI UNIVERSITY OF		1,551 *
CORAL GABLES	FLORIDA	1,224
MIAMI	FLORIDA	327
MICHIGAN STATE DEPT MENTAL HEALTH		35 *
KALAMAZOO	MICHIGAN	35
MICHIGAN STATE UNIVERSITY		208 *
EAST LANSING	MICHIGAN	208
MICHIGAN TECHNOLOGICAL UNIVERSITY		196 *
HOUGHTON	MICHIGAN	196
MICHIGAN UNIVERSITY OF		3,581 *
ANN ARBOR	MICHIGAN	3,537
WILLOW RUN	MICHIGAN	44
MIDWEST RESEARCH INSTITUTE		1,595 *
KANSAS CITY	MISSOURI	1,475
WRIGHT PATTERS	OHIO	120

- = MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

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FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
MILITARY OPERATIONS RESEARCH SOC		42 *
ALEXANDRIA	VIRGINIA	42
MINNESOTA UNIVERSITY OF		728 *
DULUTH	MINNESOTA	88
MINNEAPOLIS	MINNESOTA	640
MISSISSIPPI STATE UNIVERSITY		53 *
STATE COLLEGE	MISS	53
MISSISSIPPI UNIVERSITY OF		71 *
UNIVERSITY	MISS	71
MISSISSIPPI VALLEY STATE COLLEGE		61 *
ITTA BENA	MISS	61
MISSOURI UNIVERSITY OF		795 *
COLUMBIA	MISSOURI	237
KANSAS CITY	MISSOURI	319
ROLLA	MISSOURI	239
MITRE CORP		46,823 *
WASHINGTON	DC	16
BEDFORD	MASS	48,353
MCLEAN	VIRGINIA	5,654
MONTANA STATE UNIVERSITY		38 *
BOZEMAN	MONTANA	38
MONTANA UNIVERSITY OF		23 *
MISSOULA	MONTANA	23
MONTEFIORE HOSPITAL MEDICAL CENTER		58 *
NEW YORK	NEW YORK	58
MOUNT SINAI HOSPITAL		57 *
MIAMI BEACH	FLORIDA	44
NEW YORK	NEW YORK	13
MOUNT SINAI MEDICAL CENTER		24 *
MILWAUKEE	WISCONSIN	24
NARCOTIC & DRUG RESEARCH INC		18 *
ALBANY	NEW YORK	18
NATIONAL STRATEGY INFO CENTER INC		84 *
NEW YORK	NEW YORK	84
NEBRASKA UNIVERSITY OF		53 *
LINCOLN	NEBRASKA	21
OMAHA	NEBRASKA	32
NEVADA UNIVERSITY OF		212 *
RENO	NEVADA	212
NEW BRITAIN GENERAL HOSPITAL		88 *
NEW BRITAIN	CONN	88
NEW ENGLAND INSTITUTE MEDICAL RSCH		65 *
RIDGEFIELD	CONN	65
NEW ENGLAND MEDICAL CENTER HOSPITL		78 *
BOSTON	MASS	78
NEW HAMPSHIRE UNIVERSITY OF		99 *
DURHAM	NH	99
NEW MEXICO INSTITUTE MINING & TECH		1,899 *
SOCORRO	NEW MEXICO	1,899
NEW MEXICO STATE UNIVERSITY		4,148 *
HOLLOMAN AFB	NEW MEXICO	26
LAS CRUCES	NEW MEXICO	2,109
UNIVERSITY PAR	NEW MEXICO	415
WHITE SANDS MS	NEW MEXICO	1,598
NEW MEXICO UNIVERSITY OF		1,965 *
ALBUQUERQUE	NEW MEXICO	1,965
NEW YORK MEDICAL COLLEGE		92 *
NEW YORK	NEW YORK	92
NEW YORK STATE UNIV RESEARCH FOUND		691 *
ALBANY	NEW YORK	307
BUFFALO	NEW YORK	281
NEW YORK	NEW YORK	25
PLATTSBURGH	NEW YORK	22
STONY BROOK	NEW YORK	56
NEW YORK STATE UNIVERSITY OF		179 *
ALBANY	NEW YORK	40
BUFFALO	NEW YORK	55
NEW YORK	NEW YORK	84
NEW YORK UNIVERSITY		921 *
BRONX	NEW YORK	75
NEW YORK	NEW YORK	768
UNIVERSITY HTG	NEW YORK	78
NEW YORK ZOOLOGICAL SOCIETY		10 *
BROOKLYN	NEW YORK	10
NORTH CAROLINA STATE UNIVERSITY		143 *
RALEIGH	NCAR	143
NORTH CAROLINA UNIVERSITY OF		564 *
CHAPEL HILL	NCAR	514
WILMINGTON	NCAR	50
NORTH CENTRAL ASSOC OF COLLEGES		12 *
CHICAGO	ILLINOIS	12
NORTH DAKOTA UNIVERSITY OF		38 *
GRAND FORKS	NDAK	38
NORTH STAR RESEARCH & DEV INSTI		75 *
MINNEAPOLIS	MINNESOTA	75
NORTHEASTERN UNIVERSITY		865 *
BOSTON	MASS	865
NORTHWEST REGIONAL EDUCATIONAL LAB		77 *
PORTLAND	OREGON	77
NORTHWESTERN UNIVERSITY		403 *
CHICAGO	ILLINOIS	27
EVANSTON	ILLINOIS	376
NOTRE DAME UNIVERSITY OF		256 *
NOTRE DAME	INDIANA	256
NOVA UNIVERSITY OF ADVANCED TECH		178 *
FORT LAUDERDAL	FLORIDA	178
NUMERICAL CONTROL SERVICES ENGR CO		45 *
DAYTON	OHIO	45

- = MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

RECEIVING MILITARY PRIME CONTRACTS OF $10,000 OR MORE FOR

RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
OCEAN ATMOSPHERE RESEARCH INSTITUT		41 *
CAMBRIDGE	MASS	41
OHIO STATE UNIV RESERCH FOUNDATION		1,778 *
COLUMBUS	OHIO	1,778
OHIO STATE UNIVERSITY THE		194 *
COLUMBUS	OHIO	194
OHIO UNIVERSITY		72 *
ATHENS	OHIO	72
OKLAHOMA MEDICAL RESEARCH FOUNDATN		175 *
OKLAHOMA CITY	OKLAHOMA	175
OKLAHOMA STATE UNIVERSITY OF		1,468 *
EGLIN AFB	FLORIDA	703
STILLWATER	OKLAHOMA	765
OKLAHOMA UNIVERSITY OF		72 *
NORMAN	OKLAHOMA	72
OLD DOMINION COLLEGE		25 *
NORFOLK	VIRGINIA	25
OREGON GRADUATE CTR FOR STUDY RES		159 *
BEAVERTON	OREGON	98
ST PAUL	OREGON	65
OREGON RESEARCH INSTITUTE		59 *
EUGENE	OREGON	59
OREGON STATE OF		15 *
CORVALLIS	OREGON	15
OREGON STATE UNIVERSITY		1,038 *
CORVALLIS	OREGON	1,038
OREGON UNIVERSITY OF		308 *
EUGENE	OREGON	125
PORTLAND	OREGON	183
PALISADES GEOPHYSICAL INSTITUTE		2,108 *
ROOSEVELT	NEW YORK	917
MIAMI	FLORIDA	1,191
PALISADES INSTITUTE		200 *
NEW YORK	NEW YORK	200
PAN AMERICAN HEALTH ORGANIZATION		80 *
WASHINGTON	DC	80
PASADENA FOUNDATION MEDICAL RSCH		75 *
PASADENA	CALIFORNIA	75
PENNSYLVANIA HOSPITAL CONTRIBUTORS		88 *
PHILADELPHIA	PA	88
PENNSYLVANIA STATE UNIVERSITY		8,084 *
UNIVERSITY PAR	PA	8,084
PENNSYLVANIA UNIVERSITY OF		1,811 *
PHILADELPHIA	PA	1,811
PENSACOLA JUNIOR COLLEGE		50 *
PENSACOLA	FLORIDA	50
PETER BENT BRIGHAM HOSPITAL		31 *
BOSTON	MASS	31
PHILADELPHIA GENERAL HOSPITAL		59 *
PHILADELPHIA	PA	59
PITTSBURGH UNIVERSITY OF		316 *
PITTSBURGH	PA	316
PRINCETON UNIVERSITY		1,554 *
PRINCETON	NEW JERSEY	1,554
PUBLIC HEALTH RESEARCH INSTITUTE		50 *
NEW YORK	NEW YORK	50
PURDUE RESEARCH FOUNDATION		1,672 *
LAFAYETTE	INDIANA	950
WEST LAFAYETTE	INDIANA	722
PURDUE UNIVERSITY		35 *
LAFAYETTE	INDIANA	35
QUEENS HOSPITAL MEDICAL CENTER		132 *
HONOLULU CITY	HAWAII	132
RANCHO LOS AMIGOS HOSPITAL		17 *
DOWNEY	CALIFORNIA	17
RAND CORP		15,507 *
SANTA MONICA	CALIFORNIA	15,507
REED COLLEGE		49 *
PORTLAND	OREGON	49
REGIS COLLEGE		265 *
WESTON	MASS	265
RENSSELAER POLYTECHNIC INSTITUTE		746 *
TROY	NEW YORK	746
RESEARCH TRIANGLE INSTITUTE		865 *
TRIANGLE PARK	NCAR	865
RHODE ISLAND UNIVERSITY OF		389 *
KINGSTON	RI	389
RICE UNIVERSITY		146 *
HOUSTON	TEXAS	146
RIVERSIDE RESEARCH INSTITUTE		3,585 *
NEW YORK	NEW YORK	3,585
ROCHESTER INSTITUTE OF TECHNOLOGY		30 *
ROCHESTER	NEW YORK	30
ROCHESTER UNIVERSITY OF		9,791 *
ARLINGTON	VIRGINIA	8,114
ROCHESTER	NEW YORK	1,677
RUTGERS UNIVERSITY		147 *
NEW BRUNSWICK	NEW JERSEY	147
SAINT JOSEPHS COLLEGE		30 *
PHILADELPHIA	PA	30
SAINT LOUIS UNIVERSITY		375 *
CAHOKIA	ILLINOIS	217
ST LOUIS	MISSOURI	158
SAINT LUKES HOSPITAL CENTER		102 *
MILWAUKEE	WISCONSIN	32
JOLIET	ILLINOIS	70

- = MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

RECEIVING MILITARY PRIME CONTRACTS OF $10,000 OR MORE FOR

RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
SAN DIEGO STATE COLLEGE FOUNDATION		727 *
SAN DIEGO	CALIFORNIA	727
SANTA CLARA UNIVERSITY OF		24 *
SANTA CLARA	CALIFORNIA	24
SCRIPPS CLINIC RESEARCH		116 *
LA JOLLA	CALIFORNIA	116
SEATTLE UNIVERSITY		25 *
SEATTLE	WASHINGTON	25
SOCIETY OF AUTOMOTIVE ENGINEERS		20-*
NEW YORK	NEW YORK	20-
SOUTH CAROLINA UNIVERSITY OF		171 *
CHARLESTON	SCAR	54
COLUMBIA	SCAR	117
SOUTH DAKOTA SCHOOL OF MINES TECH		13 *
RAPID CITY	SDAK	13
SOUTH DAKOTA STATE UNIVERSITY		23 *
BROOKINGS	SDAK	23
SOUTH DAKOTA UNIVERSITY OF		14 *
VERMILLION	SDAK	14
SOUTH FLORIDA UNIVERSITY OF		181 *
ST PETERSBURG	FLORIDA	89
TAMPA	FLORIDA	92
SOUTHERN CALIFORNIA UNIVERSITY OF		5,493 *
EDWARDS	CALIFORNIA	669
LOS ANGELES	CALIFORNIA	4,824
SOUTHERN METHODIST UNIVERSITY OF		335 *
DALLAS	TEXAS	335
SOUTHERN RESEARCH INSTITUTE		881 *
BIRMINGHAM	ALABAMA	881
SOUTHERN UNIVERSITY & A & M COL		31 *
BATON ROUGE	LOUISIANA	31
SOUTHWEST FOUNDATION FOR RESEARC		18 *
SAN ANTONIO	TEXAS	18
SOUTHWEST RESEARCH INSTITUTE		3,863 *
RIVER OAKS	TEXAS	100
SAN ANTONIO	TEXAS	3,763
SOUTHWEST TRAINING CORP		12 *
WASHINGTON	DC	12
SPEECH COMMUNICATIONS RESEARCH LAB		476 *
SANTA BARBARA	CALIFORNIA	476
STANFORD RESEARCH INSTITUTE		25,592 *
ARLINGTON	VIRGINIA	66
CHATANIKA	ALASKA	547
FORT POLK	LOUISIANA	66
HUNTSVILLE	ALABAMA	1,667
MENLO PARK	CALIFORNIA	23,064
STANFORD	CALIFORNIA	188
STANFORD UNIVERSITY		6,607 *
MENLO PARK	CALIFORNIA	30
STANFORD	CALIFORNIA	6,577
STERLING INSTITUTE		139 *
WASHINGTON	DC	139
STEVENS INSTITUTE OF TECHNOLOGY		848 *
HOBOKEN	NEW JERSEY	848
SYRACUSE UNIVERSITY		1,023 *
GRIFFISS AFB	NEW YORK	103
ROME	NEW YORK	25
SYRACUSE	NEW YORK	895
SYRACUSE UNIVERSITY RESEARCH CORP		1,060 *
SYRACUSE	NEW YORK	1,060
TEMPLE UNIVERSITY		129 *
PHILADELPHIA	PA	129
TENNESSEE TECHNOLOGICAL UNIVERSITY		35 *
COOKEVILLE	TENNESSEE	35
TENNESSEE UNIVERSITY OF		493 *
KNOXVILLE	TENNESSEE	419
TULLAHOMA	TENNESSEE	74
TEXAS A & M RESEARCH FOUNDATION		728 *
COLLEGE STATIO	TEXAS	728
TEXAS A & M UNIVERSITY		480 *
COLLEGE STATIO	TEXAS	480
TEXAS CHRISTIAN UNIVERSITY		81 *
FORT WORTH	TEXAS	81
TEXAS INSTITUTE FOR REHAB & RSCH		125 *
HOUSTON	TEXAS	125
TEXAS TECHNOLOGICAL COLLEGE		142 *
LUBBOCK	TEXAS	142
TEXAS UNIVERSITY OF		9,033 *
AUSTIN	TEXAS	8,332
DALLAS	TEXAS	125
EL PASO	TEXAS	278
GALVESTON	TEXAS	97
RICHARDSON	TEXAS	60
SAN ANTONIO	TEXAS	149
TRUSTEES OF HEALTH & HOSPITALS INC		48 *
BOSTON	MASS	48
TUFTS UNIVERSITY		301 *
BOSTON	MASS	101
MEDFORD	MASS	200
TULANE UNIVERSITY OF LOUISIANA		174 *
NEW ORLEANS	LOUISIANA	174
TUSKEGEE INSTITUTE		25 *
TUSKEGEE	ALABAMA	25
UNDERSEA MEDICAL SOCIETY INC		36 *
BETHESDA	MARYLAND	36
UNION COLLEGE & UNIVERSITY		12 *
SCHENECTADY	NEW YORK	12
UNIVERSITY CITY SCIENCE CENTER		310 *
PHILADELPHIA	PA	310
UNIVERSITY HOSPITAL INC		57 *
BOSTON	MASS	57

- * MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

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RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART I - U.S. INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
UTAH STATE UNIVERSITY		2,998 *
BEDFORD	MASS	63
LOGAN	UTAH	2,933
UTAH UNIVERSITY OF		1,536 *
DUGWAY	UTAH	1,146
SALT LAKE CITY	UTAH	390
VANDERBILT UNIVERSITY		219 *
NASHVILLE	TENNESSEE	219
VERMONT UNIV OF & STATE AGRIC COLL		10 *
BURLINGTON	VERMONT	10
VILLANOVA UNIVERSITY		15 *
VILLANOVA	PA	15
VIRGINIA COMMONWEALTH UNIVERSITY		98 *
RICHMOND	VIRGINIA	98
VIRGINIA MASON RESEARCH CENTER		56 *
SEATTLE	WASHINGTON	56
VIRGINIA POLYTECHNIC INSTITUTE		282 *
BLACKSBURG	VIRGINIA	282
VIRGINIA STATE COLLEGE		30 *
PETERSBURG	VIRGINIA	30
VIRGINIA UNIVERSITY OF		368 *
CHARLOTTESVILL	VIRGINIA	368
WAKE FOREST UNIVERSITY		35 *
WINSTON SALEM	NCAR	35
WASHINGTON STATE UNIVERSITY		57 *
PULLMAN	WASHINGTON	57
WASHINGTON UNIVERSITY		188 *
ST LOUIS	MISSOURI	188
WASHINGTON UNIVERSITY OF		4,205 *
SEATTLE	WASHINGTON	4,205
WAYNE STATE UNIVERSITY		154 *
DETROIT	MICHIGAN	154
WEBB INSTITUTE OF NAVAL ARCH		17 *
GLEN COVE	NEW YORK	17
WENTWORTH INSTITUTE		937 *
BOSTON	MASS	937
WEST VIRGINIA UNIVERSITY		148 *
MORGANTOWN	WVA	148
WESTERN PENNSYLVANIA HOSPITAL		29 *
PITTSBURGH	PA	29
WILLIAMS COLLEGE		25 *
WILLIAMSTOWN	MASS	25
WISCONSIN UNIVERSITY OF		2,888 *
MADISON	WISCONSIN	2,888
MILWAUKEE	WISCONSIN	88
WOODS HOLE OCEANOGRAPHIC INST		5,847 *
WOODS HOLE	MASS	5,847
WORCESTER POLYTECHNIC INSTITUTE		54 *
WORCESTER	MASS	54
WRIGHT STATE UNIVERSITY		11 *
DAYTON	OHIO	11
WYOMING UNIVERSITY OF		285 *
LARAMIE	WYOMING	285
YALE UNIVERSITY		1,203 *
NEW HAVEN	CONN	1,203
YESHIVA UNIVERSITY		334 *
BRONX	NEW YORK	80
NEW YORK	NEW YORK	254
		624,911

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RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART II - U.S. GOVERNMENT AGENCIES

NAME OF CONTRACTOR AND LOCATION		THOUSANDS OF DOLLARS
GORGAS MEMORIAL INSTITUTE OF TROPI		212 *
	CANAL ZONE	15
WASHINGTON	DC	197
NATIONAL ACADEMY OF SCIENCES		3,288 *
	VIETNAM	228
WASHINGTON	DC	2,838
ABERDEEN PROV	MARYLAND	99
EDGEWOOD	MARYLAND	15
DOVER	NEW JERSEY	36
NATIONAL SCIENCE FOUNDATION		18 *
WASHINGTON	DC	18
SMITHSONIAN INSTITUTION		807 *
WASHINGTON	DC	773
CAMBRIDGE	MASS	34
UNITED STATES AGRICULTURE DEPT		18 *
MADISON	WISCONSIN	18
UNITED STATES ATOMIC ENERGY COMM		2,495 *
WASHINGTON	DC	84
ALBUQUERQUE	NEW MEXICO	65
LAS VEGAS	NEVADA	357
ARGONNE	ILLINOIS	136
BERKELEY	CALIFORNIA	24
OAK RIDGE	TENNESSEE	558
OAKLAND	CALIFORNIA	1,231
UNITED STATES COMMERCE DEPT		1,888 *
WASHINGTON	DC .	1,842
BOULDER	COLORADO	587
GAITHERSBURG	MARYLAND	111
ROCKVILLE	MARYLAND	15
LA JOLLA	CALIFORNIA	133
UNITED STATES H E W DEPT		22 *
BERKELEY	CALIFORNIA	22
UNITED STATES INTERIOR DEPT		69 *
WASHINGTON	DC	54
PITTSBURGH	PA	15
UNITED STATES NATL AERO SPACE AGY		1,747 *
RIDGELEY	WVA	1,497
MOFFETT FIELD	CALIFORNIA	120
PASADENA	CALIFORNIA	130
UNITED STATES SMALL BUSINESS ADMIN		150 *
ALEXANDRIA	VIRGINIA	60
NEW YORK	NEW YORK	90
UNITED STATES TRANSPORTATION DEPT		115 *
ATLANTIC CITY	NEW JERSEY	115
		10,613

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DEPARTMENT OF DEFENSE

EDUCATIONAL AND NON-PROFIT INSTITUTIONS

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RESEARCH, DEVELOPMENT, TEST AND EVALUATION WORK

FISCAL YEAR 1974

PART III - FOREIGN INSTITUTIONS

NAME OF CONTRACTOR AND LOCATION	THOUSANDS OF DOLLARS
AGOUZA SERUM & VACCINE INSTITUTE UAR	985 * 985
AIN SHAMS UNIVERSITY MED SCHOOL UAR	131 * 131
ALEXANDRIA UNIVERSITY OF UAR	148 * 148
ARCTIC INSTITUTE OF NORTH AMERICA WASHINGTON DC	42 * 42
BELFAST UNIVERSITY UN KINGDOM	28 * 28
BRASILIA UNIVERSITY OF BRAZIL	68 * 68
BRISTOL UNIVERSITY OF UN KINGDOM	38 * 38
BRITISH COLUMBIA UNIVERSITY OF CANADA	66 * 66
CAIRO AMERICAN COLLEGE UAR	408 * 408
CALGARY UNIVERSITY OF CANADA	19 * 19
CAMBRIDGE UNIVERSITY OF UN KINGDOM	18 * 18
CATTEDRA DI EMATOLOGIA ITALY	42 * 42
CONSEJO NACIONAL INVEST CIENTIFICA ARGENTINA	14 * 14
FULMER RESEARCH INSTITUTE UN KINGDOM	11 * 11
GEOPHYSIQUES ET SPATIALES ASSN FOR FRANCE	38 * 38
HEBREW UNIVERSITY ISRAEL	37 * 37
INNSBRUCK UNIVERSITY OF AUSTRIA	23 * 23
LIVERPOOL SCHOOL OF TROPICAL MED UN KINGDOM	34 * 34
MANCHESTER UNIVERSITY UN KINGDOM	38 * 38
MANITOBA UNIVERSITY OF CANADA	12 * 12
MELBOURNE UNIVERSITY OF AUSTRALIA	34 * 34
NORWEGIAN DEFENSE RESEARCH ESTABMT NORWAY	38-* 38-
NOTTINGHAM UNIVERSITY OF UN KINGDOM	14 * 14
ROYAL NORWEGIAN CNCL SCNTFC IND RS NORWAY	867 * 867
SALFORD UNIVERSITY OF UN KINGDOM	27 * 27
SASKATCHEWAN UNIVERSITY CANADA	134 * 134
SHIRLEY INSTITUTE UN KINGDOM	11 * 11
SIMON FRASER UNIVERSITY CANADA	58 * 58
SOUTHAMPTON UNIVERSITY OF UN KINGDOM	28 * 28
STANDAROS INSTITUTION OF ISRAEL ISRAEL	62 * 62
TECHNION RESEARCH FOUNDATION ISRAEL	11 * 11
TEL AVIV UNIVERSITY ISRAEL	25 * 25
TORONTO UNIVERSITY OF CANADA	25 * 25
VON KARMAN INSTITUTE FOR FLUID DYN BELGIUM	15 * 15
WEIZMANN INSTITUTE OF SCIENCE ISRAEL	27 * 27
	3,452

- * MINUS AMOUNT (CANCELLATIONS EXCEED NEW AWARDS)

Future Research Developments

Senator Young. How much of the funds requested for fiscal year 1976 will be for pure research aimed at developments of the future?

Dr. Currie. Approximately $4 billion. This is what we refer to as Group One and supports literally thousands of individual projects for technological options which may be useful for future military capabilities.

Specific Military Hardware Development

Senator Young. How much of the budget request will be for development of specific military hardware?

Dr. Currie. This represents an investment of about $6 billion. This is what we refer to as Group Two, as opposed to Group One, and consists of only a few hundred programs for full-scale system development for potential deployment.

R. & D. Supporting Establishment

Senator Young. How much of the funds in the budget will be used to maintain the research and development supporting establishment?

Dr. Currie. This amounts to approximately $1.4 billion and is being maintained at about a constant effort level. This management and support category supports and cuts across both Group One, creation and demonstration of options, and Group Two, full-scale system development. This category includes efforts directed toward support of installations or operations required for use in general research and development such as operation and support of test ranges and operation and support of test aircraft and ships.

Defense Technology Level Comparisons

Senator Young. How do you rate our level of technology for defense as compared to Russia, China and other nations of the world?

Dr. Currie. On balance, we lead the Soviet Union overall in defense technologies where we have chosen to compete. Our leads are particularly strong in areas which are jointly supported by both military needs and a strong commercial market, such as aircraft, jet engines, and computer-related technologies. We have excellent leads in areas where DoD has chosen to advance rapidly on its own—air-to-air missiles, airborne radar, precision guided munitions, and space technology. We have maintained, and in some instances increased, these leads despite the advantages that our open society gives to Soviet intelligence. The Soviets lead us in some areas where they have made a major effort to advance, where we do not have a strong commercial market, and where we are, by choice, not competing or have not competed in the past—chemical warfare technologies and deployed anti-ship missiles, for example. It is important to recognize, however, that simple lead or lag comparisons do not tell the whole story. There are some instances where, although we lead the Soviets today, their rate of advance may be greater than our own and they will catch up with us in the near future—offensive strategic missile technology is in this category. Finally, there are a number of cases where a lead or lag comparison is not meaningful, either because we and the Soviets have chosen to emphasize different objectives for technological advance—submarine quieting and propulsion, and electronic warfare—or because we simply do not have sufficient intelligence data to make a definitive comparison.

I believe that we lead the People's Republic of China by several years in all areas of military technology for which we have data to make comparisons. For many years, the PRC relied on imports of Soviet military hardware and technical expertise, and what they obtained frequently did not represent the Soviets' best technology. Although they appear to have recognized the need for more advanced military technology after the Korean action, their efforts to get started were hindered by internal conflicts. We now see the PRC beginning to achieve their own capabilities to develop advanced technology into military systems—ballistic missiles, submarines, and aircraft, for example. We are concerned that their current rate of advance is being helped by transfer of advanced technology from Western Europe and Japan, but not to the extent that we believe they might catch up with us in any important areas within the next few years.

With regard to the other developed nations—particularly the Western European countries and Japan—a lead-or-lag comparison is not generally meaningful because we exchange many technological advances with them. It is more accurate to say that the U.S. sets the pace and establishes technological quality standards for these nations in most areas of defense technology. Their high-technology products are often quite competitive with our own, and we frequently use them as components of our own weapon systems.

SUBCOMMITTEE RECESS

Senator INOUYE. Without objection, this subcommittee will stand in recess until 10 o'clock tomorrow morning.

We will meet in room 1223, at which time we will hear from the Secretary of the Navy and Chief of Naval Operations, and the Commandant of the Marine Corps.

[Whereupon, at 4 p.m. Tuesday, February 25, the subcommittee was recessed, to reconvene at 10 a.m., Thursday, February 27.]

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1976

MONDAY, MARCH 10, 1975

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

The subcommittee met at 10 a.m. in room 1223, Everett McKinley Dirksen Office Building, Hon. Milton R. Young presiding.

Present: Senators Young and Hruska.

DEPARTMENT OF DEFENSE

DEFENSE AGENCIES

STATEMENT OF DAVID O. COOKE, DEPUTY ASSISTANT SECRETARY OF DEFENSE (ADMINISTRATION)

ACCOMPANIED BY:

CARL W. FISHER, DIRECTOR OF BUDGET AND FINANCE, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (ADMINISTRATION)

MARK C. SNYDER, CHIEF, BUDGET BRANCH, BUDGET AND FINANCE DIRECTORATE, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (ADMINISTRATION)

RALPH G. NESTOR, CHIEF, FINANCIAL MANAGEMENT BRANCH, DIRECTORATE OF ADMINISTRATIVE SERVICES, ORGANIZATION OF THE JOINT CHIEFS OF STAFF

JOHN C. BROGER, DIRECTOR, OFFICE OF INFORMATION FOR THE ARMED FORCES, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (MANPOWER AND RESERVE AFFAIRS)

DR. ANTHONY CARDINALE, DIRECTOR, OFFICE OF OVERSEAS DEPENDENTS EDUCATION, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (MANPOWER AND RESERVE AFFAIRS)

VERNON McKENZIE, PRINCIPAL DEPUTY ASSISTANT SECRETARY OF DEFENSE (HEALTH AND ENVIRONMENT)

BUDGET REQUEST

Senator YOUNG. The subcommittee will come to order.

This morning the subcommittee will receive testimony in support

of fiscal year 1976 budget requests for various agencies of the Department of Defense.

Before we begin receiving testimony, I think general material relating to the defense agencies should be inserted in the record. This material has been taken from the budget justifications.

[The information follows:]

PROCUREMENT, DEFENSE AGENCIES

For expenses of activities and agencies of the Department of Defense (other than the military departments and the Defense Civil Preparedness Agency) necessary for procurement, production, and modification of equipment, supplies materials, and spare parts therefor, not otherwise provided for; purchase of [three hundred and eighty-six] *five hundred and four* pasenger motor vehicles for replacement only; expansion of public and private plants, equipment and installation thereof in such plants, erection of structures, and acquisition of land for the foregoing purposes, and such lands and interests therein, may be acquired, and construction prosecuted thereon prior to the approval of title as required by section 355, Revised Statutes, as amended: [$98,416,000] *$128,300,000* to remain available for obligation until [June 30, 1977] *September 30, 1978.*

For "Procurement, Defense Agencies" for the period July 1, 1976, through September 30, 1976, $20,900,000, including purchase of not to exceed seven passenger motor vehicles, for replacement only, to remain available for obligation until September 30, 1978. (Department of Defense Appropriation Act, 1975.)

PROCUREMENT, DEFENSE AGENCIES

PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
Direct: 1. Major equipment	66,000	98,416	128,300	67,041	101,221	114,213
Reimbursable	8,469	16,028	15,333	8,208	15,254	15,183
Total	74,469	114,444	143,633	75,249	116,475	129,396
Financing:						
Receipts and reimbursements from: Federal funds	−8,469	−16,028	−15,333	−8,360	−16,028	−15,333
Unobligated balance available, start of year for completion of prior-year budget plans				−24,797	−23,738	−21,707
Reprograming from or to prior-year budget plans	−169					
Unobligated balance available, end of year for completion of prior-year budget plans				23,738	21,707	35,944
Unobligated balance lapsing: unobligated balance lapsing, budget plan	169			169		
Budget authority (appropriations)	66,000	98,416	128,300	66,000	98,416	128,300
Relation of obligations to outlays:						
Obligations incurred, net				66,889	100,447	114,063
Obligated balance, start of year				43,675	46,918	66,365
Obligated balance, end of year				−46,918	−66,365	−86,428
Adjustments in expired accounts				465		
Outlays				64,112,	81,000	94,000

OBJECT CLASSIFICATION

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate
Direct obligations:			
Transportation of things	71	103	563
Other services	287	370	640
Supplies and materials	236	300	520
Equipment	66,447	100,448	112,490
Total direct obligations	67,041	101,221	114,213
Reimbursable obligations:			
Transportation of things	21	32	40
Other services	459	710	900
Supplies and materials	715	1,100	1,400
Equipment	7,013	13,412	12,843
Total reimbursable obligations	8,208	15,254	15,183
Total obligations	75,249	116,475	129,396

PROGRAM AND FINANCING—1972 FISCAL YEAR PROGRAM

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
Direct: 1. Major equipment				2,916		
Reimbursable				165		
Total				3,081		
Financing:						
Receipts and reimbursements from: Federal funds				−165		
Unobligated balance available, start of year for completion of prior-year budget plans				−3,085		
Reprograming from or to prior-year budget plans	−169					
Unobligated balance lapsing: Unobligated balance lapsing, budget plan	169			169		
Budget authority (appropriation)						

PROGRAM AND FINANCING—1973 FISCAL YEAR PROGRAM

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
Direct: 1. Major equipment				16,525	5,062	
Reimbursable				−150		
Total				16,375	5,062	
Financing:						
Receipts and reimbursements from: Federal funds				274		
Unobligated balance available, start of year for completion of prior-year budget plans				−21,712	−5,062	
Unobligated balance available, end of year for completion of prior-year budget plans				5,062		
Budget authority (appropriation)						

PROGRAM AND FINANCING—1974 FISCAL YEAR PROGRAM

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
Direct: 1. Major equipment	66,000			47,600	15,178	3,222
Reimburseable	8,469			8,193	276	
Total	74,469			55,793	15,454	3,222
Financing:						
Receipts and reimbursements from: Federal funds	−8,469			−8,469		
Unobligated balance available, start of year for completion of prior year budget plans					−18,676	−3,222
Unobligated balance available, end of year for completion of prior year budget plans				18,676	3,222	
Budget authority (Appropriation)	66,000			66,000		

PROGRAM AND FINANCING—1975 FISCAL YEAR PROGRAM

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
Direct: 1. Major equipment		98,416			80,981	12,911
Reimbursable		16,028			14,978	1,050
Total		114,444			95,959	13,961
Financing:						
Receipts and reimbursements from: Federal funds		−16,028			−16,028	
Unobligated balance available, start of year for completion of prior-year budget plans						−18,485
Unobligated balance available, end of year for completion of prior-year budget plans					18,485	4,524
Budget authority (appropriation)		98,416			98,416	

PROGRAM AND FINANCING—1976 FISCAL YEAR PROGRAM

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
Direct: 1. Major equipment			128,300			98,080
Reimbursable			15,333			14,133
Total			143,633			112,213
Financing:						
Receipts and reimbursements from: Federal funds			−15,333			−15,333
Unobligated balance available, end of year for completion of prior-year budget plans						31,420
Budget authority (appropriation)			128,300			128,300

PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for procurement actions programed)—transition	Obligations—transition
Program by activities:		
Direct: 1. Major equipment	20,900	32,148
Reimbursable (total)	3,969	4,869
Total	24,869	37,017
Financing:		
Receipts and reimbursements from: Federal funds	−3,969	−3,969
Unobligated balance available, start of year for completion of prior-year budget plans		−35,944
Unobligated balance available, end of year for completion of prior-year budget plans		23,796
Budget authority (appropriation)	20,900	20,900
Relation of obligations to outlays:		
Obligations incurred, net		33,048
Obligated balance, start of year		86,428
Obligated balance, end of year		−101,476
Outlays		18,000

OBJECT CLASSIFICATION

[In thousands of dollars]

	Transition
Direct obligations:	
Transportation of things	35
Other services	115
Supplies and materials	120
Equipment	31,878
Total direct obligations	32,148
Reimbursable obligations:	
Transportation of things	15
Other services	330
Supplies and materials	520
Equipment	4,004
Total reimbursable obligations	4,869
Total obligations	37,017

Introductory Statement

This appropriation provides for procurement of capital equipment for the Defense Communications Agency, the Defense Investigative Service, the Defense Mapping Agency, the Defense Supply Agency, and other agencies of the Department of Defense. The 1975 program includes procurement of automatic data processing equipment, mechanical materials handling systems, general and special purpose vehicular equipment, communications equipment and mapping, charting and geodetic equipment.

SUMMARY OF REQUIREMENTS (IN THOUSANDS OF DOLLARS)

	1974 actual	1975 estimate	1976 estimate	197T estimate
Defense Communications Agency	$1,370	$3,625	$6,910	
Defense Intelligence Agency				
Defense Investigative Service	138	674	1,142	
Defense Mapping Agency	6,078	5,217	6,113	$1,042
Defense Nuclear Agency				
Defense Supply Agency	5,256	14,000	12,033	2,380
National Security Agency				
Office Secretary of Defense	422	900	608	170
Uniformed Services University of the Health Sciences			1,000	
Total direct program	66,000	98,416	128,300	20,900
Reimbursable program	8,469	16,028	15,333	3,969
Total	74,469	114,444	143,633	24,869
Less: Portion of program to be obligated in subsequent fiscal years	18,676	18,485	31,420	
Plus: Obligations incurred against prior year program funds	19,456	20,516	17,183	12,148
Total obligations	75,249	116,475	129,396	37,017

DEFENSE COMMUNICATIONS AGENCY

Fiscal year:	*Thousands*
197T estimate	
1976 estimate	$6,910
1975 estimate	3,625
1974 estimate	1,370

Purpose and Scope of work

These funds provide for initial procurement of mission essential and replacement items for the Defense Communications Agency.

Justification of Funds

1. *Worldwide Military Command and Control System (WWMCCS) Automatic Data Processing (ADP) Systems:*

a. National Military Command System (NMCS) Automatic Data Processing (ADP) Systems.—The FY 1976 request includes $2,080,000 to upgrade the WWMCCS standard Honeywell Information System (HIS) computers and the UNIVAC computers at the National Military Command System Support Center (NMCSSC) and the Alternate National Military Command Center (ANMCC). Based on analysis of technical support requirements provided by the Office of the Joint Chiefs of Staff (OJCS) and elements of the Office of the Secretary of Defense, an increase in the basic HIS computer capacity and speed at the NMCSSC and the ANMCC is required. This increase in computer capacity and speed is required both to meet the increased computer workload and to improve response-time measurably by the conversion of "batch" or "off-line" slow processing to a real-time "on-line" system. A portion of these funds will be used to acquire additional storage capability on the NMCSSC and ANMCC UNIVAC computers. This upgrade in storage is required to enable these computers to perform certain vital attack assessment functions defined in OJCS requirements.

b. National Military Command System (NMCS) Information and Display System (NIDS).—The FY 1976 request includes $1,870,000 to acquire hardware required for the development of an NMCS Information and Display System (NIDS) in response to a Joint Chiefs of Staff (JCS) requirement to provide a means to assist the National Military Command Center (NMCC) in providing rapid recall and exchange of information during crisis conditions. The basic objective of NIDS is to simplify and facilitate the procedures required to integrate information available from various command and control and intelligence sources, thus enabling the NMCC to rapidly access, integrate and display dynamic operational and intelligence data vital to crisis management at the national level. These FY 1976 funds will procure the processing and display hardware for a prototype system at the NMCC with the objective of phasing into actual operations in FY 1977.

c. Joint Technical Support Activity (JTSA) Automatic Data Processing (ADP) Systems.—The FY 1976 request includes $880,000 to upgrade the JTSA Honeywell Information System (HIS) computer system bulk storage capability and to

improve the timely processing of software incident reports. The requirements for these improvements are to provide an operating system that actually simulates Worldwide Military Command and Control System (WWMCCS) sites for problem resolutions and system software maintenance; to concurrently provide an environment for developing system software; and to provide a day-to-day computer support to the Office of the Joint Chiefs of Staff (OJSC) and the user community. Since all WWMCCS ADP sites have recently become operational and are gaining operational experience, there has been a significant increase in system improvement/modification recommendations submitted by WWMCCS users. It is envisioned that the number and complexity of JCS-approved enhancements in FY 1976 and FY 1977 will necessitate the implementation of several major software releases. It is imperative that JTSA act in a prompt and most efficient manner with regard to these needs for system modification, to preclude independent development by users which would result in multiple duplication of efforts and unnecessary costs.

2. *Items Less Than $500,000 Each.*—The FY 1976 program for this line item includes $1,622,000 to purchase communications equipment for a classified activity and $458,000 for communications, ADP, general purpose and office equipment required at the Defense Communications Agency Headquarters and sixteen worldwide field activities to exercise operational and management direction over the Defense Communications System.

Procurement, Defense Agencies

Defense, Intelligence Agency

Fiscal year:	*Thousands*
197T estimate	
1976 estimate	[Deleted.]
1975 estimate	
1974 estimate	

Purpose and Scope of Work

These funds provide for the purchase of mission essential and replacement items for the Defense Intelligence Agency. These items include, Passenger Carrying and Special Purpose Vehicles, Electronic and Communication Equipment, Photographic Laboratory and Interpretation Equipment, Other Major Equipment, Modification of In-Service Equipment and Spares and Repair Parts.

Justification of Funds

1. *Items Less Than $500,000 Each.*—The FY 1976 and FY 197T program for items less than $500,000 each includes [deleted] and [deleted] respectively, to purchase the following equipment:

a. Vehicles.—[Deleted] will be required in FY 1976 for replacement of 70 passenger carrying and 21 special purpose vehicles for the Defense Attache System. [Deleted.] All replacements are in accordance with prescribed DoD criteria for vehicle replacement.

b. Electronic and Communication Equipment:

(1) *Intelligence Data Handling System (IDHS):* [Deleted] in FY 1976 and [deleted] in FY 197T are requested for major procurement in IDHS. [Deleted] is required to support expanding utilization of intelligence data files and automated services for the Collection Management Information System (COMIS). [Deleted] is required for the completion of the expansion and upgrade of the capabilities for the National Military Intelligence Center (NMIC). This includes: One Terminal Oriented Support System (TOSS) at a cost of [deleted], one Graphic Display Device at [deleted]; 15 Alpha Numeric Cathode Ray Tubes at a total cost of [deleted], and TOSS Peripherals at [deleted] in FY 1976 and [deleted] in FY 197T are requested for the modernization of the processing of imagery related data through the modernization project: Imagery Related Data Handling System (IRDHS). This includes: Three Communication Controllers at a total cost of [deleted], 45 Data Terminals in FY 1976 at [deleted] and 50 Data Terminals in FY 197T at [deleted], and four Remote Out-Put Devices at [deleted]. The remaining [deleted] requested for IDHS will provide for additional Remote Batch Terminals at a total cost of [deleted] and miscellaneous ADP equipment at a total cost of [deleted]. These items are required to sustain the Defense Intelligence Agency On-Line System (DIAOLS).

(2) *Intelligence Communications.*—[Deleted] is requested for major equipment. The majority of these funds, [deleted] is required to procure communication equipment for the upgrade of the Special Intelligence Communication Network (SPINTCOM). The balance is requested to procure communications security cryptographic equipment and replace obsolete or wornout communications devices.

c. Photographic Laboratory and Interpretation.—[Deleted] is requested in FY 1976 for additional and replacement equipment to enable DIA to maintain its photographic laboratory and interpretation capabilities. Of this amount [deleted] will be required for the photographic laboratory of which [deleted] is for replacement and [deleted] is for additional equipment which will take advantage of present technological improvements. [Deleted] is required mainly for replacement of interpretation equipment which is obsolete or worn-out.

d. Other Equipment.—[Deleted] is requested for special purpose equipment used in the daily performances of Agency functions. This requirement consist of [deleted] for printing, reproduction and microfiche equipment of which [deleted] is for the replacement of equipment which is beyond economical repair; [deleted] is for the purchase of equipment required for the fully operational Defense Intelligence Document Dissemination, Storage and Retrieval System (DIDSRS), and [deleted] for additional printing equipment. The balance, [deleted] is required for special purpose office equipment such as word processing machines, calculators, rotary file systems, and remote TV systems.

2. *Modification of In-Service Equipment.*—[Deleted] is requested for the modification of equipment. [Deleted] is required for photographic interpretation and [deleted] is required for modification of photographic laboratory equipment. [Delted] of the photographic laboratory modification are for two modification kits to allow conversion of Fultron Processors from a spray type to a more efficient viscous type development process.

3. *Spares and Repair Parts.*—The [deleted] requested in FY 1976 provides for essential initial spare parts required to maintain additional Intelligence Communication equipment included in the FY 1976 proceurement program.

Procurement, Defense Agencies

DEFENSE INVESTIGATIVE SERVICE

Fiscal year:	*Thousands*
197T estimate	0
1976 estimate	$1,142
1975 estimate	674
1974 actual	138

Purpose and Scope of Work

These funds provide for the cost of replacing general-purpose vehicles used for mission requirements and for initial procurement of other mission essential items for the Defense Investigative Service.

Justification of Funds

1. *Motor Vehicles.*—The chart below presents the number of DIS vehicles which will be overage and have excess mileage at the close of FY 1976 if there is no FY 1976 vehicle procurement. The replacement criteria is 6 years of age or 72,000 miles of usage.

Year of manufacture	Overage	Excess mileage	Total
1964	2		2
1965	12		12
1966	44		44
1967	105		105
1968	169		169
1969	107		107
1970	380		380
1971		107	107
1972		1	1
Total	819	108	927
Less:			
Approved fiscal year 1975 program			−236
Inventory reduction			−40
Total overage/over mileage in fiscal year 1976			651

The $1,103,000 requested in FY 1976 provides for the procurement of 382 passenger vehicles and 3 panel trucks to permit the replacement of a portion of overage/over mileage vehicles which are uneconomically repairable. Additionally, by introducing 10 utility trucks as substitutes for passenger vehicles, those agents who must drive on unimproved roads will be equipped with a vehicle more suited to the terrain.

2. *Other capital equipment.*—The FY 1976 Other Capital Equipment Program includes $5,000 for dry copy machines, $4,000 for security cabinets and $30,000 for IBM 370 disk packs.

PROCUREMENT, DEFENSE AGENCIES

DEFENSE MAPPING AGENCY

Fiscal year:	*Thousands*
197T	$1,042
1976	6,113
1975	5,217
1974	6,078

Purpose and scope of work

These funds provide for procurement of automatic compilation equipment, passenger carrying and other vehicles, and Other Mission essential and replacement items for the Defense Mapping Agency.

Justification of funds

1. MC&G Photogrammetric and Data Reduction Equipment. The AS11BX/ACE Analytical Plotter system is need to improve the efficiency and rate of production of terrain mapping information in digital form from photography. This equipment produces digital data representing the earth's surface that is used to produce contour maps and orthophoto data. The AS11BX/ACE provides the required digitizing capability essential to meeting increased demands of current and future program assignments such as Digital Radar Land Mass Simulation (DRLMS) and Terrain Matching Contour (TERCOM) in support of strategic and tactical weapon systems for the Air Force and Navy. $1,500 thousand is required in FY 1976 to procure the first production model. Delivery of RDT&E prototype is scheduled for March 1975 with the programmed test period scheduled for completion in November 1975.

2. *Vehicles.*—The Fiscal Year 1976 vehicles program provides $76 thousand to replace 5 light sedans, 1 bus, and 20 trucks used at DMA installations for mission requirements. The vehicles requested for replacement meet the age, mileage and uneconomical repair criteria of DoD Instruction 4150.4. Also provided for in FY 1976 is augmentation of 5 pieces of materials handling equipment for depot use to meet requirements of the MC&G product distribution function—$26 thousand.

3. The Other Capital Equipment Program includes $1,306 thousand for photogrammetric and data reduction equipment; $582 thousand for photographic equipment; $1,666 thousand for cartographic equipment; $847 thousand for geodetic equipment; $527 thousand for lithographic equipment; $204 thousand for Automatic Data Processing Equipment, and $421 thousand for other mapping, charting and geodetic equipment. Fiscal Year 1976—$4,511; fiscal year 197T—$1,042.

DEFENSE NUCLEAR AGENCY

Fiscal year:	*Thousands*
197T estimate	
1976 estimate	[Deleted.]
1975 estimate	
1974 estimate	

Purpose and Scope of Work

These funds provide for the procurement of mission essential capital equipment and the cost of replacing general and special purpose vehicles, material handling equipment, and R&U mobile equipment used at DNA installation for mission requirements.

Justification of Funds

1. *Vehicles.*— The [deleted] in the FY 1976 program provides for the replacement of 43 vehicles and material handling equipment. [Deleted] is for 40 general purpose vehicles, [deleted] is for two special purpose vehicles, [deleted] is for one piece of materials handling equipment, and [deleted] is for transportation.

2. *Other Capital Equipment.*—The FY 1975 Other Capital Equipment program includes [deleted] for printing and reproduction equipment, and [deleted] for automatic data processing equipment, [deleted] for security equipment, [deleted] for office equipment, [deleted] for mess equipment, [deleted] for shop equipment, [deleted] for other equipment, and [deleted] for transportation costs.

DEFENSE SUPPLY AGENCY

Fiscal year:	*Thousands*
197T estimate	$2,380
1976 estimate	12,033
1975 estimate	14,000
1974 estimate	5,256

Purpose and Scope of Work

These funds provide for the procurement of mission essential and replacement items for the Defense Supply Agency. These items include Mobile Material Handling Equipment, Automotive Vehicles, Mechanized Material Handling Systems, Automatic Data Processing Equipment, Other Major Equipment and Items Less Than $500,000 each.

Justification of Funds

1. *Mobile Materials Handling Equipment.*—The FY 1976 program provides $2,583 thousand and the FY 197T provides $433 thousand for the procurement of Mobile Materials Handling Equipment (MHE).

Examples of principal equipments in this project are gas and electric forklift trucks, cranes and tractors. The request is to replace equipment which, in accordance with established criteria, are overage and represent excessive maintenance cost.

The FY 1976 requirements are based on currently forecast DSA workload. Since the FY 1976 workloads are estimated to be less than FY 1975, an appropriate decrease in the size of the fleet has been programmed for FY 1976. Although there is no decrease in workload during FY 197T, fund requirements for this period are proportionately lower than FY 1976 requirements, as the average age of the fleet will be lower and fewer pieces of equipment will need to be replaced.

2. *Automotive Vehicles.*—The FY 1976 and FY 197T programs provide $459 thousand for the procurement of 108 standard commercial vehicles and $186 thousand for the procurement of 30 standard commercial vehicles respectively, required to replace units meeting the DoD replacement criteria. The following listings provide unit descriptions and costs.

DSA FISCAL YEAR 1976 AUTOMOTIVE REQUIREMENTS

Description	Units	Unit cost	Total cost
Sedan, light	21	$2,800	$58,800
Bus, 36-passenger	2	13,000	26,000
Station wagon	1	3,200	3,200
Ambulance, metropolitan	2	10,500	21,000
Truck:			
¼-ton carryall	5	4,100	20,500
¼-ton pickup	30	2,900	87,000
¼-ton panel	2	3,300	6,600
1-ton stake	1	3,700	3,700
1-ton panel	1	4,300	4,300
2-ton stake	11	4,600	50,600
2-ton van	2	5,300	10,600
2½-ton dump	2	7,200	14,400
2½-ton stake	2	4,900	9,800
5-ton dump	3	8,500	25,500
5-ton tractor	5	8,900	44,500
¼-ton maintenance	13	3,700	48,100
Trailer, semi 12-ton, stake	5	4,800	24,000
Total automotive vehicles	108	----------	458,600

DSA FISCAL YEAR 197T AUTOMOTIVE REQUIREMENTS

Description	Units	Unit cost	Total cost
Sedan, light	5	$2,800	$14,000
Bus, 36-passenger	1	15,700	15,700
Station wagon	1	3,200	3,200
Truck:			
½-ton carryall	3	4,100	12,300
½-ton pickup	8	3,400	27,200
½-ton panel	3	4,000	12,000
2-ton stake	4	5,100	20,400
2-ton van	3	6,000	18,000
2½-ton dump	2	8,200	16,400
5-ton dump	1	9,500	9,500
5-ton tractor	2	9,900	19,800
½-ton maintenance	3	3,900	11,700
Trailer, semi 12-ton, stake	1	5,800	5,800
Total automotive vehicles	37		186,000

3. *Mechanized Material Handling System.*—The FY 1976 program provides $5,750 thousand for a mechanized materials handling ssytem for processing material through receiving, packing, and shipping at Defense Electronics Supply Center; a system for processing issues and receipts in the mechanized bin complex at Defense Depot Ogden; a mechanized system for processing issues and receipts in the bin complex at the Defense General Supply Center (DGSC); and a revised binnable item packing system at DGSC. A study of labor costs for the current systems has indicated that utilization of the proposed equipment will realize a substantial savings over present methods of operations. These savings are estimated at $1,003,000 per year, resulting in an estimated amortization rate of 4.39 years.

D. *Automatic Data Processing Equipment.*—The FY 1976 program provides $969 thousand and the FY 197T program provides $1,263 thousand for purchase of ADP equipment which is currently being leased by the Defense Supply Agency (DSA). This ADP support the Defense Automatic Addressing System (DAAS), which involves eleven ADP systems; five systems for the DAAS facility at Defense Depot Tracy and six systems for the DAAS facility at Dayton, Ohio. FY 1976 and FY 197T funds are required to accomplish the conversion from lease to purchase. Such a conversion will provide the most economical procurement for the Government and will result in an estimated FY 1976 net O&M savings of $202 thousand, an estimated FY 197T net O&M savings of $461 thousand and an estimated annual O&M savings thereafter of $2,468 thousand.

5. *Telecommunications Equipment.*—The FY 1976 program provides $833 thousand for telecommunications equipment. This request includes expansion of the public address system in support of the Direct Commissary Support (DICOMSS) mission assigned to Defense Depot Mechanicsburg; a cable project at Defense General Supply Center to provide additional telephone service and teleprocessing capability in administrative and warehouse areas; and the purchase of lease Autodin terminal equipment installed at DSA Depots, Centers, and the Defense Logistics Services Center. The economic analysis indicates the latter purchase will be amortized in 15 months.

6. *Items Less Than $500,000 Each.*—Under this category, FY 1976 includes $1,439 thousand and FY 197T includes $498 thousand for office equipment, miscellaneous warehouse equipment, industrial facilities equipment and other major equipment. Office equipment ($377 thousand in FY 1976 and $128 thousand in FY 197T) includes items such as copying machines, offset presses, magnetic tape typewriters, platemaking, calculating and bookkeeping machines. All office equipments are replacements for items that meet or exceed their life expectancy and are uneconomically repairable. Miscellaneous warehouse equipment ($473 thousand for FY 1976 and $209 thousand for FY 197T) include items required to continue performance improvement in those areas susceptible to adaptation of recent developments in warehouse techniques. These include such items as electric revolving storage bin, urethane (foam in place) machine, mechanized lift tables, power conveyors and multi-purpose processing system. These equipments will replace items no longer feasible for use due to condition or inadequate capability, or they represent new items, the use of which will reduce operating costs. Other major equipment ($408 thousand in FY 1976 and $161 thousand in FY 197T)

includes items such as wheel mounted cranes, road grader, paint spray booth, drilling machines and strapping machines. These equipments will replace items no longer feasible for use due to condition or inadequate capability. The request for industrial facilities equipment ($181 thousand in FY 1976) includes single needle integrated sewing machines, contour seamers, marker system (pocket location), pressing machines, pocket welt and shade marking machines. These are replacement and modernization items essential to operation of the Clothing Factory.

NATIONAL SECURITY AGENCY

[Deleted.]

Thousands

Purpose and Scope of Work

[Deleted.]

Justification of Funds

Fiscal Year 1976

Classified Equipment.—The FY 1976 capital equipment program provides [deleted] for the following major requirements:

The FY 197T capital equipment program provides [deleted] for the following requirements:

1. [Deleted.]
2.
3.
4.
5.
6.
7.
8.

Fiscal Year 197T

1. [Deleted.]
2.
3.

The FY 197T budget estimates are needed during the transitional period to meet projected contractual obligations, including essential documentation and engineering support, related to existing phased equipment programs. The FY 197T budget does not include any new starts.

OFFICE OF THE SECRETARY OF DEFENSE

Fiscal year:	*Thousands*
197T estimate	$170
1976 estimate	608
1975 estimate	900
1974 estimate	422

Purpose and Scope of Work

These funds provide for initial procurement and for replacement items of equipment of an investment nature for the Office of the Secretary of Defense, the Office of Information for the Armed Forces, and the Organization of the Joint Chiefs of Staff.

Justification of Funds

Items Less Than $500,000 Each.—The FY 1976 program for items less than $500,000 each includes $34,000 for the Office of the Secretary of Defense, $489,000 for the Office of Information for the Armed Forces, and $85,000 for the Organization of the Joint Chiefs of Staff.

The FY 197T program for these items includes $6,000 for the Office of the Secretary of Defense, $138,000 for the Office of Information for the Armed Forces, and $26,000 for the Organization of the Joint Chiefs of Staff.

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

Fiscal year:	*Thousands*
197T estimate	0
1976 estimate	$1,000
1975 estimate	0
1974 estimate	0

Purpose and Scope

These funds provide for the cost of equipment required for the operation of the School of Medicine in the Uniformed Services University of the Health Sciences (USUHS).

Justification of Funds

The Fiscal Year 1976 program consists of $1,000,000 for the purchase of the minimum scientific and medical equipment necessary to outfit the Basic Science building of the School of Medicine of the Uniformed Services University of the Health Sciences, which will have the capacity to educate and train up to 64 medical students.

Operation and Maintenance, Defense Agencies, Fiscal Year 1976

APPROPRIATION LANGUAGE

For expenses, not otherwise provided for, necessary for the operation and maintenance of activities and agencies of the Department of Defense (other than the military departments and the Defense Civil Preparedness Agency), as authorized by law; as follows: for the Secretary of Defense activities, [$752,643,000] *$818,023,000*, of which [$489,000,000] *$539,141,000* shall be available only for the Civilian Health and Medical Program of the Uniformed Services and [$201,932,000] *$215,166,000* shall be available only for Overseas Dependents Education; for the Organization of the Joint Chiefs of Staff, [$10,924,000] *$12,084,000*; for the Office of Information for the Armed Forces, [$14,356,000] *$16,272,000*; for the Defense Contract Audit Agency, [$66,193,000] *$68,653,000*; for the Defense Investigative Service, [$25,401,000] *$28,437,000*; for the Defense Mapping Agency, [$170,801,000] *$189,112,000*; for the Defense Nuclear Agency, [$21,215,000] *$24,548,000*; for Uniformed Services University of the Health Sciences, $5,491,000; for the Defense Supply Agency, [$761,453,000] *$820,914,000*; and for Intelligence and Communications activities, [$527,173,000] *$586,266,000*; in all: [$2,350,159,000] *$2,569,800,000*: Provided, That of the total amount of this appropriation, not to exceed [$6,518,000] *$9,208,100* can be used for emergencies and extraordinary expenses, to be expended on the approval or authority of the Secretary of Defense, and payments may be made on his certificate of necessity for confidential military purposes: Provided further, That not less than [$19,500,000] *$26,000,000* of the total amount of this appropriation shall be available only for the maintenance of real property facilities: Provided further, That the Secretary of Defense may transfer up to 3 per centum of the amount of any subdivision of this appropriation to any other subdivision of this appropriation, but no subdivision may thereby be increased by more than 5 per centum and the Secretary of Defense shall notify the Congress promptly of all transfers made pursuant to this authority.

For "Operation and Maintenance, Defense Agencies" for the period July 1, 1976, through September 30, 1976 as follows: for the Secretary of Defense Activities $201,420,000, of which $134,358,000 shall be available only for the Civilian Health and Medical Program of the Uniformed Services and $51,368,000 shall be available only for Overseas Dependent Education; for the organization of the Joint Chiefs of Staff, $3,157,000; for the Office of Information for the Armed Forces, $4,107,000; for the Defense Contract Audit Agency, $17,472,000; for the Defense Investigative Service, $7,119,000; for the Defense Mapping Agency, $47,505,000; for the Defense Nuclear Agency, $6,183,000; for the Uniformed Services University of the Health Sciences, $1,659,000; for the Defense Supply Agency, $211,380,000; for Intelligence and Communications activities, $153,598,000; in all: $653,600,000, of which not to exceed $1,964,500 can be used for emergencies and extraordinary expenses. Provided, That the Secretary of Defense may transfer up to 3 per centum of the amount of any subdivision of this appropriation to any other subdivision of this appropriation, but no subdivision may thereby be increased by more than 5 per centum and the Secretary of Defense shall notify the Congress promptly of all transfers made pursuant to this authority.

OPERATION AND MAINTENANCE, DEFENSE AGENCIES—PROGRAM AND FINANCING

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate	Transition
Program by activities:				
Direct program:				
3. Intelligence and Communications:				
Defensive Investigative Service	22,134	25,790	28,437	7,119
Defense Mapping Agency	158,775	175,740	189,112	47,505
Defense Nuclear Agency	19,491	22,034	24,548	6,183
Intelligence and Communications Activities	476,078	538,073	586,266	153,598
7. Central Supply and Maintenance:				
Defense Supply Agency	744,735	788,850	820,914	211,380
8. Training, medical, and other general personnel activities:				
Overseas Dependent's Education		204,115	215,166	51,368
Office of Information for the Armed Forces	11,452	14,469	16,272	4,107
Armed Forces Institute	4,663			
Uniformed Services University of the Health Sciences			5,491	1,659
Civilian Health and Medical Program of the Uniformed Services		493,071	539,141	134,358
9. Administration and Associated Activities:				
Secretary of Defense	48,713	58,598	63,716	15,694
Joint Chiefs of Staff	8,445	11,139	12,084	3,157
Defense Contract Audit Agency	62,919	67,668	68,653	17,472
Total direct program	1,557,405	2,399,547	2,569,800	653,600
Reimbursable (total)	131,940	206,938	205,139	50,345
Total obligations	1,689,345	2,606,485	2,774,939	703,945
Financing:				
Receipts and reimbursements from:				
Federal funds	−53,007	−108,460	−105,639	−26,140
Non-Federal sources	−77,842	−97,414	−98,760	−24,286
Unobligated balance available, start of year	−3,979	−2,659	−1,595	−855
Unobligated balance transferred from other accounts	−700			
Unobligated balance available, end of year	2,659	1,595	855	936
Unobligated balance lapsing	3,060			
Budget authority	1,559,544	2,399,547	2,569,800	653,600
Budget authority:				
Appropriation	1,543,728	2,350,159	2,569,800	653,600
Appropriation (indefinite)	4,546			
Recision of enacted appropriation now pending		−1,900		
Transferred to other accounts	−1,822			
Transferred from other accounts	13,092	400		
Appropriation (adjusted)	1,559,544	2,348,659	2,569,800	653,600
Proposed supplemental for wage-board pay raises		5,092		
Proposed supplemental for civilian pay raises		45,796		
Relation of obligations to outlays:				
Obligations incurred, net	1,558,496	2,400,611	2,570,540	653,519
Obligated balance, start of year	126,929	143,412	271,023	327,563
Obligated balance, end of year	−143,412	−271,023	−327,563	−329,082
Adjustments in expired accounts	−294			
Outlays, excluding pay raise supplemental	1,541,718	2,224,657	2,511,455	652,000
Outlays from wage-board pay raise supplemental		4,837	255	
Outlays from civilian pay raise supplemental		43,506	2,290	
Personnel compensation:				
Permanent positions	926,400	981,780	1,018,263	259,987
Positions other than permanent	14,496	16,622	16,641	5,014
Other personnel compensation	20,033	16,350	16,673	4,144
Special personal services payment	621	673	673	173
Total personnel compensation	961,550	1,015,425	1,052,250	269,318
Direct obligations:				
Personnel compensation	863,343	925,102	963,523	247,908
Personnel benefits: Civilian	79,384	89,861	93,889	24,237
Benefits for former personnel	115	16	14	3
Travel and transportation of persons	26,731	26,750	33,543	9,521
Transportation of things	6,099	10,476	12,618	4,405
Rent, communications, and utilities	95,570	151,595	161,834	41,862
Printing and reproduction	11,960	13,678	14,098	3,507
Other services	416,538	1,111,852	1,214,235	303,812
Supplies and materials	50,256	62,620	68,541	16,744
Equipment	7,409	7,597	7,505	1,601
Total direct obligations	1,557,405	2,399,547	2,569,800	653,600

OPERATION AND MAINTENANCE, DEFENSE AGENCIES—PROGRAM AND FINANCING—Continued

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate	Transition
Reimbursable obligations:				
Personnel compensation	98,207	90,323	88,727	21,410
Personnel benefits: Civilian	8,916	8,837	8,821	2,097
Travel and transportation of persons	2,173	3,508	3,118	780
Transportation of things	322	764	652	163
Rent, communications, and utilities	6,184	4,051	3,633	908
Printing and reproduction	2,362	1,883	1,756	537
Other services	8,490	93,577	93,302	23,110
Supplies and materials	4,752	2,705	1,882	528
Equipment	534	1,290	3,248	812
Total reimbursable obligations	131,940	206,938	205,139	50,345
Total obligations	1,689,345	2,606,485	2,774,939	703,945

DEPARTMENT OF DEFENSE

OPERATION AND MAINTENANCE, DEFENSE AGENCIES—PERSONNEL SUMMARY

	Fiscal year—		
	1974 actual	1975 estimate	1976 estimate
Total number of permanent positions	70,387	68,479	68,044
Full-time equivalent of other positions	2,941	2,955	2,981
Average paid employment	68,301	68,252	68,596
Average GS grade	8.40	8.49	8.43
Average GS salary	$14,333	$15,232	$15,435
Average salary of ungraded positions	$10,777	$11,747	$11,943

Department of Defense

Appropriation: Operation and Maintenance, Defense Agencies, Fiscal Year 1976

Introductory Statement

This appropriation account was established in FY 1963 and consolidates under one account (a) the overall management and direction of the Department of Defense; (b) the common supply and service functions consolidated in a single agency directly under the Secretary of Defense; (c) Defense communications activities for the control of world-wide strategic and administrative long-haul, point-to-point communications services of the Department of Defense; (d) joint atomic weapons technical operations of the Department of Defense; (e) intelligence functions consolidated in a single agency reporting to the Secretary of Defense through the Joint Chiefs of Staff; (f) information and education programs for members of the Armed Forces; (g) the mapping, charting and geodesy functions consolidated in a single agency reporting to the Secretary of Defense through the Joint Chiefs of Staff; (h) the personnel security investigations and contract audit functions consolidated in separate agencies reporting directly to the Secretary of Defense; and (i) classified activities. Commencing with FY 1975, the Dependent Education Program and the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) were incorporated into this appropriation. In FY 1976, the Uniformed Services University of the Health Sciences (USUHS) has been included for the first time.

The budget activity structure for this appropriation is aligned with the structure of the Department of Defense Five year Defense Program with individual agencies identified as formal budget subactivities. As provided for by the FY 1975 appropriation, the Dependent Education Program and CHAMPUS are included as separate entities under the Secretary of Defense Activity. This year's budget includes resources for the new programs indicated below.

NEW PROGRAMS IN O. & M. APPROPRIATION

Defense Investigative Service

Identification and description	*Estimate (in millions)*
Defense Supply Agency Support—Criminal and fraud investigative support and crime surveys provided by the Defense Investigative Service at the request of the Defense Supply Agency	$0.170

Defense Communications Agency

Transfer of funding responsibility—This provides for the transfer of funding responsibility for the Systems Engineering Facility from R.D.T. & E., Defense Agencies 3.440

Defense Supply Agency

Mission Area Transfers—This covers the transfer of three mission assignments from the military departments and NASA to DSA. Service financing in fiscal year 1975 was on a reimbursable basis 1.058

Common Warehousing—This provides for the implementation of the Common Service Warehousing Policy adopted by the Department of Defense. Under this policy, warehousing services performed by one DoD component for another will be on a common service (non-reimbursable basis). This increase is offset by corresponding decreases in the budgets of the military services 9.881

Uniformed Services University of the Health Sciences

USUHS—This provides for the operating requirements of the University which for the first time is budgeted in this appropriation as a separate entity .....

SUMMARY OF CIVILIAN MANPOWER INCREASES—FISCAL YEAR 1975 TO FISCAL YEAR 1976

(Full-Time Permanent Employees)

Operation or activity[1]	*Year-end increases*
Defense Investigative Service:	
Conversion of military positions	+295
Reduced workload and revised scope	−110
Reduced headquarters personnel	−30
Total increase	+155
Defense Mapping Agency: Conversion from military to civilian manning	+31
Defense Nuclear Agency: Conversion from military to civilian manning	+10
Defense Communications Agency:	
Conversion from military to civilian manning	+13
Transfer of activity from R.D.T. & E., DA	+101
Increased ADP support to WWMCCS	+20
NMCS-wide support to airborne command post	+10
Reduction in DCA headquarters	−40
Total increase	+104
Defense Intelligence Agency:	
Conversion from military to civilian manning	+12
Production analysis and operational capabilities	+51
New Defense attaché offices	+7
Defense Intelligence School	+3
Total increase	+73
Uniformed Services University of the Health Sciences: New Program	+154
Secretary of Defense Activities: Establish Office of Policy Planning and Management under the ASD (M. & R.A.)	+7

[1] Civilian manpower increases are requested only for activities in the Agencies indicated. The number of full-time permanent employees in the other Agencies in FY 1976 is either the same as or less than the number in FY 1975.

DIRECT HIRE CIVILIAN EMPLOYMENT

[Dollars in thousands; strength in whole numbers]

	Fiscal year 1974 actual			Fiscal year 1975 estimate			Fiscal year 1976 estimate			Fiscal year 197T estimate			Fiscal year 1977 estimate, end strength, June 30
	Average strength	End strength, June 30	Obligations	Average strength	End strength, June 30	Estimated obligations	Average strength	End strength, June 30	Estimated obligations	Average strength	End strength, June 30	Estimated obligations	
Direct hire civilians:													
Full-time permanent	66,399	69,190	$1,033,850	66,083	67,982	$1,099,468	66,698	67,559	$1,136,323	66,434	67,709	$289,970	67,761
Other	1,902	1,975	15,565	2,169	2,207	17,568	1,898	1,948	17,655	1,798	1,848	5,343	1,880
Total	68,301	71,165	1,049,415	68,252	70,189	1,117,036	68,596	69,507	1,153,978	68,232	69,557	295,313	69,641
Detail by activity:													
Intelligence and communications	12,158	13,655	225,199	11,844	13,378	240,217	13,592	13,751	250,058	13,437	13,763	63,410	13,828
Central supply and maintenance	50,618	51,911	711,962	50,929	51,195	754,359	49,230	49,776	778,757	49,192	49,798	199,959	49,772
Training, medical and general personnel activities	142	161	4,882	178	182	3,483	495	517	9,255	502	533	2,555	578
Administrative and association activities	5,383	5,438	107,372	5,301	5,434	118,977	5,279	5,463	115,938	5,101	5,463	29,389	5,463
Total	68,301	71,165	1,049,415	68,252	70,189	1,117,036	68,596	69,507	1,153,978	68,232	69,557	295,313	69,641

OTHER PERSONNEL COMPENSATION

[Dollars in thousands]

	Fiscal year—			
	1974 Actual	1975 estimate	1976 estimate	197T estimate
Overtime and holiday pay	16,176	12,437	12,746	3,157
Sunday and night differential	2,154	2,274	2,284	571
Postdifferential and cost of living	369	386	394	101
Premium pay (including firefighters)	74	80	82	21
Other compensation	1,260	1,173	1,167	294
Total	20,033	16,350	16,673	4,144

Appropriation Language

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE AGENCIES

For expenses of activities and agencies of the Department of Defense (other than the military departments and the Defense Civil Preparedness Agency), necessary for basic and applied scientific research, development, test, and evaluation; advanced research projects as may be designated and determined by the Secretary of Defense, pursuant to law; maintenance, rehabilitation, lease, and operation of facilities and equipment, as authorized by law: $597,800,000 to remain available for obligation until September 30, 1977: Provided, That such amounts as may be determined by the Secretary of Defense to have been made available in other appropriations available to the Department of Defense during the current fiscal year for programs related to advanced research may be transferred to and merged with this appropriation to be available for the same purposes and time period: Provided further, That such amounts of this appropriation as may be determined by the Secretary of Defense may be transferred to carry out the purposes of advanced research to those appropriations for military functions upnder the Department of Defense which are being utilized for related programs to be merged with and to be available for the same time period as the appropriation to which transferred.

For "Research, development, test, and evaluation, Defense agencies for the period July 1, 1976, through September 30, 1976, $152,700,000 to remain available for obligation until September 30, 1977. (Department of Defense Appropriation Act, 1975; additional authorizing legislation to be proposed for fiscal year 1976, and for the period July 1, 1976, through September 30, 1976.)

[In thousands of dollars]

TOA summary by Defense agency	Fiscal year 1974 Actual	Fiscal year 1975 estimate	Fiscal year 1976 estimate	Fiscal year 1977 estimate	Fiscal year 1977 estimate
Defense Advanced Research Project Agency (DARPA)	194,349	202,257	226,600	56,743	259,743
Defense Communications Agency (DCA)	18,119	26,500	29,800	7,900	32,400
Defense Nuclear Agency (DNA)	116,949	119,600	130,606	32,904	146,013
Defense Intelligence Agency (DIA)	[Deleted]				
Defense Mapping Agency (DMA)	11,524	125,500	14,902	3,850	16,602
Defense Supply Agency (DSA)	12,925	14,000	15,153	3,706	15,200
National Security Agency (NSA)	[Deleted]				
OSD/JCS Technical Support (OSD/JCS)	15,580	17,800	22,800	5,700	25,300
Uniform Services University of Health Sciences (USUHS)			300		750
Total, R.D.T. & E. program	461,661	490,657	597,800	152,700	660,201
Director, test and evaluation, Defense	24,600	25,000	28,500	6,800	32,400
Grand total	486,261	515,657	626,300	159,500	692,601

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE AGENCIES

PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for R.D.T. & E. actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
Direct:						
1. Military sciences	54,210	56,100	62,500	55,218	55,820	62,350
3. Missiles and related equipment	69,199	68,550	74,900	69,359	68,221	74,865
7. Other equipment	321,927	348,167	441,147	316,360	353,391	440,515
8. Programwide management and support	16,325	17,840	19,253	16,152	18,434	19,266
Total direct	461,661	490,657	597,800	457,089	495,866	596,996
Reimbursable (total)	18,077	7,500	7,471	16,318	9,258	7,471
Total	479,738	498,157	605,271	473,407	505,124	604,467
Financing:						
Receipts and reimbursements from:						
Federal funds	−4,152	−7,300	−6,271	−4,091	−7,300	−6,271
Non-Federal sources	−13,925	−200	−1,200	−13,925	−200	−1,200
Unobligated balance available, start of year for completion of prior year budget plans				−5,208	−11,125	−4,158
Reprograming from or to prior year budget plans	−354					
Unobligated balance available, end of year for completion of prior year budget plans				11,125	4,158	4,962
Unobligated balance lapsing, budget plan	354			354		
Budget authority	461,661	490,657	597,800	461,661	490,657	597,800
Budget authority:						
Appropriation	461,661	491,057	597,800	461,661	491,057	597,800
Transferred to other accounts		−400			−400	
Appropriation (adjusted)	461,661	490,697	597,800	461,661	490,657	597,800
Relation of obligations to outlays:						
Obligations incurred, net				455,391	497,624	596,996
Obligated balance, start of year				321,635	272,553	263,177
Obligated balance, end of year				−272,553	−263,177	−300,173
Adjustments in expired accounts				−443		
Outlays				504,029	507,000	560,000

PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan Amounts for R.D.T. & E. transition	Obligations, transition
Program by activities:		
Direct:		
1. Military sciences	15,600	15,493
3. Missiles and related equipment	18,700	19,095
7. Other equipment	113,694	112,061
8. Programwide management and support	4,706	4,807
Total direct	152,700	151,456
Reimbursable (total)	1,001	1,001
Total	153,701	152,457
Financing:		
Receipts and reimbursements from:		
Federal funds	−948	−948
Non-Federal sources	−53	−53
Unobligated balance available, start of year for completion of prior year budget plans		−4,962
Unobligated balance available, end of year for completion of prior year budget plans		6,206
Budget authority	152,700	152,700
Budget authority: Appropriation (adjusted)	152,700	152,700
Relation of obligations to outlays:		
Obligations incurred, net		151,456
Obligated balance, start of year		300,173
Obligated balance, end of year		−334,629
Outlays		117,000

OBJECT CLASSIFICATION

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate	Transition
Personnel compensation:				
Permanent positions	14,281	15,110	13,607	3,413
Positions other than permanent	174	200	200	
Other personnel compensation	195	260	236	64
Special personal services payment	91	68	88	22
Total, personnel compensation	14,741	15,638	14,131	3,499
Direct obligations:				
Personnel compensation	14,524	15,199	13,671	3,374
Personnel benefits: Civilian	1,236	1,358	1,195	295
Travel and transportation of persons	3,374	2,727	3,848	860
Transportation of things	566	214	221	58
Rent, communications, and utilities	4,887	6,615	8,423	2,101
Printing and reproduction	302	281	317	80
Other services	395,624	433,925	523,711	133,401
Supplies and materials	4,644	4,303	5,407	1,382
Equipment	27,803	29,596	37,890	9,327
Grants, subsidies, and contributions	4,129	1,648	2,313	578
Total, direct obligations	457,089	495,866	596,996	151,456
Reimbursable obligations:				
Personnel compensation	217	439	460	125
Personnel benefits: Civilian	15	37	42	8
Travel and transportation of persons	2	4	4	1
Transportation of things		1	1	
Rent, communications, and utilities	24	55	61	16
Other services	15,792	8,338	6,499	750
Supplies and materials	90	215	231	64
Equipment	178	169	173	37
Total, reimbursable obligations	16,318	9,258	7,417	1,001
Total, obligations	473,407	505,124	604,467	152,457

SUMMARY BY PROGRAM CATEGORY

	Fiscal year—				
	1974 actual	1975 estimate	1976 estimate	197T estimate	1977 estimate
Research	34.9	36.3	37.4	9.3	44.5
Exploratory development	273.0	281.7	316.0	79.2	357.9
Advanced development	8.0	7.8	9.8	2.3	11.9
Engineering development	3.5	4.7	5.1	1.6	5.8
Management and support	31.9	35.6	42.1	10.5	44.6
Total research and development (PROG-6)	351.3	366.1	410.4	102.9	464.7
Total operational systems program	110.3	124.5	187.4	49.8	195.5
Total, direct	461.6	490.6	597.8	152.7	660.2
Reimbursable	18.1	7.5	7.5	1.0	
Total, program	479.7	498.1	605.3	153.7	660.2

FISCAL YEAR 1976 CONGRESSIONAL BUDGET (PERSONNEL SUMMARY) DEFENSE AGENCIES

	Fiscal year 1974 actual	Fiscal year 1975 estimate	Fiscal year 1976 estimate	Fiscal year 197T estimate	Fiscal year 1977 estimate
Total number of permanent positions	916	904	801	801	803
Full-time equivalent of other positions	31	8	5	5	5
Average paid employment	882	901	796	204	800
Average GS grade	9.38	9.36	9.10	9.10	9.10
Average GS salary	$16,375	$17,550	$17,255	$17,255	$17,450
Average salary of ungraded positions	$10,382	$12,065	$12,213	$12,213	$12,213

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE AGENCIES

PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for R.D.T. & E. actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
1973 FISCAL YEAR PROGRAM						
Program by activities—Direct:						
1. Military sciences				1,286		
3. Missiles and related equipment				581		
7. Other equipment				2,406		
8. Programwide management and support				521		
Total				4,794		
Financing:						
Receipts and reimbursements from: Federal funds				61		
Unobligated balance available, start of year for completion of prior year budget plans				−5,208		
Reprograming from or to prior year budget plans	−354					
Unobligated balance lapsing, budget plan	354			354		
Budget authority						
1974 FISCAL YEAR PROGRAM						
Program by activities:						
Direct:						
1. Military sciences	54,210			53,932	278	
3. Missiles and related equipment	69,199			68,778	421	
7. Other equipment	321,927			313,954	7,973	
8. Programwide management and support	16,325			15,631	694	
Total, direct	461,661			452,295	9,366	
Reimbursable (total)	18,077			16,318	1,758	
Total	479,738			468,613	11,124	
Financing:						
Receipts and reimbursements from:						
Federal funds	−4,152			−4,152		
Non-Federal sources	−13,925			−13,925		
Unobligated balance available, start of year for completion of prior year budget plans					−11,124	
Unobligated balance available, end of year for completion of prior year budget plans				11,125		
Budget authority	461,661			461,661		
1975 FISCAL YEAR PROGRAM						
Program by activities:						
Direct:						
1. Military sciences		56,100			55,542	558
3. Missiles and related equipment		68,550			67,800	750
7. Other equipment		348,167			345,418	2,748
8. Programwide management and support		17,840			17,740	100
Total, direct		490,657			486,500	4,156
Reimbursable (total)		7,500			7,500	
Total		498,157			494,000	4,156

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE AGENCIES—Continued

PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for R.D.T. & E. actions programed)			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
1975 FISCAL YEAR PROGRAM—Continued						
Financing:						
Receipts and reimbursements from:						
Federal funds		−7,300			−7,300	
Non-Federal sources		−200			−200	
Unobligated balance available, start of year for completion of prior year budget plans					−1	−4,158
Unobligated balance available, end of year for completion of prior year budget plans					4,158	2
Budget authority		490,657			490,657	
Budget authority:						
Appropriation		491,057			491,057	
Transferred to other accounts		−400			−400	
Appropriation (adjusted)		490,657			490,657	
1976 FISCAL YEAR PROGRAM						
Program by activities:						
Direct:						
1. Military sciences			62,500			61,792
3. Missiles and related equipment			74,900			74,115
7. Other equipment			441,147			437,767
8. Programwide management and support			19,253			19,166
Total, direct			597,800			592,840
Reimbursable (total)			7,471			7,471
Total			605,271			600,311
Financing:						
Receipts and reimbursements from:						
Federal funds			−6,271			−6,271
Non-Federal sources			−1,200			−1,200
Unobligated balance available, end of year for completion of prior year budget plans						4,960
Budget authority			597,800			597,800

STATEMENT HIGHLIGHTED

Senator YOUNG. The first witness will be David O. Cooke, Deputy Assistant Secretary of Defense for Administration.

Mr. Cooke, do you have a prepared statement?

Mr. COOKE. I do have a short prepared statement, Mr. Chairman.

Senator YOUNG. Do you want to read it?

Mr. COOKE. Yes; if I may just hit the highlights of it.

Mr. Chairman, I am pleased to appear before this committee to present the budget requirements of the Office of the Secretary of Defense, the Organization of the Joint Chiefs of Staff, the Office of Information for the Armed Forces, the Office of Overseas Dependents Education, and for the first time the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). If they have not already done so, representatives of other activities included in the Operation and Maintenance, Defense Agencies appropriation will make their individual presentations to you.

INTRODUCTION OF ASSOCIATES

I have with me on my left, Mr. Carl Fisher, Director of Budget and Finance, Office of the Secretary of Defense; on my right, Mr. Mark C. Snyder, Chief of the Budget Branch in Mr. Fisher's directorate.

Also to respond to any questions you may have in the other budgetary areas that I am appearing before you on, I have with me, Mr. Ralph Nestor, Organization of the Joint Chiefs of Staff; Mr. John Broger, Director, Office of Information for the Armed Forces; Dr. Anthony Cardinale, Director, Office of Overseas Dependents Education; and Mr. Vernon McKenzie, Principal Deputy Assistant Secretary of Defense—Health and Environment—matters concerning CHAMPUS.

PREPARED STATEMENT

As I said, I do have a short statement.

If I may, I will just summarize briefly, Mr. Chairman, if you will accept the statement for the record, please.

Senator YOUNG. That may be done. Without objection, it will be inserted in the record at this point.

[The statement follows:]

Mr. Chairman and Members of the Committee: I am pleased to appear again before this committee to present the budget requirements of the Office of the Secretary of Defense, the Organization of the Joint Chiefs of Staff, the Office of Information for the Armed Forces, the Office of Overseas Dependents Education, and for the first time the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS). If they have not already done so, representatives of other activities included in the Operation and Maintenance, Defense Agencies appropriation will make their individual presentations to you.

The pay, allowances, and permanent change of station costs for military personnel assigned to these activities are not included in the estimates I will address. Such costs are contained in the military personnel appropriation estimates of the military departments and will be addressed by their witnesses. These estimates do include, however, all other support costs for military personnel assigned to these activities, such as temporary duty travel, supplies, and office equipment.

OFFICE OF THE SECRETARY OF DEFENSE

The FY 1976 budget request of $63,716,000 represents an increase of $5,118,000 over our current year requirements, as shown in Attachment 1.

Over half of the increase, $2,680,000, is attributable to requirements for service support contracts, primarily intelligence support contracts and the quadrennial review of military compensation. $1,794,000 of the overall increase is needed to cover personnel costs, such as annualization of the October 1974 pay raise, normal within-grade salary increases, and an additional day of paid employment. An increase of $504,000 for travel is attributable to the numbers of and length of international conferences in which OSD is required to participate as well as increased congressional and public concern in areas such as nuclear security and changes in priorities. The remaining $140,000 is a net amount reflecting increases and decreases in such areas as utilities and rents, communications, and other purchased services.

Attachment 2 provides a summary of our projected personnel requirements.

ORGANIZATION OF THE JOINT CHIEFS OF STAFF

Next, Mr. Chairman, I invite your attention to the budget requirements of the Joint Chiefs of Staff. You will find attached two (2) charts pertaining to the OJCS; a summary of financial requirements (Attachment 3); and a summary of personnel requirements (Attachment 4). The FY 1976 fund request for this organization is $12,084,000, an increase of $945,000 when compared with the revised FY 1975 estimate.

The increase is primarily in the areas of civilian personnel and utilities and rents. In the area of civilian personnel, an increase of $250,000 is required for the annualization of the October 1974 pay raise and the January 1975 increase in costs to the government for Federal employees health insurance, additional day of paid employment in FY 1976, normal within-grade salary raises and related costs to the government for personnel benefits. This increase is partially offset by a decrease of $111,000 associated with a reduction in employment implemented during FY 1974 and FY 1975. The increase of $720,000 in the utilities and rents area is to reimburse the General Services Administration for building rent as provided by PL 92–313 enacted effective FY 1975. The $61,000 increase in travel and transportation of personnel is needed to offset the dollar devaluation abroad and is primarily associated with our support of ongoing international negotiations. The remaining increases totaling $25,000 are attributable to increases in cost of equipment maintenance service and supplies/materials, primarily paper and paper-made products.

Office of Information For the Armed Services

The FY 1976 budget estimate for this program is $16,272,000, an increase of $1,803,000 over the revised FY 1975 estimate of $14,469,000. I would like to point out that this program is committed to provide Navy personnel with radio and television services enjoyed by other members of the armed services stationed at land bases, and that this organization has recently been given the responsibility for policy and supervision of audio-visual activities throughout the Department of Defense. In addition, this organization contracts with commercial sources for much of its materials. The costs of these contracts have risen.

In FY 1976 we will complete the phasing of TV service for Navy ships by adding two additional television circuits for a total of 8. These 8 circuits and the 6 land-based television circuits will service 233 television outlets. In addition, our radio service will increase from 887 to 901 outlets.

The $1,803,000 increase is needed to provide the following: (1) $145,000 in civilian personnel costs primarily for annualization of the October 1974 pay raise, for within grade salary increases, and for the extra paid day in FY 1976; (2) $42,000 to reimburse GSA for space rental at a higher rate than currently paid; (3) $664,000 to provide for increased cost announced by commercial contractors for transcription services associated with our radio service; (4) $198,000 for television services, which includes almost a half-million dollars increase in the cost of program materials which are partially offset by savings resulting from the greater use of video tape in lieu of film; (5) $351,000 in communications to annualize the cost of the audio satellite circuit to Korea which was installed in FY 1975, to reimburse the Postal Service for larger mailings for the new circuits, and for price increases; (6) $142,000 for printing and reproduction of which $104,000 is for increases associated with labor and paper costs; (7) $59,000 for travel primarily to support the new audio-visual mission responsibilities and to provide liaison with state election administrators to further the goals of the Federal Voting Assistance Program; and (8) $382,000 for supplies which consist primarily of audio and video tape for service to Navy ships. These and other minor increases totalling $18,000 are partially offset by other decreases of $198,000 in such areas as rental of facilities in Los Angeles and equipment purchases.

Office of Overseas Dependents Education

The budget request for fiscal year 1976 for the operation and maintenance of overseas dependents schools is now appearing in the budget request of the Office of the Secretary of Defense. Prior to FY 1975 funds were requested in the budget of each Military Department. This change in funding, from the individual Military Department's budget to a consolidated Office of the Secretary of Defense budget, was directed by Congress.

We anticipate that, for FY 1975, the obligations for overseas dependents schools will be $204.5 million. The request for FY 1976 will amount to $215.6 million, an increase of $11.1 million.

These funds will provide for the continuation of the educational programs conducted in FY 1975 and provide for increased costs of the program.

	Millions
These costs are as follows:	
1. Pay raise for Public Law 86–91 personnel	$3.8
2. Within-grade increases and pay raise annualization	2.9
3. Other personnel related costs	1.6
4. Change requirements related to enrollment changes	—2.6
5. Estimated increases in tuition-fee schools	2.0
6. Program improvement and price increases	3.4
Total	11.1

The estimated student enrollment is 149,631, broken down as follows:

DOD-operated schools, K–12	134,513
Canal Zone schools	6,466
Tuition-fee schools	8,652
Total	149,631

Civilian Health and Medical Program of the Uniformed Services (CHAMPUS)

The budget request for Fiscal Year 1976 for the CHAMPUS program is $539,141,000. Previously this program, which cost-shares the medical care provided dependents of active duty and retired personnel as well as retired members in civilian health facilities, was funded separately in the three military departments. The FY 1975 Appropriations Act transferred funds for the support of the program to the Office of the Secretary of Defense. A CHAMPUS charter, dated 4 December 1974, establishes the Office of CHAMPUS as an Office of the Secretary of Defense field activity. The FY 1976 personnel end strengths for the Office of CHAMPUS provide for improved and expanded management of the program as well as the additional responsibility for the adjudication of claims outside the United States. The program is composed of two major elements—the cost of medical supplies and services reimbursed ($511.4 million) and the administrative cost of operating the program ($27.7 million). The cost of medical supplies and services is expected to increase by $42,150,000 over FY 1975; this includes the added overseas responsibility. The estimated $3,920,000 increase in the administrative cost of the program provides for expansion of the Denver office, contractors' remuneration, and the added overseas programs.

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Secretary of Defense Activities
Summary of Financial Requirements
(in thousands of dollars)

Attachment 1

Type of Expense	FY 1974 Actual	FY 1975 President's Budget	FY 1975 Adjustments	FY 1975 Revised Estimate	FY 1976 Increases/ Decreases	FY 1976 Budget Estimate
Civilian Personnel Costs	37,149	41,806	-1,391	40,415	+1,794	42,209
Travel & Transportation of persons	1,784	1,964	-81	1,883	+504	2,387
Transportation of Things	133	185	-20	165	-	165
Utilities and Rents	301	6,002	-495	5,507	-135	5,372
Communications	1,454	1,320	+229	1,549	+116	1,665
Purchased Equipment Maintenance (intra-DOD)	73	70	+5	75	-	75
Purchased Equipment Maintenance (Commercial)	145	150	-	150	+25	175
Printing and reproduction	1,228	1,250	+25	1,275	+50	1,325
Other Services:	5,681	9,014	-2,151	6,863	+2,788	9,651
Building maintenance and repairs	(216)	(214)	(-)	(214)	(+26)	(240)
Official representation	(92)	(100)	(-)	(100)	-	(100)
Management/Technical Contracts	(3,294)	(6,445)	(-2,500)	(3,945)	(+2,680)	(6,625)
Other	(2,079)	(2,255)	(+349)	(2,604)	(+82)	(2,686)
Supplies and materials	349	300	+40	340	-	340
Equipment purchases	416	250	+126	376	-24	352
Total (Direct Obligations)	48,713	62,311	-3,713	58,598	+5,118	63,716

Office of the Secretary of Defense
Summary of Personnel Requirements

Attachment 2

	FY 1974 Actual	FY 1975 President's Budget	FY 1975 Adjustments	FY 1975 Revised Estimate	FY 1976 Budget Estimate
Year End Strength					
Civilian					
Full Time	1,484	1,717	-150	1,567	1,574
Temporary Employees	34	37	-	37	41
When actually employed	53	42	-	42	42
Sub-Total-Civilian	1,571	1,796	-150	1,646	1,657
Military	549	519	+3	522	528
Total-Year End	2,120	2,315	-147	2,168	2,185
Average Employment:					
Civilian					
Full Time	1,503	1,674	-155	1,519	1,554
Temporary Employees	8	11	-	11	11
When actually employed	31	25	+16	41	54
Sub-Total-Civilian	1,542	1,710	-139	1,571	1,619
Military	620	519	+14	533	528
Total-Average Employment	2,162	2,229	-125	2,104	2,147

Attachment 3

Organization of the Joint Chiefs of Staff
Summary of Financial Requirements
(In thousands of dollars)

Type of Expense	FY 74 Actual	FY 75 President's Budget	FY 75 Adjustments	FY 75 Revised Estimate	FY 76 Budget Estimate
Civilian Personnel Cost	6,035	6,827	-159	6,668	6,807
Travel and Transportation of Persons	554	627	-31	596	657
Transportation of things	1	2	-	2	2
Utilities and Rents	285	2,384	-190	2,194	2,914
Communications	559	562	-	562	562
Purchased Equipment Maintenance (Commercial)	112	110	+10	120	125
Printing and Reproduction	62	77	-	77	77
Other Services:	304	340	-10	330	330
Building Maintenance & Repairs	(167)	(168)	(-)	(168)	(168)
Official Representation	(30)	(33)	(-)	(33)	(33)
Other	(107)	(139)	(-10)	(129)	(129)
Supplies and Materials	380	315	+105	420	440
Equipment Purchases	153	170	-	170	170
Total (Direct Obligation)	8,445	11,414	-275	11,139	12,084
Reimbursable Obligations (Not Included Above)	-0-	-0-	-0-	-0-	-0-

Attachment 4

Organization of the Joint Chiefs of Staff
Summary of Personnel Requirements

	FY 74 Actual	FY 75 President's Budget	FY 75 Adjustments	FY 75 Revised Estimate	FY 76 Budget Estimate
Year End Strength					
Civilian					
Full-time	342	391	-39	352	352
Temporary Employees	8	20	-20	-	-
When actually employed	6	10	-5	5	5
Sub-Total-Civilian	356	421	-64	357	357
Military	1,234	1,304	-168	1,136	1,136
Total-Year-End	1,590	1,725	-232	1,493	1,493
Average Employment					
Civilian					
Full Time	360	378	-27	351	345
Temporary Employees	3	5	-3	2	-
When Actually employed	3	6	-2	4	3
Sub-Total-Civilian	366	389	-32	357	348
Military	1,318	1,304	-110	1,194	1,136
Total Average Employment	1,684	1,693	-142	1,551	1,484

Office of Information for the Armed Forces
Summary of Financial Requirements
(in thousands of dollars)

Attachment 5

Type of Expense	FY 1974 Actual	FY 1975 President's Budget	FY 1975 Adjustments	FY 1975 Revised Estimate	FY 1976 Budget Estimate
Civilian Personnel	2,678	3,005	+65	3,070	3,215
Travel of Personnel	82	72	-4	68	127
Transportation of Things	3	3	-1	2	3
Utilities and Rents	154	435	-103	332	352
Communications	1,404	1,688	-142	1,546	1,897
Purchased Equipment Maintenance (Intra-DOD)	9	6	-	6	10
Purchased Equipment Maintenance (Commercial)	66	76	+3	79	89
Printing and reproduction	748	1,063	-12	1,051	1,191
Other Purchased Services	4,917	7,348	-111	7,237	7,938
Supplies	1,304	1,026	-9	1,017	1,399
Equipment	87	51	+10	61	51
Total (Direct Obligations)	11,452	14,773	-304	14,469	16,272

SUPPORT COSTS

Mr. COOKE. The pay, allowances, and permanent change of station costs for military personnel assigned to these activities are not included in the estimates I will address. Such costs are contained in the military personnel appropriation estimates of the military departments and will be addressed by their witnesses.

These estimates do include, however, all other support costs for military personnel assigned to these activities, such as temporary duty travel, supplies, and office equipment.

OFFICE OF THE SECRETARY OF DEFENSE

The fiscal year 1976 budget request of $63,716,000 represents an increase of $5,118,000 over our current year requirements as shown in attachment 1.

Senator YOUNG. Do you have the number of personnel in both fiscal years?

Mr. COOKE. Yes; I do, Mr. Chairman.

Senator YOUNG. It seems to me, that with increased pay, your small requested increase indicates that you would have fewer personnel projected for 1976 than for 1975.

Mr. COOKE. We have some modest increases, Mr. Chairman.

Our total number of personnel year-end strength for fiscal year 1975, revised budget estimate, is 2,168.

Our fiscal year 1976 budget estimate is 2,185.

Senator YOUNG. What will you do about a pay increase? Will that come in a supplemental?

Mr. COOKE. Our fiscal year 1976 budget estimate includes the annualization of the October 1974 pay increase.

Future pay increases for all Government personnel are not anticipated in this budget request.

Senator YOUNG. There is an anticipated pay raise that is not included, though.

Mr. COOKE. That is correct.

Senator YOUNG. Will that be met in a supplemental appropriation request?

Mr. COOKE. I would assume so, Mr. Chairman.

That will be a pay raise for the entire civilian employment in the Federal Government, not solely for the Office of the Secretary of Defense nor, indeed, for the Department of Defense.

Senator YOUNG. Many agencies of Government absorb a portion of their pay increases within their total budget.

Do you have such plans?

Mr. COOKE. Until we see the size of the pay increase and assess our situation, we have no present plans.

However, I would like to point out, Mr. Chairman, that I think both in the Office of the Secretary of Defense and the Organization of the Joint Chiefs of Staff we have done a responsible job in cutting the size of personnel.

In the last 9 years, we have reduced about 500 in total from the Office of the Secretary of Defense, that is, both military and civilian.

In the last 7 years, in the Organization of the Joint Chiefs of Staff, we have reduced about 450, again military and civilian.

So, we have, over the last 7 to 9 years, come down.

Senator YOUNG. That is not a very good argument. We were in a war and, of course, you had to have more.

REQUIREMENTS FOR FISCAL YEAR 1976 BUDGET

Since you have raised the subject, yourself, you must do a better job of explaining why you need more in fiscal 1976 than in 1975.

Mr. COOKE. We will furnish that for the record.

[The information follows:]

After the reduction in last year's budget the following additional requirements became necessary for FY 76. Four summer employee positions were transferred from the MAP appropriation to O&M to simplify administering the program within OSD. Within OASD (Comptroller) one of the civilian positions in ODASD (Security Policy) was converted to military because of changing requirements. Three additional military positions are being added for an Office of Special Studies working directly for the Principal Deputy Assistant Secretary (Comptroller). Two military and eight civilian positions are being added to the OASD (Manpower & Reserve Affairs) as part of a new office whose function will be to define manpower goals, and the tasks required to achieve them.

ORGANIZATION OF THE JOINT CHIEFS OF STAFF

Senator YOUNG. Please proceed.

Mr. COOKE. Mr. Chairman, if there are no further questions on the Office of the Secretary of Defense, I will proceed to the Organization of the Joint Chiefs of Staff.

Next, Mr. Chairman, I invite your attention to the budget requirements of the Joint Chiefs of Staff.

You will find attached two charts pertaining to the OJCS; a summary of financial requirements (attachment 3); and a summary of personnel requirements (attachment 4).

The fiscal year 1976 fund request for this organization is $12,084,000, an increase of $945,000 when compared with the revised fiscal year 1975 estimate. The increase is primarily in the areas of civilian personnel and utilities and rents.

In the area of civilian personnel, an increase of $250,000 is required for the annualization of the October 1974 pay raise and the January 1975 increase in costs to the Government for Federal employees health insurance, additional day of paid employment in fiscal year 1976, normal within-grade salary raises and related costs to the Government for personnel benefits. This increase is partially offset by a decrease of $111,000 associated with a reduction in employment implemented during fiscal year 1974 and fiscal year 1975.

The increase of $720,000 in the utilities and rents area is to reimburse the General Services Administration for building rent as provided by Public Law 92–313 enacted effective fiscal year 1975.

The $61,000 increase in travel and transportation of personnel is needed to offset the dollar devaluation abroad and is primarily associated with our support of ongoing international negotiations.

The remaining increases totaling $25,000 are attributable to increases in cost of equipment maintenance service and supplies/materials, primarily paper and papermade products.

This completes my summary of the requirements of the Organization of the Joint Chiefs of Staff.

If I may proceed now to the Office of Information for the Armed Forces.

OFFICE OF INFORMATION FOR THE ARMED FORCES

The fiscal year 1976 budget estimate for this program is $16,272,000, an increase of $1,803,000 over the revised fiscal year 1975 estimate of $14,469,000.

I would like to point out that this program is committed to provide Navy personnel with radio and television services enjoyed by other members of the armed services stationed at land bases, and that this organization has recently been given the responsibility for policy and supervision of audiovisual activities throughout the Department of Defense.

In addition, this organization contracts with commercial sources for much of its materials. The costs of these contracts have risen.

Senator YOUNG. You mentioned supervision of audiovisual activities. What do you mean by that?

Mr. COOKE. I would like to call on Mr. Broger, Director of the Office, whom I am sure you remember from previous years, to elaborate on that.

Mr. BROGER. Mr. Chairman, over past years, the Office of the Secretary has tried to get a complete overview of all of the management problems connected with audiovisual facilities. This is all software such as films, all hardware such as camera equipment, all kinds of audiovisual hardware or facilities, the various facilities that exist in the military departments.

We are making a determined effort in our organization now to get all of these facilities, hardware and software, under control, consolidate where we can the facilities, so that where a facility is only operating at 50 percent efficiency we begin to either put other agencies in Defense in with those facilities or perhaps even service other Federal facilities. But cost effectiveness is a major job in this area.

We also are going to have to get considerable computer effort going on this, because, as you may know, there are thousands of different kinds of hardware in audiovisuals and there is such proliferation in this area that we are determined to get on top of it and make it cost effective.

SPORTS EVENTS ON SATELLITE TV

Senator YOUNG. I asked the Navy a few days ago if naval personnel on an aircraft carrier, were able to get football games, baseball games, sports of all kinds, and other programs from satellites. Are our troops in Europe able to get these programs from satellites?

Mr. BROGER. Only seven a year, Mr. Chairman.

We program for seven live sports events annually. That has been in our budget for several years now. It is costly and we have included more of that but we do try to give them adequate sports on film.

Now, we asked the services which sporting events they prefer to have. Normally, it is the first game of the world series and if they play a seventh game, the seventh game, and pro bowl games, the Army-Navy game; that kind of thing. But we only give them seven a year now.

Senator YOUNG. Is that by film or by satellite?

Mr. BROGER. That is by satellite.

We provide them up to 5 or 6 hours a week of sports on film. Of course, that is several weeks after the event. But we do it on radio live every time there is an outstanding event.

We do have satellites into Europe, into Panama, Puerto Rico.

As you may remember, last year we asked you for money to start a circuit into Korea. That is in and we are asking now for enough money to annualize that satellite to the troops in Korea for sporting events and news.

Senator YOUNG. Isn't that expensive to have a day-to-day use of the satellite for various programs?

Mr. BROGER. It is not expensive when you think that this is a continuing listening audience.

On the basis of troops, it amounts to pennies a person.

For instance, the satellite to Korea will run something like $300,000 annually but by the time you amortize that to the number of troops who get continual news and sports on a daily and nightly basis it is very inexpensive.

Senator YOUNG. I should think that would be very helpful to isolated troops or Navy personnel aboard ships, if it isn't too costly.

Mr. BROGER. Yes, sir, it is. As a matter of fact, it is the best lifeline to home that we have. It is the nearest that we can make a comparable home life for troops who are in isolated areas.

Mr. COOKE. As Mr. Broger pointed out, in fiscal year 1976 we will complete the phasing of TV service for Navy ships by adding two additional television circuits, for a total of eight. These 8 circuits and the 6 land-based television circuits will service 233 television outlets. In addition, our radio service will increase from 887 to 901 outlets.

The $1,803,000 increase is needed to provide the following:

(1) $145,000 in civilian personnel costs primarily for annualization of the October 1974 pay raise, for within-grade salary increases, and for the extra paid day in fiscal year 1976;

(2) $42,000 to reimburse GSA for space rental at a higher rate than currently paid;

(3) $664,000 to provide for increased cost announced by commercial contractors for transcription services associated with our radio service;

(4) $198,000 for television services, which includes almost a half million dollars increase in the cost of program materials which are partially offset by savings resulting from the greater use of video tape in lieu of film.

(5) $351,000 in communications to annualize the cost of the audio satellite circuit to Korea which was installed in fiscal year 1975, to increase the Postal Service for larger mailings for the new circuits, and for price increases:

(6) $142,000 for printing and reproduction, of which $104,000 is for increases associated with labor and paper costs;

(7) $59,000 for travel primarily to support the new audiovisual mission responsibilities and to provide liaison with State election administrators to further the goals of the Federal voting assistance program; and

(8) $382,000 for supplies which consist primarily of audio and video tape for service to Navy ships.

These and other minor increases totalling $18,000 are partially offset by other decreases of $198,000 in such areas as rental of facilities in Los Angeles and equipment purchases.

CONDITION OF AUDIO AND VISUAL TAPES

Senator YOUNG. How old are these audio and visual tapes by the time they reach Navy ships?

Mr. BROGER. We have two different methodologies of getting them out, Mr. Chairman.

One is a priority package like the sporting events or something that happens that ought to be timely. That will go airmail and will get even to the farthest outposts within 4 or 5 days, 2 weeks at the outside. We try to get it there as quickly as we can.

Now, the regular package materials will go out just by regular mail since it is not timely. If you see a particular television show 3 weeks or 6 months from now, it does not make that much difference.

But the timely events we try to get out as quickly as we can.

Mr. COOKE. Mr. Chairman, that concludes our presentation of the Office of Information for the Armed Forces.

With your permission, I would like to turn now to the Office of Overseas Dependents Education.

OFFICE OF OVERSEAS DEPENDENTS EDUCATION

The budget request for fiscal year 1976 for the operation and maintenance of overseas dependents schools is now appearing in the budget request of the Office of the Secretary of Defense. Prior to fiscal year 1975 funds were requested in the budget of each military department. This change in funding, from the individual military department's budget to a consolidated Office of the Secretary of Defense budget, was directed by Congress.

We anticipate that, for fiscal year 1975, the obligations for overseas dependents schools will be $204.5 million. The request for fiscal year 1976 will amount to $215.6 million, an increase of $11.1 million.

These funds will provide for the continuation of the educational programs conducted in fiscal year 1975 and provide for increased costs of the program. These costs are as follows——

Senator YOUNG. Are these the increased costs you are giving now?

Mr. COOKE. These are increased costs, with the exception of a reduction of $2.6 million because of declining enrollment. But the costs listed in the statement, Mr. Chairman, net out to the increase of $11.1 million. They include:

	Millions
1. Pay raise for Public Law 86–91 personnel	$3.8
2. Within-grade increases and pay raise annualization	2.9
3. Other personnel related costs	1.6
4. Change requirements related to enrollment changes	−2.6
5. Estimated increases in tuition-fee schools	2.0
6. Program improvement and price increases	3.4
Total	11.1

STUDENT ENROLLMENT

The estimated student enrollment is 149,631, broken down as follows:

DOD-operated schools, K–12	134,513
Canal Zone schools	6,466
Tuition-fee schools	8,652
Total	149,631

These increases are offset by a decreasing enrollment with an estimated savings, because of decreased enrollment, of $2.6 million, with a net increase of $11.1 million.

Senator YOUNG. Do you have the number of schools you operated in fiscal year 1975 and the number you intend to operate in fiscal year 1976?

Mr. COOKE. Yes; and I do have with me Dr. Cardinale, who is Director of the program.

Dr. CARDINALE. In 1975, we were operating approximately 270 schools.

We anticipate in fiscal year 1976 having 271 schools.

This is due, in some instances, to the reduction of troops or the partial closing out of certain activities or shifting of troop population.

We have been for the last several years trying to consolidate as many schools as we can if they are within daily commuting distance of each other.

As an elementary school would decrease in enrollment to a specific number, 55 or 100 or so, we try to consolidate that with another school that is not too far away. However, up to the present time, because of the dispersal of our declining enrollments, we have not been able to consolidate or close more schools.

Senator YOUNG. With the closing of bases, it is a little hard to understand why you would have an increase.

You may want to amplify that a little more.

Mr. COOKE. We will for the record, sir.

[The information follows:]

The FY 1976 budget request forecasts declining enrollments in the DoD schools we are presently operating overseas. While a major realignment of units based abroad, resulting in fewer headquarters and more combat troops is now in progress, I am not aware of any imminent changes to existing force structures and deployment of forces overseas which would reduce the total number of DoD operated schools in FY 1976. If mission draw-downs do occur, then conceivably in another year there will be some base closures overseas with resultant pupil transfers that would enable us to close some DoD overseas dependents schools and consolidate others.

CIVILIAN HEALTH AND MEDICAL PROGRAM OF THE UNIFORMED SERVICES (CHAMPUS)

Mr. COOKE. Mr. Chairman, I would like to turn to the Civilian Health and Medical Program of the Uniformed Services (CHAMPUS).

The budget request for fiscal year 1976 for the CHAMPUS program is $539,141,000.

Previously, this program, which cost-shares the medical care provided dependents of active duty and retired personnel as well as retired members in civilian health facilities, was funded separately in the three military departments.

The fiscal year 1975 Appropriations Act transferred funds for the support of the program to the Office of the Secretary of Defense.

A CHAMPUS charter, dated December 4, 1974, establishes the Office of CHAMPUS as an Office of the Secretary of Defense field activity.

The fiscal year 1976 personnel end strengths for the Office of CHAMPUS provide for improved and expanded management of the program as well as the additional responsibility for the adjudication of claims outside the United States.

The program is composed of two major elements—the cost of medical supplies and services reimbursed $511.4 million and the administrative cost of operating the program $27.7 million.

The cost of medical supplies and services is expected to increase by $42,150,000 over fiscal year 1975; this includes the added overseas responsibility.

The estimated $3,920,000 increase in the administrative cost of the program provides for expansion of the Denver office, contractors' remuneration, and the added overseas programs.

Senator YOUNG. Is part of this increase due to rising numbers of retired military personnel?

Mr. COOKE. I think it is in part that; in part the cost of medical services has been going up drastically over the last year.

I do have Mr. McKenzie, who is the principal deputy assistant Secretary of Defense in Health and Environment.

Vern, would you like to talk a bit to the problem of costs?

Mr. MCKENZIE. Yes.

Mr. Chairman, the increase in the entire population is one of the bases for the increased cost anticipated in fiscal year 1976.

In addition to the increased cost of the care itself, another contributing factor is the shortage of military doctors in Armed Forces treatment facilities, which necessitates an increased number of beneficiaries obtaining care under the CHAMPUS who formerly obtained it within our own military facilities.

COST INCREASES IN HOSPITAL BEDS

Senator YOUNG. Do you have figures on the increase in cost for a bed in a hospital over the last 3 or 4 or 5 years?

Mr. MCKENZIE. The cost in the past 8 or 9 months has gone up roughly 20 percent.

I could provide for the record, Mr. Chairman, the past 5 years' experience.

[The information follows:]

	Total expense per adjusted patient day	Annual percentage change
1970	$78.01	13.91
1971	87.63	12.3
1972	97.66	10.4
1973	105.65	9.2
1974	118.57	12.2
December 1974[1]	136.20	[2] 15.0

[1] Latest available figure.
[2] Percentage change December 1974 over December 1973.

Source: Hospital Indicators Panel Survey American Hospital Association.

COST TO MEMBERS OF CONGRESS AT BETHESDA NAVAL AND WALTER REED

Senator YOUNG. What is the cost per bed now in hospitals as compared with 2 or 3 years ago?

The cost for Members of Congress at the Bethesda Naval Hospital or Walter Reed Hospital is how much?

Mr. McKENZIE. $133 per day.

Mr. COOKE. Mr. Chairman, this completes our presentation of the budget.

QUESTIONS SUBMITTED BY SENATOR YOUNG

Senator YOUNG. I have some further questions which you may answer for the record.

Mr. COOKE. We will be very pleased to do so, sir.

[The questions and answers follow:]

INTELLIGENCE SUPPORT CONTRACTS

Senator YOUNG. What is the reason for the Office of the Secretary to engage in intelligence support contracts?

Mr. COOKE. The money planned for use in FY 1976 is to provide contractual assistance from private industrial firms. Outside contracted studies, as well as internal reviews and studies, play an essential role in improving the quality of intelligence information produced and the efficiency with which Defense intelligence resources are managed.

In general, intelligence study requirements are contracted externally where adequate in-house skills, facilities or equipment are not available and where the use or development of an in-house capability is neither required nor practical.

The studies planned in FY 76 are concerned with: Indications and Warning Systems; Reconnaissance and Surveillance; Systems Evaluation; Intelligence Threat Assessment; and Resource Allocations.

The $3.5M funding level requested for FY 76 will permit the continuation of contractual work initiated in FY 1975 as well as the initiation of new studies, principally in the areas of threat assessment and systems evaluation. To assist in carrying out the ASD(I) responsibility to provide the Secretary of Defense with net threat assessments, new study efforts are planned on the following topics: (1) Strategic Product Assessments/SALT Support; (2) ASW Studies; and (3) Air and Land GPF Studies (including MBFR support). These latter studies are directly related to negotiations of MBFR reduction options and verifications.

ATTENDANCE AT INTERNATIONAL CONFERENCES

Senator YOUNG. Why and what type of international conferences do representatives of the Office of the Secretary of Defense attend?

Mr. COOKE. Attached is a list of international conferences which OSD representatives attend. Representatives of the Office of the Secretary of Defense are members of the U.S. Delegation and/or principal negotiators on these particular conferences where international negotiations are conducted relating to national security issues.

International meeting	*Location*
Mutual and Balanced Force Reductions Task Force (MBFR) Negotiations.	Vienna, Austria.
North Atlantic Treaty Organization (NATO).	Brussels, Belgium.
Mutual and Balanced Force Reductions Task Force (MBFR) Negotiations Between North Atlantic Treaty Organization (NATO) and Delegation.	Brussels, Belgium. Vienna, Austria.
Trilateral Meetings with Federal Republic of Germany and United Kingdom on Conventional Balance.	Federal Republic of Germany. United Kingdom.
Permanent Joint Board on Defense (PJBD).	Ft. Bragg, N.C. Canada (To be identified later, probably Nova Scotia).
United States-Federal Republic of Germany Offset Negotiations.	Bonn, Germany.

North Atlantic Treaty Organization (NATO) Infrastructure Conference.	Casteau, Belgium.
Nuclear Planning Group Study Group	Brussels, Belgium.
Nuclear Planning Group (NPG) Ministerial Meeting.	Monterey, Calif.
Base Rights Negotiations	Athens, Greece.
Negotiations for Renewal for United States-Spanish Agreement and/or Azores Agreement.	Madrid, Spain and/or Lisbon, Portugal.
North Atlantic Treaty Organization (NATO) Defense Planning Committee Ministerial Meeting.	Brussels, Belgium.
Standing Consultative Commission (SCC) Session.	Geneva, Switzerland.
Strategic Arms Limitation Talks (SALT) Negotiations.	Geneva, Switzerland.
Meeting of the Joint Department of Defense Commonwealth of Puerto Rico Commission on the Caribbean Firing Range.	London, England.
International Conference on the Indian Ocean.	Tehran, Iran.
North Atlantic Treaty Organization (NATO) Disarmament Conference.	Brussels, Belgium.
Conference of the Committee on Disarmament.	Geneva, Switzerland.
Laws of War After Action Conference	Paris, France.
Non-Proliferation Treaty Conference	Geneva, Switzerland.
International Institute of Strategic Studies.	London, England.
North Atlantic Treaty Organization (NATO) Defense Ministers Conference.	Brussels, Belgium.
Eighth Antarctic Treaty Conference	Oslo, Norway.
Nuclear Suppliers Conference	Paris, France.
United Nations Scientific and Technology Committee.	New York, New York.
United States-Union of Soviet Socialist Republic Incidents at Sea Conference.	Washington, D.C., Pensacola, Florida.
United Nations Outer Space Committee	New York, New York.
Panama Canal Treaty Negotiations	Panama Canal Zone.
North Atlantic Treaty Organization (NATO) Economic Committee.	Brussels, Belgium.
Joint United States-Canadian Defense Production Sharing Agreement Discussions.	Ottawa, Canada.
Joint Economic Affairs, International Investment, Industries and Security Committee Meeting.	(Middle East) Egypt, India, Israel, Saudi Arabia and Tunisia.
United States Delegate to Coordinating Committee (3 Trips).	Paris, France.

Civilian and Military Personnel Strengths

Senator Young. What have been the civilian and military personnel strengths in the Office of the Secretary of Defense since 1964?

Mr. Cooke. The actual civilian and military personnel end strengths in the Office of the Secretary of Defense since FY 1964 were as follows:

OPERATION AND MAINTENANCE APPROPRIATION

Fiscal year	Civilian	Military	Total	Fiscal year	Civilian	Military	Total
1964	1,425	412	1,827	1970	1,779	712	2,491
1965	1,599	458	2,507	1971	1,597	642	2,239
1966	1,850	587	2,437	1972	1,555	632	2,187
1967	1,992	609	2,601	1973	1,534	656	2,190
1968	1,913	660	2,573	1974	1,571	549	2,120
1969	1,856	737	2,593				

Rent and Utilities Costs for Joint Chiefs of Staff

Senator Young. What is the reason for the significant increase in funds requested to pay GSA for utilities and rents for the Joint Chiefs of Staff?

Mr. Nestor. The reason for the significant increase ($720,000) in funds requested to pay GSA for utilities and rents for the Joint Chiefs of Staff includes: $105,000 for the support of 15,246 square feet of office space reassigned from the Office of the Secretary of Defense in support of the Expanded National Military Command Center (ENMCC); $209,000 for additional services required for OJCS operations which extend beyond the 10 hours per day, 5 days per week, provided in the standard user rates established for the Pentagon Building; and the balance of $406,000 represents the difference between the total fiscal year 1976 estimated cost compared with the fiscal year 1975 appropriated amount.

Senator Young. Does the Office of Secretary of Defense have a similar increase?

Mr. Cooke. No, sir, the Office of the Secretary of Defense is requesting less in fiscal year 1976 for GSA reimbursement.

Overseas Dependents Education

Senator Young. What savings and efficiencies, if any, have been attained by consolidating Overseas Dependents Education in the Office of the Secretary of Defense?

Dr. Cardinale. The Office of the Secretary of Defense has established the Office of Overseas Dependents Education (OODE) as a field activity with the following responsibilities and functions:

1. Development of curricula
2. CONUS recruitments, selection and assignment and the inter-area transfer of personnel
3. Consolidated financial management activities in coordination with the Assistant Secretary of Defense (Comptroller)
4. Develop policy and technical guidance for the Overseas Dependents Education System with respect to: (a) Educational goals and objectives, curricula, educational programs, instructional materials and techniques, professional standards, and staff criteria; (b) Recruitment, selection, assignment and transfer of personnel; (c) Financial management activities, in coordination with the Assistant Secretary of Defense (Installations and Logistics).

The FY 1976 budget submission is the first opportunity of OODE to budget for Overseas Dependents Education, since the funds contained in the FY 1975 President's Budget were those transferred to OODE from the three Military Departments.

Therefore, the FY 1976 submission reflects the elimination of the Military Departments' headquarters echelons from the Overseas Dependents Education Budget, at a saving of $200,000.

Steps have been taken in the FY 1976 budget to further reduce the number of Classification Act professional and clerical personnel above the school level. The table below will display some of the changes that have taken place:

	Fiscal year		
	1974	1975	1976
Educational specialists	61	59	46
Other administrators	53	53	47
District superintendents	10	10	9
Assistant superintendents	4	3	3
Educational specialists	50	46	44
Other administrators	39	37	24
Clerical	35	32	19
Total	252	240	192

This represents a reduction of 60 administrative spaces over the past two years with an estimated savings of $1,014,000 in basic compensation alone.

In FY 1975 the elementary pupil-teacher ratio was 24.7:1. The FY 1976 submission reflects a pupil-teacher ratio of 25:1. Thus the total number of Public Law 86-91 personnel has been reduced from 7,477 to 7,224, a saving of 253 spaces and $2,783,000.

It must be noted that while the Congress reduced the FY 1975 budget request for Overseas Dependents Schools by $2,000,000 in anticipation of economies and savings to be effected by OSD, these savings were more than offset by rising costs, foreign currency revaluation and increased costs of the reimbursable logistic support provided by the Military Departments. Over a period of two years, support costs have increased 34 per cent from $40,615,000 in FY 1974 to $54,271,000 in FY 1976. Support costs constitute 27 per cent of the total cost of DoD-operated schools in FY 1976, as opposed to 23 per cent in 1974.

The Office of Overseas Dependents Education (OODE) has developed a quarterly management information reporting form. This will provide data concerning enrollment, personnel and financial expenditures on a regular, periodic basis for the entire school system and provide for more efficient management and monitoring. This will be the first time such data will be available in one central location.

OODE has initiated the development of a comprehensive framework for system-wide curriculum study and development. The first overall study of curriculum programs and materials being employed in all three school areas has been completed. Based on this study, a plan has been prepared for a 5-year cycle of curriculum review and development, including development of objectives, piloting programs, reviews and evaluation, and for a unified approach to curriculum development in all three school areas. This unified, comprehensive approach to curriculum development under management by OODE will avoid duplicative efforts and expenditures.

Fiscal Year 1976 Request for CHAMPUS

Senator Young. Does the fiscal year 1976 request for CHAMPUS reflect an increase in medical care as well as increased costs for such services and administration costs?

Mr. McKenzie. Yes, it does. The program has historically experienced an increase in claims volume from one year to the next. The rate of these increases has also grown from year to year. In Fiscal Year 1974 the increase was 7.6 percent over Fiscal Year 1973. Fiscal Year 1975 data indicate a growth rate of 8.2 percent over 1974. A significant portion of the Fiscal Year 1976 request is, therefore, to pay for an increase in medical care.

QUESTIONS SUBMITTED BY CHAIRMAN McCLELLAN

Senator Young. Chairman McClellan was unable to attend today's hearing, but asked questions for each witness. Would you also respond to those for the record.

Mr. Cooke. Certainly, sir.

[The questions and answers follow:]

Impact of Holding Contracts Level

Chairman McClellan. Delineate the service support contracts, primary intelligence support contracts, and those contracts associated with the review of military compensation that are increasing. If these contracts are held level, what would be the impact?

Mr. Cooke. A summary of the service support contracts and impact on reduced funding is as follows:

SUMMARY OF SERVICE SUPPORT CONTRACTS

[In thousands of dollars]

	Fiscal year		
	1974	1975	1976
Logistics Management Institute	[1] 1,400	1,400	1,500
Economic impact	35	35	450
Review of military compensation			1,165
Insurance accreditation	10	10	10
Intelligence	2,449	2,500	3,500
Total	3,894	3,945	6,625

[1] $600,000 funded by military departments.

Logistics Management Institute

Since 1961 LMI has been under contract to the Office of the Secretary of Defense to conduct logistics management studies. Since FY 1972 funding has been at the $1.4 million level and our FY 1976 request is to continue LMI at approximately the same level.

Economic Impact Studies

The Department of Defense is responsible for implementing and coordinating actions that will help minimize the economic impact upon communities seriously affected by Defense readjustments. The additional funds requested will be used to employ commercial contractors for pre-impact planning and select follow-up work. If the increase is not appropriated the local community will suffer, not the Department of Defense.

Review of Military Compensation

These funds will be used to satisfy statutory requirements as well as the requirements of two congressional committees. Our present compensation staff does not possess all of the requisite expertise for analyzing the intricacies of private sector compensation. Therefore, persons who are very familiar with private sector practices, such as management consultants and independent analysts, are needed for accurate assessment of compensation and supplemental benefits. Our staff would require an independent assessment of its work by outside critics and experts in any event. Outside appraisal is a very necessary check on the quality of the work of the study.

Intelligence Contracts

Denial of the requested increase would prevent initiation of threat assessment studies which are needed to underpin the SALT and MBFR negotiations.

INCREASE IN TRAVEL TO INTERNATIONAL CONFERENCES

Chairman MCCLELLAN. In view of the Congress' expressed intent in the Roth Amendment to reduce travel, do you believe it is wise or necessary to increase travel by $0.5 million for international conferences? Describe and discuss the need to travel to these conferences and where they will be.

Mr. COOKE. While the total increase in travel is $504,000, it encompasses more than international conferences. Included also is the requirement of Public Law 93–365 which directed the Secretary of Defense to study the overall concept of tactical nuclear weapons in Europe, as well as the increased public and Congressional concern for the safety and security of nuclear weapons with the attendant need for numerous inspection visits to storage sites in such places as Europe, Alaska and Pacific areas as well as in the continental United States. The need to travel to international conferences and their locations are discussed on pages 668 and 669.

INCREASE FOR OFFICE OF INFORMATION

Chairman MCCLELLAN. An increase of over 10% is requested this year for the Office of Information for the Armed Forces. What would be the impact of denying increases not associated with increased GSA space rental costs, pay raise annualization, or increased labor and paper costs associated with printing cost increases?

Mr. BROGER. The Office of Information for the Armed Forces requested an increase of $1,803,000 for FY 76. This increase is only $356,000 more than the 10% in question.

The increases which are not an issue are those associated with increased GSA space rental costs, pay raise annualization, and increased labor and paper costs associated with printing cost. These increases total only $291,000 of the $1,803,000 requested.

The balance of the requests totals $1,512,000. The impact of denying these increases would have the effect of stopping important programs directly supporting morale in the Armed Forces. Funds to develop these programs in the two preceding years have been approved by the Congress and are now in the final stages of implementation. These increases include funds for:

Completion during FY 76 of television service for additional Navy ships while at sea over protracted periods of time.

Conversion from antiquated television kinescope films to video tape recordings currently used in industry. FY 76 will be the second year of converting to industry standards and will be completed in FY 77.

Transcription records for overseas American Forces Radio. These costs have dramatically increased because the acetate base is a petroleum product.

Annual cost of radio news and sports through a satellite circuit to the troops in Korea. This circuit was instituted during the latter part of FY 75 and was approved by the Congress last year.

Increased costs to improve management and control of audiovisual activities in the Department of Defense. This is a new management program which will result in significant savings.

Curtailment of these increases would seriously impact on the morale and welfare of military personnel and their dependents, especially in overseas areas. Concerning radio and television, equipment has been procured, and in some cases is on location ready to use the materials cited in the programs above. This includes television service for Navy ships and the conversion to video tape by American Forces Television stations overseas. Procurement and equipment to use these materials was included in the procurement budgets of the Military Departments.

Tuition-Fee Schools

Chairman McClellan. Describe what the "tuition-fee schools" are.

Dr. Cardinale. Most of the children of United States military and civilian personnel of the Department of Defense stationed in overseas areas attend schools established by the Department of Defense. A number of Government and private sector civilian children also attend DoD schools on a space-available, tuition-paying basis. In overseas areas where due to status of forces agreements and/or local conditions the DoD cannot establish and operate its own schools, the DoD dependents attend nongovernment, coeducational, private schools of various kinds for which a tuition is charged. Most of these schools are nonprofit, independent schools established on a cooperative basis by American citizens residing in a foreign community. These schools are not operated or controlled by DoD. Ownership and policy control are typically in the hands of associations of parents of the children enrolled.

Chairman McClellan. What estimated increases in tuition-fee schools are anticipated?

Dr. Cardinale. The FY 1976 request provides for tuition-fee schooling of an estimated 8,652 DoD pupils at an average tuition cost of $1,418. This compares with 9,602 DoD pupils in FY 1975 at an average tuition cost of $1,315. This is an average increase of 7.8% and does not reflect the further decline of the dollar exchange rate. The FY 1976 request also provides for tuition-fee schooling of an estimated 6,466 DoD pupils in the Canal Zone Government schools at an average cost per pupil of $1,968. This compares with an average per pupil cost of $1,789 in FY 1975. This is an average increase per pupil of 10% which is the same per cent of increase experienced from FY 1974 to FY 1975.

Program Improvements for ODS

Chairman McClellan. What "program improvements" are being planned for the Overseas Dependents Schools in FY 1976 for which $3.4 million is being requested?

Dr. Cardinale. The $3.4 million increase is a net increase which embraces not only program improvements but uncontrollable price increases as well. The breakdown is as follows:

	Thousands
Custodial and maintenance services	+$699
Transportation	+1,537
Rents	+118
Utilities	+353
Other instructional services	+159
Miscellaneous costs	+203
Minor construction	+240
Repair and maintenance	−2,039
Reimbursements	−764
Reimburse Army stock fund	+2,600
Textbooks and library books	−107
Supplies and equipment	+89
Research and Innovation	+211
Dormitory support costs	+3
TDY	+104
Totals	+3,406

We are still unable to fully implement some of the program improvements such as vocational education, paraprofessional school aides, etc., approved by Congress in previous years but only partially realized because of rising costs, foreign currency revaluation and increased costs of the reimbursable logistic support provided by the Military Departments.

Enrollments

Chairman McClellan. Compare enrollments in FY 1974, 1975 and 1976 by geographical area and type of school.

Dr. Cardinale. Enrollments by geographical area and type of school are as follows:

	Fiscal year		
	1974	1975	1976
A. European Area:			
1. DoD operated schools:			
DoD students only	108,582	105,623	103,225
Kindergarten	9,732	9,892	9,801
Grades 1 to 12	98,850	95,731	93,424
2. Tuition fee schools	4,052	4,100	4,100
3. Total for DoD pupils	112,634	109,723	107,325
B. Pacific Area:			
1. DoD operated schools:			
DoD students only	29,648	28,897	27,465
Kindergarten	2,667	3,122	2,950
Grades 1 to 12	26,981	25,775	24,515
2. Tuition fee schools	4,489	4,010	3,600
3. Total for DoD pupils	34,137	32,907	31,065
C. Atlantic Area:			
1. DoD operated schools:			
DoD students only	3,887	3,725	3,823
Kindergarten	356	389	406
Grades 1 to 12	3,531	3,336	3,417
2. a. Tuition fee schools	986	952	952
b. Canal Zone tuition fee	6,863	6,466	6,466
3. Total for DoD pupils	11,736	11,143	11,241

CHAMPUS Management Changes

Chairman McClellan. Describe the recent management changes made in the administration of the Civilian Health and Medical Program of the Uniformed Services. What cost avoidance or cost savings are expected from such policy and administrative changes?

Mr. McKenzie. Our recent efforts should be characterized as program clarification and definition rather than changes. We have attempted to clarify a number of gray areas and enforce the concept that CHAMPUS is a medical benefits program which provides financial assistance only for necessary medical care. In order to do this, we have issued a series of statements on what is or is not covered; whose services can or cannot be paid for; and what cost share formula is appropriate in given situations. Our recently issued actions are estimated to result in cost avoidance of something under $10 million.

"When Actually Employed" Definition

Chairman McClellan. Explain what is meant by the term "when actually employed" that appears on your personnel requirements table.

Mr. Cooke. "When Actually Employed" is a term used to describe an employee who has no prescheduled regular tour of duty and works less than full time.

Overseas Dependents Education Program/Personnel

Chairman McClellan. For the Overseas Dependents Education Program, provide a breakdown showing number of principals, clerical personnel, each category

of "other personnel," logistics personnel, for each fiscal year shown in the justification book.

Mr. Cook. The requested information is provided below:

	Fiscal year—			
	1974	1975	1976	197T [1]
(a) Principals:				
Principals	220	219	219	219
Assistant principals	89	94	94	94
Total	309	313	313	313
(b) Clerical personnel (includes paraprofessionals):				
1. Classification Act (clerical):				
Secretarial	129	126	128	128
Clerical	62	61	67	67
Subtotal	191	187	195	195
2. Foreign nationals (clerical):				
Secretaries	155	155	155	155
Clerical	277	242	235	235
Librarians	44	44	44	44
Library clerks	155	156	158	158
Subtotal	631	597	592	592
3. Paraprofessionals (United States)	300	296	418	418
Total	1,122	1,080	1,205	1,205
(c) Other personnel:				
1. Librarians	180	188	181	181
2. Assistant librarians	20	15	25	25
3. Counselors	272	269	269	269
4. Nurses	152	146	147	147
5. Psychologists	24	26	29	29
6. Social workers	16	12	32	32
7. Vocational instructors	4	4	20	20
8. Work-study	7	11	17	17
9. Junior ROTC instructor	30	33	33	33
Total	705	704	753	753
(d) Logistics personnel:				
1. Classification Act (supply specialists)		49	49	49
2. Foreign nationals (supply specialists)	55	270	270	270
Subtotal	55	319	319	319
3. Military personnel:				
(a) Officer	10	8	8	8
(b) Enlisted	30	29	29	29
Subtotal	40	37	37	37
Total	95	356	356	356

[1] End strengths not man-years.

DoD School Reimbursements

Chairman McClellan. From whom do reimbursements to Department of Defense schools come? What categories of individuals are eligible for attendance?

Mr. Cooke. Reimbursements to Department of Defense schools come primarily from sponsors of non-DoD dependents enrolled in DoD Overseas Dependents Schools. Two categories of individuals are eligible for attendance:

a. Space-Required, Tuition-Paying.—The following may attend on a space-required, tuition-paying basis:

1. Dependents of employees of other United States Governmental agencies stationed overseas who are eligible to receive an educational allowance for their dependents under the State Department Standardized Regulations (Government Civilians, Foreign Areas).

2. Dependents of United States citizen or immigrant-alien sponsors employed under contracts or other agreements with DoD when the applicable contract or agreement authorizes dependent education on a tuition basis in DoD Overseas Dependents Schools. Examples include:

(*a*) American Red Cross personnel.

(*b*) Contract technical services and contract maintenance personnel.

(c) Employees of non-appropriated fund activities.

3. Dependents of third-state national military and civilian personnel accompanying or serving with the United States Armed Forces overseas when recommended by the major overseas commander and approved by the appropriate DoD Dependents Schools geographical manager.

b. Space-Available, Tuition-Paying.—At the discretion of the local dependents school authorities and when consistent with the local military commander's policy concerning access to the installation and agreements with the host government concerned, the following may be enrolled, in the priority given, upon payment of the established tuition:

1. Dependents of United States citizens residing in the overseas area including dependents of deceased or retired United States military personnel.

2. Dependents of United States citizen or immigrant-alien sponsors who are employed under contracts or other agreements with the DoD but whose contracts do not authorize dependent education on a tuition-fee, space-required basis in a DoD Overseas Dependents School.

3. Dependents of foreign nationals when there is no objection from the host country and when such inclusion does not displace nor prevent inclusion of United States citizen sponsored dependents seeking admission on the same basis at the same time.

In addition, costs involved in operating Department of Defense schools in Berlin, Germany are charged directly to occupational cost Deutschemark funds. This Deutschemark support is indicated as such on our budget submit and reduces the net cost for Department of Defense schools.

Eligible CHAMPUS Beneficiaries

Chairman McClellan. What is the total population eligible for CHAMPUS benefits—1974–75–76? Breakout by category of personnel.

Mr. Cooke. The information follows:

ESTIMATE OF CHAMPUS-ELIGIBLE BENEFICIARIES

	1974	1975	1976
Dependents (active duty)	3,328,718	3,055,191	3,029,092
Retirees	1,075,714	1,099,988	1,135,367
Dependents (retired)	2,247,142	2,307,758	2,357,411
Survivors (active duty)	136,714	130,800	129,585
Survivors (retired)	209,398	220,739	233,920
Total	6,997,686	6,814,476	6,885,375

Revised CHAMPUS Estimates

Chairman McClellan. Provide revised CHAMPUS estimates based on actions that caused a request for $75 million reprogramming in the FY 75 program. What is the impact on the FY 76 program of the price increases experienced in FY 75? How will they be accommodated?

Mr. Cooke. The actions that caused a request for $75 million reprogramming in the FY 75 program were (a) inflation, (b) increased utilization and intensity, (c) increased beneficiary population, and (d) a $31 million reduction by the Congress in the amount requested in the FY 75 President's Budget. The effect of these actions on the FY 76 program, offset by estimated management savings, is expected to generate a requirement for $588,840 thousand, or an additional $49,699 more than the President's Estimate. The requirement was calculated as follows:

	Thousands
Fiscal year 1976 President's estimate	$539,141
Increases:	
Utilization and intensity	34,560
Inflation	35,440
Beneficiary population	9,699
Total	79,699
Less: Estimated management savings	−30,000
Fiscal year 1976 CHAMPUS requirement	588,840

The $539,141 thousand reflected in the FY 76 President's Estimate was calculated approximately six months ago. Since that time, inflation in health services has continued to increase at an increasing rate, which resulted in the reprogramming request for FY 75. The FY 1976 President's budget estimate should be increased by $49.7 million, resulting in a revised total request of $588.8 million. The alternative would be to either further reduce the benefits package early in the fiscal year, resort to a reprogramming action again next year, or terminate the program prior to the end of the fiscal year.

Contractor Fees for OCHAMPUS

Chairman McClellan. Explain what is funded under administrative "contractor fees" for OCHAMPUS.

Mr. Cooke. The administrative "contractor fees" for OCHAMPUS are the fees paid the CHAMPUS contractors to cover the administration costs they incur in the performance of the contract with OCHAMPUS. They include:

1. Salaries of contractor personnel.
2. Costs of office supplies.
3. Cost of automatic data processing and developmental costs directly associated with CHAMPUS.
4. Mail and telephone expense.
5. Travel.

when these costs directly relate to reviewing, adjudicating, and paying claims.

They also include other costs incurred indirectly and prorated or allowed to different departments within the contracting company, including the CHAMPUS division. These indirect costs could include:

1. Utilities.
2. Executive salaries.
3. Depreciation of fixed assets.
4. Finance and accounting services.
5. Commonly shared services, such as custodial services, legal advisors, etc.

Unobligated Balances

Chairman McClellan. Explain why small amounts of unobligated balances were available at the end of various fiscal years shown in the program and financing statement for this appropriation.

Mr. Cooke. Funds are allocated to various field activities for administration. The financial manager of each of these activities is directed not to exceed his basic allocation of funds. The relatively small unobligated balances are the accumulated unobligated balances of these numerous field activities which cannot administratively obligate down to the precise amount of their allocations. In addition the managers of these activities are constrained to obligate funds for prudently necessary costs of performing their missions.

Office of Policy, Planning and Management

Chairman McClellan. What specific mission will the office of Policy, Planning and Management in the Office of the Assistant Secretary of Defense (M&RA) fulfill?

Mr. Cooke. The office of Policy, Planning and Management (PP&M), in the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs), is responsible for developing, directing, and coordinating certain major projects, the scope of which transcends the functional responsibilities of the other Deputy Assistant Secretaries within Manpower and Reserve Affairs, and which also has a significant interaction with other offices within the Defense Department and with other agencies. Such projects are distinguished by the degree of integration required regarding the activities and contributions of existing offices both within OASD (M&RA) and elsewhere within the Office of the Secretary of Defense (OSD) and the Services.

One such project is to supervise the manpower aspects of United States force deployment overseas. In this capacity, to develop a five-year manpower plan for overseas deployments, to include the implications of arms control negotiations for our long-term manpower requirements. The office represents ASD (M&RA) on the Secretary of Defense's NATO Task Force, and directs staff actions pertaining to the manpower aspects of United States participation in NATO.

As a second project, in conjunction with planning efforts pertaining to United States and Allied manpower utilization, PP&M will coordinate for M&RA the implementation of Total Force policy (Active and Reserve forces), paying particular attention to mobilization policy and plans, desired readiness, and alternative post-M-Day deployment schedules.

Further, as part of the DoD-wide management program, working with the Assistant Secretaries of the Military Departments and others, PP&M will act as the M&RA agent in development for the Secretary of Defense the Defense Department long-term manpower goals and near-term objectives, including the legislative program. These programs must include efficient monitoring and reporting systems to ensure timely and effective accomplishment of approved goals and objectives. It will participate, along with other M&RA offices, in identifying major manpower issues in need of analysis and decisions as part of the PPBS cycle.

PP&M will also supervise the preparation and coordination of the Congressional program for Manpower and Reserve Affairs, and will originate, review, and integrate OSD and Military Department proposals for legislation, and prepare and coordinate testimony of key Defense witnesses before the Congress in support of Defense Manpower programs. It will prepare the manpower portion of the Annual Report to the Congress by the Secretary of Defense. PP&M will testify before Congressional Committees as required.

PP&M will also undertake other major projects as assigned.

Mission Area Transfers From NASA

Chairman McClellan. Provide a breakdown of service support contracts antary departments have taken place?

Mr. Cooke. The following functional transfers, by Military Service or Agency, were approved subsequent to development of the FY 1975 President's Budget and are included in the FY 1976 President's Budget.

Item	Military service or agency	Civilian end strength	Military end strength
Quality assurance—petroleum	A		
Item coding—Phase III	A	23	
Do	N	13	
Do	AF	9	
Disposal operations	A	3	1
Defense civil preparedness	GSA	4	
Precious metals recovery	N	18	
Telecommunications consolidation	N	13	
Contract compliance	NASA	13	
Support functions:			
Accounting and finance	A	−8	
Administrative	A	7	
Total transfers		95	

Increased Service Support Contracts

Chairman McClellan. Provide a breakdown of service support contracts anticipated in FY 76 that result in a $2.7 million increase in the costs of the Office of the Secretary of Defense.

Mr. Cooke. The following is a breakdown of the costs of service support contracts anticipated in FY 1976 compared with those in FY 1975:

SERVICE SUPPORT CONTRACTS

[In thousands of dollars]

	Fiscal year 1975	Fiscal year 1976	Difference
Logistics Management Institute	1,400	1,500	+100
Economic impact	35	450	+415
Review of military compensation		1,165	+1,165
Insurance accreditation	10	10	
Intelligence	2,500	3,500	+1,000
Total	3,945	6,625	+2,680

PERMANENT CHANGE OF STATION COSTS

Chairman MCCLELLAN. Explain amounts shown for PCS costs in the justification books.

Mr. COOKE. The amounts shown for permanent change of station (PCS) costs in the justification books are as follows:

Fiscal year:	*Thousands*
1974	$4,647
1975	4,605
1976	5,626
197T	3,384

The above PCS costs reflect primarily transportation expenses for travel to, from and within foreign countries by Department of Defense Overseas Dependents School System teachers and administrators and their dependents pursuant to contractual obligations (includes renewal agreement travel).

a. Per diem and incidental expenses for travel to, from and within foreign countries.

b. Transportation expenses for travel to, from and within foreign countries paid to Military Aircraft Command (MAC), Military Sea Transportation Service (MSTS), American Flag carriers and foreign flag carriers. Also included in above PCS costs are expenses for Transportation of Things (TOT). These include costs of transportation of household and personal effects of DoD school teachers and administrators and their dependents paid to MAC, MSTS and others.

The significant increase in PCS costs reflected in FY 1976 and 197T is due primarily to MAC over-ocean transportation costs for DoD teachers, administrators and their dependents for the European school area *not previously identified by Army as dependents schooling costs* but centrally funded by Army O&M funds.

Chairman MCCLELLAN. Explain the reason for increases of $492,000 for the Office of Information for the Armed Forces for program materials and support to television services in FY 1976.

Mr. COOKE. The $492,000 increase includes $488,000 for increased cost of program materials in color from commercial sources. These programs are no longer available in black and white and the increased cost is primarily attributable to the cost of procuring the programs in color. $4,000 is to provide an electrical power panel and required electrical connections to the video tape duplication area within the American Forces Radio and Television Service facility at Los Angeles. The increase of $492,000 is partially offset by a decrease of $294,000 resulting from use of video tape in lieu of kinescope film for an actual net increase of $198,000 in this area.

Chairman MCCLELLAN. How many Satellite circuits, to which parts of the world, are operated for the Office of Information of the Armed Forces. What is the annual cost of each one.

Mr. COOKE. The following Satellite circuits are used to provide news, sports and other perishable information to Armed Forces overseas:

AFRTS—Washington to Frankfurt	$137,805
AFRTS—Washington to Panama	99,897
AFRTS—Washington to Puerto Rico	58,087
AFRTS—Washington to Korea	285,192
Seven special television events via satellite to Philippines, Korea, Germany and Panama	280,000

The seven special events for the past year were—first game in the World Series; Michigan/Ohio, Army/Navy, Rose Bowl, Orange Bowl and Super Bowl football games; and NCAA Basketball Championship.

The Satellite circuits feed major regional AFRT networks overseas and thus provide service to more than 70% of the AFRT military audience overseas.

RETIRED PAY, DEFENSE

STATEMENT OF LeROY J. SPENCE, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (MILITARY PERSONNEL POLICY)

ACCOMPANIED BY:

L. PAUL DUBE, DIRECTOR OF MILITARY PERSONNEL, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (PROGRAM/BUDGET)

ALOYSIUS F. HARTER, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE (PROGRAM/BUDGET)

JUSTIFICATION

Senator YOUNG. Our next witness is Mr. LeRoy J. Spence, Office of the Deputy Assistant Secretary of Defense, Military Personnel Policy.

Before we hear Mr. Spence's testimony, I think it appropriate to include for the record material from the justification which deals with retired pay.

[The justification follows:]

RETIRED PAY, DEFENSE

APPROPRIATION LANGUAGE

For retired pay and retirement pay, as authorized by law, of military personnel on the retired lists of the Army, Navy, Marine Corps, and the Air Force, including the reserve components thereof, retainer pay for personnel of the Inactive Fleet Reserve, and payments under section 4 of Public Law 92–425 and chapter 73 of title 10, United States Code; [$6,040,600,000] *$6,885,200,000.*

For "Retired Pay, Defense" for the period July 1, 1976 through September 30, 1976, $1,775,100,000. (Department of Defense Appropriation Act, 1975.)

RETIRED PAY, DEFENSE—PROGRAM AND FINANCING

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate
Program by activities:			
1. Nondisability	3,930,289	4,679,561	5,381,887
2. Temporary disability	74,750	71,708	73,325
3. Permanent disability	680,011	766,182	829,655
4. Fleet reserve	415,011	472,617	510,859
5. Survivors' benefits	36,836	50,532	89,474
Total obligations (object class 13.0)	5,136,897	6,040,600	6,885,200
Financing: Unobligated balance lapsing	13,803		
Budget authority	5,150,700	6,040,600	6,885,200
Relation of obligations to outlays:			
Obligations incurred, net	5,136,897	6,040,600	6,885,200
Obligated balance, start of year	15,792	34,092	28,692
Obligated balance, end of year	−34,092	−28,692	−30,192
Adjustments in expired accounts	8,957		
Outlays	5,127,554	6,046,000	6,883,700

RETIRED PAY, DEFENSE—PROGRAM AND FINANCING

[In thousands of dollars]

	Transition
Program by activities:	
1. Nondisability	1,393,075
2. Temporary disability	16,433
3. Permanent disability	211,884
4. Fleet reserve	127,922
5. Survivors' benefits	25,786
Total obligations	1,775,100
Financing: Budget authority	1,775,100
Relation of obligations to outlays:	
Obligations incurred, net	1,775,100
Obligated balance:	
Start of year	30,192
End of year	−16,292
Outlays	1,789,000

RETIRED PAY, DEFENSE, PROGRAM SUPPLEMENTAL (SUPPLEMENTAL NOW REQUESTED)—PROGRAM AND FINANCING

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate
Program by activities:			
1. Nondisability		193,464	
2. Temporary disability		5,644	
3. Permanent disability		11,277	
4. Fleet reserve		11,147	
5. Survivors' benefits		13,768	
Total obligations		235,300	
Financing:			
Budget authority (proposed supplemental appropriation)		235,300	
Relation of obligations to outlays:			
Obligations incurred, net		235,300	
Obligated balance, start of year			300
Obligated balance, end of year		−300	
Outlays		235,000	300

RETIRED PAY, DEFENSE—APPROPRIATION INTRODUCTION, FISCAL YEARS 1974–76 AND 1977

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate	197T estimate
Appropriation or estimate	5,150,700	6,040,600	6,885,200	1,775,100
Proposed supplemental appropriation		235,300		
Unobligated balance lapsing	−13,803			
Total obligations	5,136,897	6,275,900	6,885,200	1,775,100

This appropriation provides for pay, as authorized and the rates prescribed by law, of military personnel on the retired lists of Army, Navy, Marine Corps, and Air Force and provides for payments to survivors pursuant to section 4 of Public Law 92–425 and chapter 73, title 10, United States Code. These expenses include the pay of retired officers, warrant officers, enlisted personnel, female nurses and members of the women's medical specialist corps, Philippine Scouts, and authorized personnel of the reserve components, including retainer pay of the Inactive Fleet Reserve.

The estimates exclude payments to individuals who elect to receive compensation for physical disability from the Veterans Administration. The amounts requested are also exclusive of any administrative expense. The estimates reflect the results of the military pay raise of 5.52 percent on October 1, 1974, a 7.2 percent increase on January 1, 1975 in retired pay under the Consumer Price Index formula, and a net increase in FY 1975 due to strength and rate changes.

RETIRED PAY, DEFENSE—SUMMARY OF OBLIGATIONS BY BUDGET ACTIVITY, FISCAL YEARS 1974–1976 AND 197T

[Dollar amounts in thousands]

Budget activity	1974 actual		1975 estimate		1976 estimate		197T estimate	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Nondisability	$3,930,289	76.51	$4,873,025	77.65	$5,381,887	78.17	$1,393,075	$78.48
Temporary disability	74,750	1.46	77,352	1.23	73,325	1.06	16,433	.92
Permanent disability	680,011	13.24	777,459	12.39	829,655	12.05	211,884	11.94
Fleet reserve	415,011	8.08	483,764	7.71	510,859	7.42	127,922	7.21
Survivors' benefits	36,836	.72	64,300	1.02	89,474	1.30	25,786	1.45
Total	5,136,897	100.00	6,275,900	100.00	6,885,200	100.00	1,755,100	100.00

NONDISABILITY RETIREMENTS

Authority.—Applicable statutes.

Basis for retirement

Voluntarily on or after completion of the required length of service.

Involuntarily because of attainment of statutory age or completion of the maximum length of service authorized by law for the several grades.

Automatically upon completion of 30 years of combined active service and service in the Fleet Reserve.

Explanation

Provision is made in this category for the retirement pay of regular officers, regular enlisted personnel advanced to officer pay grades, regular enlisted personnel, and nonregular officers and nonregular enlisted personnel who have qualified for retirement pay under the applicable provisions of law covering nondisability retirement. The rates of such retirement pay are fixed by law.

Gains to the nondisability retirement rolls are governed by the following:

a. The mandatory and involuntary retirement of regular and reserve officers.

b. Voluntary retirement of regular and reserve officers as authorized by other law.

c. Mandatory and voluntary retirement of warrant officers required or authorized pursuant to the Warrant Officer Act.

d. Adjustments in force levels.

e. Automatic transfer of Fleet Reservists to this category upon completion of 30 years of combined active service and service in the Fleet Reserve.

f. Voluntary retirement of enlisted personnel as authorized by law.

Losses from the nondisability retired rolls are estimated on the basis of current death-rate experience.

The increase in FY 1976 of $508,862,000 over the estimated requirements for fiscal year 1975 is primarily attributable to the addition of 11,208 manyears of retired officers and 37,466 manyears of retired enlisted personnel.

NONDISABILITY RETIREMENTS—SUMMARY FOR FISCAL YEARS 1974–76 AND 197T

[Dollar amounts in thousands]

Subactivity	1974 actual		1975 estimate		1976 estimate		197T estimate	
	Average number	Amount	Average number	Amount	Average number	Amount	Average number	Amount
Regular officers	102,090	$1,055,310	108,935	$1,308,325	114,394	$1,442,426	29,320	$731,358
Regular enlisted	452,131	1,845,634	496,218	2,343,662	532,888	2,626,304	138,661	684,823
Nonregular officers	147,012	1,010,311	153,265	1,195,372	159,014	1,283,913	40,697	329,185
Nonregular enlisted	7,819	19,034	9,017	25,666	9,813	29,244	2,585	7,709
Total	709,052	3,930,289	767,435	4,873,025	816,109	5,381,887	211,263	1,393,075

NONDISABILITY RETIREMENTS

Fiscal year and subactivity	Comparison of gains and losses					
	Number on rolls beginning of year	Gains during year	Losses during year	Net change	Number on rolls end of year	Man-year average
Fiscal year 1974 actual:						
Regular officers	97,967	7,837	1,576	6,261	104,228	102,090
Regular enlisted	429,765	51,078	10,198	40,880	470,645	452,131
Nonregular officers	143,666	9,134	2,725	6,409	150,075	147,012
Nonregular enlisted	7,143	1,665	317	1,348	8,491	7,819
Total	678,541	69,714	14,816	54,898	733,439	709,052
Fiscal year 1975 estimate:						
Regular officers	104,228	8,235	1,878	6,357	110,585	108,935
Regular enlisted	470,645	52,633	9,594	43,039	513,684	496,218
Nonregular officers	150,075	8,478	2,955	5,523	155,598	153,265
Nonregular enlisted	8,491	1,120	193	927	9,418	9,017
Total	733,439	70,466	14,620	55,846	789,285	767,435
Fiscal year 1976 estimate:						
Regular officers	110,585	7,406	2,096	5,310	115,895	114,394
Regular enlisted	513,684	44,106	10,234	33,872	547,556	532,888
Nonregular officers	155,598	9,156	2,692	6,464	162,062	159,014
Nonregular enlisted	9,418	972	198	804	10,222	9,813
Total	789,285	61,640	15,190	46,450	835,735	816,109
Fiscal year 197T estimate:						
Regular officers	115,895	2,538	506	2,032	117,927	29,320
Regular enlisted	547,556	12,237	2,454	9,783	557,339	138,661
Nonregular officers	162,062	1,939	698	1,241	163,303	40,697
Nonregular enlisted	10,222	247	41	206	10,428	2,585
Total	835,735	16,961	3,699	13,262	848,997	211,263

TEMPORARY DISABILITY RETIREMENTS

Authority

Title IV of the Career Compensation Act of 1949 (now codified as Chapter 61, Title 10, United States Code).

Basis for retirement

Interim classification in cases where there is doubt as to the degree or permanence of the disability. Persons on temporary disability rolls are given periodic physical examinations at least once every eighteen months and may be:

a. Restored to active duty.
b. Separated from the service with severance pay.
c. Transferred to permanent disability retired list.
d. Continued on temporary list for another eighteen-month period.

Final determination is required within five years of initial classification and temporary disability retirement.

Explanation

Included in this category are amounts for the retirement pay of those disabled military personnel placed on the temporary disability rolls in accordance with the provisions of the Career Compensation Act of 1949. Individuals carried on the temporary disability list receive not less than 50 percent of their basic monthly active duty pay.

The temporary disability category was established by the Career Compensation Act in order to reduce to a minimum the number of personnel carried indefinitely on the disability retired rolls. Individuals whose physical condition has not stabilized to the point that the ultimate extent of their disability can be established are placed on the temporary list. While on this list, they are required to undergo periodic physical examination at least once every eighteen months until the degree or permanence of their disability has been fixed. They are then transferred to the permanent disability rolls, discharged with severance pay or returned to active duty, whichever is appropriate. Experience factors are the principal bases for the development of these estimates.

The average number of personnel to be carried on the temporary disability list during fiscal year 1975 is expected to be 2,115 lower than the number on the list

in fiscal year 1974. The average number expected in fiscal year 1976 will decrease 2,091 from fiscal year 1975.

It is estimated that $73,325,000 will be required for the 2,047 manyears of officer personnel and 10,814 manyears of enlisted personnel which have been projected for the temporary disability list for fiscal year 1976.

TEMPORARY DISABILITY RETIREMENTS—SUMMARY FOR FISCAL YEARS 1974, 1975, 1976, AND 197T

[Dollar amounts in thousands]

Subactivity	Fiscal year 1974 actual		Fiscal year 1975 estimate		Fiscal year 1976 estimate		Fiscal year 197T estimate	
	Average number	Amount	Average number	Amount	Average number	Amount	Average number	Amount
Regular officers	1,728	$20,752	1,517	$21,558	1,389	$20,981	322	$4,874
Regular enlisted	13,537	43,117	12,085	45,068	10,356	42,892	3,329	9,328
Nonregular officers	1,038	8,485	814	8,085	658	7,053	137	1,659
Nonregular enlisted	764	2,396	536	2,641	458	2,399	99	572
Total	17,067	74,750	14,952	77,352	12,861	73,325	2,887	16,433

Fiscal year and subactivity	Comparison of gains and losses					
	Number on rolls beginning of year	Gains during year	Losses during year	Net change	Number on rolls end of year	Man-year average
Actual, fiscal year 1974:						
Regular officers	1,777	280	501	−221	1,556	1,728
Regular enlisted	14,168	4,959	6,415	−1,456	12,712	13,537
Nonregular officers	1,157	214	472	−258	899	1,038
Nonregular enlisted	1,138	301	849	−548	590	764
Total	18,240	5,754	8,237	−2,483	15,757	17,067
Estimate, fiscal year 1975:						
Regular officers	1,556	290	433	−143	1,413	1,517
Regular enlisted	12,712	4,220	5,882	−1,662	11,050	12,085
Nonregular officers	899	216	410	−194	705	814
Nonregular enlisted	590	357	453	−96	494	536
Total	15,757	5,083	7,178	−2,095	13,662	14,952
Estimate, fiscal year 1976:						
Regular officers	1,413	272	410	−138	1,275	1,389
Regular enlisted	11,050	3,816	5,478	−1,662	9,388	10,356
Nonregular officers	705	193	317	−124	581	658
Nonregular enlisted	494	306	387	−81	413	458
Total	13,662	4,587	6,592	−2,005	11,657	12,861
Estimate, fiscal year 197T:						
Regular officers	1,275	100	66	34	1,309	322
Regular enlisted	9,388	1,240	1,304	−64	9,324	2,329
Nonregular officers	581	99	165	−66	515	137
Nonregular enlisted	413	114	154	−40	373	99
Total	11,657	1,553	1,689	−136	11,521	2,887

PERMANENT DISABILITY RETIREMENTS

Authority

Title IV of the Career Compensation Act of 1949 (now codified as Chapter 61, Title 10, USC).

Basis for retirement

Personnel are placed on the permanent disability rolls when:

a. There is no doubt as to the degree of permanence of the disability at time of initial retirement.

b. By periodic examination of temporary disability, it is determined that permanent disability exists.

Explanation

The estimate for this category provides for retirement pay of personnel who are entitled to such pay as a result of permanent physical disability. The rates of such pay are fixed by law.

It is estimated there will be a net gain of 3,254 annuitants to the rolls of this category during fiscal year 1976. This increase is based on experience factors in determining permanent disability retirement cases in relation to total military strength, estimated losses based on evaluation of the retired lists, and the number of annuitants who will transfer from the temporary to the permanent disability rolls by virtue of the examinations required within eighteen-month intervals for those annuitants on the temporary disability rolls.

It is estimated that $829,655,000 will be required for the 61,735 manyears of officer personnel and 86,081 manyears of enlisted personnel which have been projected for the permanent disability list for fiscal year 1976.

PERMANENT DISABILITY RETIREMENTS—SUMMARY FOR FISCAL YEARS 1974, 1975, 1976, AND 197T

[Dollar amounts in thousands]

Subactivity	Fiscal year 1974 actual		Fiscal year 1975 estimate		Fiscal year 1976 estimate		Fiscal year 197T estimate	
	Average number	Amount	Average number	Amount	Average number	Amount	Average number	Amount
Regular officers	20,054	$201,168	20,175	$232,458	20,288	$247,175	5,096	$62,813
Regular enlisted	73,677	233,108	75,800	271,040	78,977	295,719	20,366	75,936
Nonregular officers	41,866	236,712	41,485	262,940	41,447	274,530	10,341	69,996
Nonregular enlisted	6,720	9,023	6,892	11,021	7,104	12,231	1,804	3,139
Total	142,317	680,011	144,352	777,459	147,816	829,655	37,607	211,884

Fiscal year and subactivity	Comparison of gains and losses					
	Number on rolls beginning of year	Gains during year	Losses during year	Net change	Number on rolls end of year	Man-year average
Actual, fiscal year 1974:						
Regular officers	19,955	805	609	196	20,151	20,054
Regular enlisted	71,845	6,683	3,299	3,384	75,229	73,677
Nonregular officers	41,904	656	882	−226	41,678	41,866
Nonregular enlisted	6,427	662	265	397	6,824	6,720
Total	140,131	8,806	5,055	3,751	143,882	142,317
Estimate, fiscal year 1975:						
Regular officers	20,151	729	603	126	20,277	20,175
Regular enlisted	75,229	5,666	3,149	2,517	77,746	75,800
Nonregular officers	41,678	555	773	−218	41,460	41,485
Nonregular enlisted	6,824	343	165	178	7,002	6,892
Total	143,882	7,293	4,690	2,603	146,485	144,352
Estimate, fiscal year 1976:						
Regular officers	20,277	830	707	123	20,400	20,288
Regular enlisted	77,746	5,914	2,868	3,046	80,792	78,977
Nonregular officers	41,460	582	668	−86	41,374	41,447
Nonregular enlisted	7,002	343	172	171	7,173	7,104
Total	146,485	7,669	4,415	3,254	149,739	147,816
Estimate, fiscal year 197T:						
Regular officers	20,400	217	167	50	20,450	5,096
Regular enlisted	80,792	2,295	899	1,396	82,188	20,366
Nonregular officers	41,374	367	308	59	41,433	10,341
Nonregular enlisted	7,173	255	201	153	7,326	1,804
Total	149,739	3,134	1,476	1,658	151,397	37,607

FLEET RESERVE

Authority

Title II of the Naval Reserve Act of 1938, as amended (now codified as 10 U.S.C. 6330, 6331).

Basis for transfer to fleet reserve

Enlisted personnel of the Navy and Marine Corps having twenty but less than thirty years' creditable service may be transferred to the inactive Fleet Reserve with retainer pay at rates prescribed by law. They remain in the Fleet Reserve until their status is changed by reason of:

a. Completion of thirty years' service.
b. Recall to active duty.
c. Physical unfitness for further military service.
d. Death.

Explanation

Included in this category are amounts estimated to be required to provide retainer pay for members of the inactive fleet reserves of the Navy and Marine Corps. Retainer pay for Fleet Reservists is fixed by law.

Gains to the Fleet Reserve rolls during fiscal year 1976 are based on the estimated number of Navy and Marine Corps enlisted personnel having twenty but less than thirty years' creditable service who will transfer to the Fleet Reserve. It is estimated there wil be a net gain of 292 Fleet Reservists to the rolls in fiscal year 1976 for a year-end strength of 97,101. It is estimated that $510,859,000 will be required for the 97,335 man-years projected for the Fleet Reserve rolls for fiscal year 1976.

FLEET RESERVE—SUMMARY FOR FISCAL YEARS 1974, 1975, 1976, AND 197T

[Dollar amounts in thousands]

Subactivity	Fiscal year 1974 actual		Fiscal year 1975 estimate		Fiscal year 1976 estimate		Fiscal year 197T estimate	
	Average number	Amount	Average number	Amount	Average number	Amount	Average number	Amount
Enlisted	97,739	$415,011	97,550	$483,764	97,335	$510,859	24,271	$127,922

Fiscal year and subactivity	Comparison of gains and losses					
	Number on rolls beginning of year	Gains during year	Losses during year	Net change	Number on rolls end of year	Man-year average
Actual: 1974	98,360	13,214	14,818	−1,604	96,756	97,739
Estimate:						
1975	96,756	13,236	13,183	53	96,809	97,550
1976	96,809	13,475	13,183	292	97,101	97,335
197T	97,101	3,254	3,237	17	97,118	24,271

SURVIVORS' BENEFITS

Authority

Public Law 92–425 (chapter 73 of title 10, United States Code.)

Effect of Public Law 92–425

A new program that enables retired uniformed services members to provide financial protection for their survivors was signed by the President on September 21, 1972, as Public Law 92–425. The new law: (1) allowed those who already had the *old* Retired Servicemen's Family Protection Plan (RSFPP) eighteen months from September 21, 1972 to decide to keep the old plan only, drop the old plan and take the new plan, or keep the old plan and take the new plan in addition; (2) made the *new* Survivor Benefit Plan (SBP) an automatic coverage for all *new* retirees unless they specifically elect not to participate. The new plan gives greater coverage at less cost to the retiree than the old plan and is modeled after the Civil Service plan; (3) has a special provision benefiting women who are *now* widows of deceased members of the Uniformed Services who were receiving, or were entitled to receive, retired pay. The provision guarantees these widows annual incomes of at least $2,100; and (4) provides supplemental payments to spouses of retirement-eligible members who die on active duty if Dependency and Indemnity Compensation (DIC) payments (by VA) are less than the maximum payments the spouse would have received if the member had been retired. SBP payments covering the difference between the two will be paid.

Explanation

Two of the benefits are contributory; the old Retired Serviceman's Family Protection Plan and the new Survivor Benefit Plan. The new Guaranteed Minimum Income and the DIC Supplemental Payments are non-contributory.

Under both of the contributory benefits, a member of the uniformed services may elect to receive a reduced amount of any retired pay which may be awarded him in order to provide one or more annuities to his survivors as specified in the law. The basic options include the choice of annuities to provide for (1) surviving spouse, (2) surviving children, (3) surviving family, including both spouse and children, or (4) other persons with insurable interest (under the new plan only). Basically, the individual provides an annuity for his survivors out of his monthly retired pay by accepting a reduction in that pay. Thus, a smaller income during his retirement years assures a continuing income for his survivor(s) after his death.

It is estimated that there will be a net gain of 6,334 annuitants in this activity for fiscal year 1976.

Payments to survivors during fiscal year 1976 will be less than the amounts which will be deducted from the pay of retired personnel. The deductions in retirement pay during fiscal year 1976 will total approximately $148,900,000, whereas, payments to survivors are estimated at $89,474,000.

SURVIVORS' BENEFITS—SUMMARY FOR FISCAL YEARS 1974, 1975, 1976, AND 197T

[Dollar amounts in thousands]

	Fiscal year 1974 actual		Fiscal year 1975 estimate		Fiscal year 1976 estimate		Fiscal year 197T estimate	
	Average number	Amount	Average number	Amount	Average number	Amount	Average number	Amount
Subactivity:								
Old plan (RSFPP)	10,599	$17,175	11,215	$18,109	11,776	$19,334	3,067	$5,262
New plan (SBP)	3,981	16,052	10,319	40,570	15,296	62,246	4,647	18,239
Guaranteed minimum income	2,920	3,199	4,197	4,585	5,465	6,081	1,572	1,753
DIC supplemental payments	113	410	259	1,036	414	1,813	138	532
Total	17,613	36,836	25,990	64,300	32,951	89,474	9,424	25,786

	Comparison of gains and losses					
Fiscal year and subactivity	Number on rolls beginning of year	Gains during year	Losses during year	Net change	Number on rolls end of year	Man-year average
Actual—Fiscal year 1974:						
Old plan (RSFPP)	10,345	1,153	623	530	10,875	10,599
New plan (SBP)	936	6,774	538	6,236	7,172	3,981
Guaranteed minimum Inc	1,689	2,044	272	1,772	3,461	2,920
DIC supplemental payments	2	201	21	180	182	113
Total	12,972	10,172	1,454	8,718	21,690	17,613
Estimate—Fiscal year 1975:						
Old plan (RSFPP)	10,875	1,158	552	606	11,481	11,215
New plan (SBP)	7,172	6,685	870	5,815	12,987	10,319
Guaranteed minimum Inc	3,461	1,582	146	1,436	4,897	4,197
DIC supplemental payments	182	176	34	142	324	259
Total	21,690	9,601	1,602	7,999	29,689	25,990
Estimate—Fiscal year 1976:						
Old plan (RSFPP)	11,481	1,071	502	569	12,050	11,776
New plan (SBP)	12,987	5,508	1,064	4,444	17,431	15,296
Guaranteed minimum Inc	4,897	1,261	113	1,148	6,045	5,465
DIC supplemental payments	324	231	58	173	497	414
Total	29,689	8,071	1,737	6,334	36,023	32,951
Estimate—Fiscal year 197T:						
Old plan (RSFPP)	12,050	610	247	363	12,413	3,067
New plan (SBP)	17,431	2,350	500	1,850	19,281	4,647
Guaranteed minimum Inc	6,045	489	58	431	6,476	1,572
DIC supplemental payments	497	114	26	88	585	138
Total	36,023	3,563	831	2,732	38,755	9,424

[In thousands of dollars]

Type of plan and item	Comparison of deductions and payments to survivors			
	Fiscal year 1974 actual	Fiscal year 1975 estimate	Fiscal year 1976 estimate	Fiscal year 197T estimate
Retired serviceman's family protection plan:				
Accumulated deductions, net, start of year	260,141	263,009	262,565	259,958
Plus: Current deductions during the year	20,043	17,665	16,727	4,179
Less: Payment of survivors' benefits	−17,175	−18,109	−19,334	−5,262
Accumulated deductions, net, end of year	263,009	262,565	259,958	258,875
Survivor benefit plan:				
Accumulated deductions, net, start of year	28,233	118,933	202,336	272,263
Plus: Current deductions during the year	106,752	123,973	132,173	33,554
Less: Payment of survivors' benefits	−16,052	−40,570	−62,246	−18,239
Accumulated deductions, net, end of year	118,933	202,336	272,263	287,578
Guaranteed minimum income	3,199	4,585	6,081	1,753
DIC supplemental payments	410	1,036	1,813	532
Total payments of survivors' benefits	36,836	64,300	89,474	25,786

BUDGET REQUEST

Mr. SPENCE. Mr. Chairman and members of the committee:

I appreciate the opportunity of appearing before this committee in behalf of the Department of Defense to discuss the appropriation for retired pay for fiscal year 1976.

The appropriation requested is a consolidation of the estimates of the military departments for: Retired pay of military personnel on the retired lists of the Army, Navy, Marine Corps, and Air Force; retainer pay for members of the Fleet Reserves of the Navy and Marine Corps; and payments to survivors of retired military personnel under the Retired Serviceman's Family Protection Plan and payments under the Survivor Benefit Plan enacted by Public Law 92–425.

The appropriation request for fiscal year 1976 is $6,885.2 million, compared with $6,040.6 million initially appropriated plus supplemental funds of $235.3 million, for a total of $6,275.9 million in fiscal year 1975.

The amount requested for fiscal year 1976 will provide for payments to an average of 1,107,072 annuitants, an increase of 56,793 over the estimate for fiscal year 1975.

The supplemental funds for fiscal year 1975 are required to provide for the additional retirement costs resulting from a cost-of-living increase, a raise in the military pay of military personnel retiring during the year, and net strength and rate changes since the budget was submitted.

Under the law, when the Consumer Price Index (CPI) for any month is at least 3 percent higher than the CPI for the month which was the basis for the adjustment to retired pay and sustains that level for 3 consecutive months, retired pay is adjusted to the highest percent of increase in that 3-month period, plus 1 percent, effective on the first day of the third month following that period.

A CPI increase of 7.2 percent, effective January 1, 1975, has occurred since the fiscal year 1975 budget estimate was submitted to the Congress.

Also, a military pay raise of 5.52 percent was authorized by Executive Order 11812 and issued pursuant to Public Law 90–207.

MAJOR CATEGORIES OF PERSONNEL

GENERAL

There are five major categories of personnel who will receive payments from this appropriation.

NONDISABILITY

The nondisability category includes personnel who are retired for age or length of service.

It is estimated that $5,381.9 million, or 78.17 percent, of the total appropriation request will be required to provide for an average of 816,109 annuitants in the nondisability category in fiscal year 1976.

TEMPORARY DISABILITY

The temporary disability category is an interim classification for disabled personnel where there is some doubt as to the degree or permanence of their disability.

It is estimated that $73.3 million, or 1.06 percent, of the total appropriation request will be required to provide for an average of 12,861 temporary disability annuitants in fiscal year 1976.

PERMANENT DISABILITY

The permanent disability category is composed of military personnel whose disability has been definitely established as "permanent."

Persons may be placed on the permanent disability rolls immediately following the termination of their active duty or by transfer from the temporary disability rolls.

It is estimated that $829.7 million, or 12.05 percent, of the total appropriation request will be required in fiscal year 1976 for an average of 147,816 permanently disabled retired military personnel.

FLEET RESERVE

The fleet reserve category is composed of Navy and Marine Corps enlisted personnel having 20 but less than 30 years of service who elect to transfer from active duty to the Fleet Reserve.

Upon completion of 30 years of combined active service and service in the Fleet Reserve or upon being found physically unfit for further military service, such personnel are transferred to the regular retired rolls.

It is estimated that $510.9 million, or 7.42 percent, of the appropriation request will be required in fiscal year 1976 to provide for an average of 97,335 fleet reservists.

SURVIVORS' BENEFITS

The survivors' benefits category includes those survivors of retired military personnel who are entitled to payments under this appropriation.

It is estimated that $89.5 million, or 1.30 percent, of the total appro-

priation request will be required to provide for an average of 32,951 survivor annuitants in fiscal year 1976.

SUMMARY

The amounts included for each of the categories are mathematical computations of averages of the rates presently prescribed by law applied to the best available projections of the number of personnel to be carried on the rolls in fiscal years 1975, 1976, and 197T.

Payments under this appropriation are required by law and any funds not required revert to the Treasury at the end of the fiscal year.

Mr. Chairman, Mr. L. Paul Dube, Director, and Mr. Aloysius F. Harter, of the Directorate for Military Personnel in the Office of the Deputy Assistant Secretary of Defense (Comptroller), are with me today.

We will attempt to answer any questions the chairman or committee members may have.

TABLES ON RETIRED PAY

We would like to have placed in the record at this point a series of tables which will accompany my statement.

Senator YOUNG. Without objection.

[The tables follow:]

TABLE No. 1

OBLIGATIONAL AUTHORITY, OBLIGATIONS, UNOBLIGATED BALANCE, AND AVERAGE NUMBER ON RETIRED MILITARY ROLLS

(In Thousands of Dollars)

Fiscal Year	Obligational Authority	Obligations	Unobligated Balance	Average Number 4/
Actual				
1952	345,000	330,598	14,402	137,785
1953	357,000	356,385	615	147,216
1954	387,000	386,298	702	162,305
1955	423,500	422,102	1,398	174,012
1956	495,000	478,932	16,068	185,754
1957	515,000	510,784	4,216	192,209
1958	567,000	560,962	6,038	208,570
1959	640,000	634,542	5,458	222,545
1960	715,000	692,922	22,078	242,904
1961	789,500	787,806	1,694	275,914
1962	920,000	895,854	24,146	313,436
1963	1,029,000 1/	1,014,775	10,925	358,830
1964	1,228,000	1,211,215	16,785	410,853
1965	1,399,000	1,385,578	13,422	462,463
1966	1,600,000	1,592,352	7,648	508,566
1967	1,839,000	1,831,159	7,841	564,280
1968	2,095,000	2,093,478	1,522	624,496
1969	2,450,000	2,442,941	7,059	691,688
1970	2,859,000 2/	2,853,234	4,766	750,144
1971	3,391,032	3,388,999	2,033	806,139
1972	3,921,446 3/	3,889,115	12,331	867,190
1973	4,441,684	4,392,218	49,466	923,635
1974	5,150,700	5,136,897	13,803	983,788
Estimate				
1975		6,275,900		1,050,279
1976		6,885,200		1,107,072
197T		1,775,100		285,452
1977		7,175,234		1,150,000
1978		7,545,775		1,192,000
1979		7,907,413		1,232,000
1980		8,260,346		1,271,000

1/ $3.3 million transferred to "Claims, Defense".

2/ $1.0 million transferred to "Operation and Maintenance, Defense Agencies".

3/ $20.0 million transferred to "Operation and Maintenance, Air Force".

4/ Includes those receiving Survivors' Benefits.

TABLE No. 2

NET INCREASES IN END STRENGTHS FROM THE PREVIOUS FISCAL YEAR

Activity	Fiscal Year 1974 Actual	Fiscal Year 1974 Percent	Fiscal Year 1975 Estimate	Fiscal Year 1975 Percent	Fiscal Year 1976 Estimate	Fiscal Year 1976 Percent	Fiscal Year 197T Estimate	Fiscal Year 197T Percent
Nondisability	54,898	8.09	55,846	7.61	46,450	5.89	13,262	1.59
Temporary Disability	-2,483	-13.60	-2,095	-13.29	-2,005	-14.67	-136	-1.17
Permanent Disability	3,751	2.68	2,603	1.81	3,254	2.22	1,658	1.11
Fleet Reserve	-1,604	-1.62	53	0.05	292	0.30	17	0.02
Survivors' Benefits	8,718	67.21	7,999	36.88	6,334	21.33	2,732	7.58
TOTAL	63,280	6.67	64,406	6.37	54,325	5.05	17,533	1.55

Table No. 3

ACTUAL END STRENGTHS, OBLIGATIONS AND EXPENDITURES IN FY 1975

(Dollars in Thousands)

Month	End Strengths	Obligations	Expenditures
July 1974	1,017,316	$489,152	$490,516
August	1,023,857	$478,435	$486,069
September	1,033,760	$496,519	$495,137
October	1,039,510	$499,157	$498,421
November	1,046,095	$501,380	$501,514
December	1.050.457	$503.186	$502,957

Table No. 4

NUMBER OF RETIREMENTS AMONG MILITARY PERSONNEL ON ACTIVE DUTY

Fiscal Year	By Category: Total	By Category: Officer	By Category: Enlisted	By Type of Retirement: Nondisability	By Type of Retirement: Disability
1966	54,750	13,101	41,649	43,533	11,217
1967	70,062	13,605	56,457	56,442	13,620
1968	72,326	13,728	58,598	55,973	16,353
1969	73,017	13,340	59,677	51,579	21,438
1970	75,728	17,586	58,142	51,232	24,496
1971	80,801	18,298	62,503	57,879	22,922
1972	77,618	14,479	63,149	59,547	18,071
1973	72,641	13,950	58,691	60,105	12,536
1974	66,307	12,325	53,982	58,875	7,432
1975	69,290	13,193	56,097	62,364	6,926
1976	58,439	12,262	46,177	52,505	5,934
"Normal" for an active force of present size with current retention rates:	47,104	7,975	39,129	39,944	7,160

Source: Budget

TABLE No. 5

TITLE III, PUBLIC LAW 810, RETIREES (10 U.S.C. 1331)

Category	FY 1974 Actual End Number	FY 1974 Actual Avg. Number	FY 1974 Actual ($000) Obligs.	FY 1975 Estimate End Number	FY 1975 Estimate Avg. Number	FY 1975 Estimate ($000) Obligs.	FY 1976 Estimate End Number	FY 1976 Estimate Avg. Number	FY 1976 Estimate ($000) Obligs.
Officers	48,999	47,164	160,802	51,638	50,385	193,373	54,826	53,297	215,104
Enlisted	6,954	6,509	14,550	7,591	7,320	19,530	8,105	7,828	21,872
Total	55,953	53,673	175,352	59,229	57,705	212,903	62,931	61,125	236,976

TABLE No. 6
COMPARISON OF RETIRED PAY WITH DEPARTMENT OF DEFENSE OUTLAYS
(Dollars in Millions)

Fiscal Year	Military Functions	Retired Pay Portion	Percent
1937	$934	$55	5.89
1938	1,033	59	5.71
1939	1,075	61	5.67
1940	1,492	66	4.42
1941	5,998	73	1.22
1942	23,570	84	.36
1943	62,664	49	.08
1944	75,797	57	.08
1945	80,048	57	.07
1946	42,044	85	.20
1947	13,838	140	1.01
1948	10,937	175	1.60
1949	11,573	193	1.67
1950	11,891	193	1.62
1951	19,764	321	1.62
1952	38,897	329	.85
1953	43,604	357	.82
1954	40,326	386	.96
1955	35,531	419	1.18
1956	35,792	477	1.33
1957	38,436	511	1.33
1958	39,070	562	1.44
1959	41,223	641	1.55
1960	41,215	694	1.68
1961	43,227	786	1.82
1962	46,815	894	1.91
1963	48,252	1,015	2.10
1964	49,577	1,209	2.44
1965	45,973	1,384	3.01
1966	54,178	1,591	2.94
1967	67,457	1,830	2.71
1968	77,373	2,095	2.71
1969	77,872	2,444	3.14
1970	77,150	2,849	3.69
1971	74,546	3,386	4.54
1972	75,151	3,885	5.17
1973	73,297	4,390	5.99
1974	77,625	5,128	6.61
1975 (Estimate)	82,978	6,281	7.57
1976 (Estimate)	89,800	6,884	7.67
197T (Estimate)	24,800	1,789	7.21

TABLE No. 7
SURVIVORS' BENEFITS
(Dollars in Thousands)

Fiscal Year	No. of Retirees Electing to Participate[1]	Deduction In Retired Pay	Survivors Receiving Benefits[1]	Payment To Survivors
RETIRED SERVICEMAN'S FAMILY PROTECTION PLAN (RSFPP)				
1954 (last 8 Mos)	11,243	$1,597	149	$67
1955	11,401	4,308	499	462
1956	12,580	4,692	814	797
1957	14,859	5,424	1,128	1,136
1958	17,890	6,251	1,469	1,479
1959	19,846	7,204	1,881	1,880
1960	22,967	7,786	2,312	2,422
1961	27,997	8,933	2,807	3,003
1962	33,659	10,806	3,271	3,495
1963	43,254	13,141	3,713	3,992
1964	52,143	14,906	4,187	4,595
1965	60,996	18,447	4,643	5,295
1966	69,445	21,338	5,149	6,046
1967	80,102	24,762	5,746	6,850
1968	91,371	28,446	6,476	7,869
1969	100,208	32,751	7,202	9,009
1970	108,272	36,680	7,891	10,283
1971	117,129	41,858	8,695	11,730
1972	124,563	46,297	9,578	13,474
1973	92,724	33,554	10,345	15,153
1974	73,627	20,043	10,875	17,175
1975	67,225	17,665	11,481	18,109
1976	63,724	16,727	12,050	19,334
197T	63,019	4,179	12,413	5,262
Total		427,792[2]		168,917
SURVIVOR BENEFIT PLAN (SBP)				
1973	260,777	29,528	936	1,295
1974	487,519	106,752	7,172	16,052
1975	525,966	123,973	12,987	40,570
1976	562,332	132,173	17,431	62,246
197T	570,847	33,554	19,281	18,239
Total		425,980		138,402
GUARANTEED MINIMUM INCOME				
1973	-	-	1,689	624
1974	-	-	3,461	3,199
1975	-	-	4,897	4,585
1976	-	-	6,045	6,081
197T	-	-	6,476	1,753
DIC SUPPLEMENTAL PAYMENTS				
1973	-	-	2	4
1974	-	-	182	410
1975	-	-	324	1,036
1976	-	-	497	1,813
197T	-	-	585	532

1/ Number at end of Fiscal Year.
2/ Annual amounts will not add to total due to rounding.

TABLE No. 8
MILITARY PERSONNEL RECEIVING RETIRED OR RETAINER PAY AS OF JUNE 30, 1974

Retired Pay Grade	All Retirements[1] No. of Persons	All Retirements[1] Monthly Amount	All Retirements[1] Avg.Mo. Ret.Pay	Nondisability Retirements[1] No. of Persons	Nondisability Retirements[1] Monthly Amount	Nondisability Retirements[1] Avg.Mo. Ret.Pay	Disability Retirements No. of Persons	Disability Retirements Monthly Amount	Disability Retirements Avg.Mo. Ret.Pay
Officers									
O-10	137	$300,402	$2,193	73	$157,499	$2,158	64	$142,903	$2,233
O-9	389	755,257	1,942	244	477,759	1,958	145	277,498	1,914
O-8	1,930	3,043,495	1,577	1,336	2,027,282	1,517	594	1,016,213	1,711
O-7	1,824	2,344,160	1,285	1,367	1,685,170	1,233	457	658,990	1,442
O-6	52,427	54,546,600	1,040	44,465	45,157,933	1,016	7,962	9,388,667	1,179
O-5	99,507	74,977,460	753	88,919	65,999,752	742	10,588	8,977,708	848
O-4	69,357	42,285,141	610	59,536	36,389,350	611	9,821	5,895,791	600
O-3	30,554	14,519,224	475	17,043	8,733,413	512	13,511	5,785,811	428
O-2	16,735	5,885,398	352	4,925	1,996,780	405	11,810	3,888,618	329
O-1	5,481	1,627,810	297	939	315,321	336	4,542	1,312,489	289
W-4	10,842	7,441,369	686	9,633	6,534,566	678	1,209	906,803	750
W-3	10,251	4,958,515	484	9,466	4,548,483	481	785	410,032	522
W-2	14,499	6,016,944	415	12,859	5,350,894	416	1,640	666,050	406
W-1	4,654	1,546,000	332	3,498	1,193,451	341	1,156	352,549	305
Subtotal	318,587	220,247,775	691	254,303	180,567,653	710	64,284	39,680,122	617
Enlisted									
E-9	31,783	18,767,068	590	28,870	17,004,562	589	2,813	1,762,506	605
E-8	71,956	33,260,483	462	66,382	30,649,165	462	5,574	2,611,318	468
E-7	254,456	91,697,198	360	234,962	84,816,341	361	19,494	6,880,857	353
E-6	186,669	56,529,227	303	168,776	51,723,947	306	17,893	4,805,280	269
E-5	85,815	20,680,645	241	67,033	15,864,090	252	18,782	3,816,555	203
E-4	23,895[2]	4,097,804[2]	171	8,349	1,599,354	192	15,546[2]	2,498,450[2]	161
E-3	10,369	1,604,799	155	1,217	197,801	163	9,152	1,406,998	154
E-2	5,183	659,438	127	228	33,529	147	4,955	625,909	126
E-1	1,121	133,228	119	75	13,312	177	1,046	119,916	115
Subtotal	671,247	227,429,890	339	575,892	202,902,101	352	95,355	24,527,789	257
Total	989,834	447,677,665	452	830,195	383,469,754	462	159,639	64,207,911	402

1/ Includes Fleet Reserve
2/ Includes 12 NAVCADS

TABLE No. 9
ANALYSIS BY FISCAL YEAR OF THE NUMBER OF RETIRED PERSONNEL AND OBLIGATIONS FOR THE DEPARTMENT OF DEFENSE
(Dollars in Thousands)

Activity and Category	Actual FY 1974			Estimate FY 1975			Estimate FY 1976			Estimate FY 197T		
	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.
Nondisability												
Regular Officers	104,228	102,090	1,055,310	110,585	108,935	1,308,325	115,895	114,394	1,442,426	117,927	29,320	371,358
Regular Enlisted	470,645	452,131	1,845,634	513,684	496,218	2,343,662	547,556	532,888	2,626,304	557,339	138,661	684,823
Nonregular Officers	150,075	147,012	1,010,311	155,598	153,265	1,195,372	162,062	159,014	1,283,913	163,303	40,697	329,185
Nonregular Enlisted	8,491	7,819	19,034	9,418	9,017	25,666	10,222	9,813	29,244	10,428	2,585	7,709
Subtotal	733,439	709,052	3,930,289	789,285	767,435	4,873,025	835,735	816,109	5,381,887	848,997	211,263	1,393,075
Temporary Disability												
Regular Officers	1,556	1,728	20,752	1,413	1,517	21,558	1,275	1,389	20,981	1,039	322	4,874
Regular Enlisted	12,712	13,537	43,117	11,050	12,085	45,068	9,388	10,356	42,892	9,324	2,329	9,328
Nonregular Officers	899	1,038	8,485	705	814	8,085	581	658	7,053	515	137	1,659
Nonregular Enlisted	590	764	2,396	494	536	2,641	413	458	2,399	373	99	572
Subtotal	15,757	17,067	74,750	13,662	14,952	77,352	11,657	12,861	73,325	11,521	2,887	16,433
Permanent Disability												
Regular Officers	20,151	20,054	201,168	20,277	20,175	232,458	20,400	20,288	247,175	20,450	5,096	62,813
Regular Enlisted	75,229	73,677	233,108	77,746	75,800	271,040	80,792	78,977	295,719	82,188	20,366	75,936
Nonregular Officers	41,678	41,866	236,712	41,460	41,485	262,940	41,374	41,447	274,530	41,433	10,341	69,996
Nonregular Enlisted	6,824	6,720	9,023	7,002	6,892	11,021	7,173	7,104	12,231	7,326	1,804	3,139
Subtotal	143,882	142,317	680,011	146,485	144,352	777,459	149,739	147,816	829,655	151,397	37,607	211,884
Fleet Reserve	96,756	97,739	415,011	96,809	97,550	483,764	97,101	97,335	510,859	97,118	24,271	127,922
Survivors' Benefits												
Old Plan (RSFPP)	10,875	10,599	17,175	11,481	11,215	18,109	12,050	11,776	19,334	12,413	3,067	5,262
New Plan (SBP)	7,172	3,981	16,052	12,987	10,319	40,570	17,431	15,296	62,246	19,281	4,647	18,239
Guaranteed Min. Inc.	3,461	2,920	3,199	4,897	4,197	4,585	6,045	5,465	6,081	6,476	1,572	1,753
DIC Suppl. Payments	182	113	410	324	259	1,036	497	414	1,813	585	138	532
Subtotal	21,690	17,613	36,836	29,689	25,990	64,300	36,023	32,951	89,474	38,755	9,424	25,786
Total	1,011,524	938,788	5,136,897	1,075,930	1,050,279	6,275,900	1,130,255	1,107,072	6,885,200	1,147,788	285,452	1,775,100

TABLE No: 10
ANALYSIS BY FISCAL YEAR OF THE NUMBER OF RETIRED PERSONNEL AND OBLIGATIONS FOR THE DEPARTMENT OF THE ARMY
(Dollars in Thousands)

Activity and Category	Actual FY 1974			Estimate FY 1975			Estimate FY 1976			Estimate FY 197T		
	End No.	Avg No.	Obligs.	End No.	Avg No.	Obligs.	End No.	Avg No.	Obligs.	End No.	Avg No.	Obligs.
Nondisability												
Regular Officers	20,386	19,940	244,233	21,942	21,564	306,133	23,824	23,274	341,813	23,998	5,985	88,343
Regular Enlisted	167,083	163,390	686,542	175,619	172,321	844,480	185,419	181,137	922,347	186,770	46,624	238,382
Nonregular Officers	85,488	83,753	551,481	88,524	87,278	658,288	92,824	90,681	713,866	93,500	23,309	184,499
Nonregular Enlisted	2,779	2,553	6,236	2,932	2,865	8,357	2,977	2,908	9,054	2,999	747	2,339
Subtotal	275,736	269,636	1,488,492	289,017	284,028	1,817,258	305,044	298,000	1,987,080	307,267	76,665	513,563
Temporary Disability												
Regular Officers	161	169	2,076	140	154	2,227	132	136	2,191	132	33	533
Regular Enlisted	2,578	2,547	8,686	2,646	2,704	9,612	2,626	2,636	9,992	2,600	654	2,434
Nonregular Officers	378	416	3,560	276	337	3,510	204	240	2,676	134	42	653
Nonregular Enlisted	283	450	1,544	232	248	1,580	192	212	1,357	152	43	330
Subtotal	3,400	3,582	15,866	3,294	3,443	16,929	3,154	3,224	16,216	3,018	772	3,950
Permanent Disability												
Regular Officers	6,663	6,688	69,482	6,695	6,675	81,133	6,747	6,721	88,684	6,797	1,698	22,976
Regular Enlisted	25,622	25,132	83,435	26,655	26,165	97,499	27,875	27,305	107,984	29,075	7,169	27,977
Nonregular Officers	25,720	25,865	137,407	25,674	25,663	152,610	25,778	25,776	161,108	25,878	6,457	41,740
Nonregular Enlisted	5,244	5,148	6,122	5,398	5,305	7,685	5,555	5,497	8,738	5,705	1,402	2,263
Subtotal	63,249	62,833	296,446	64,422	63,808	338,927	65,955	65,299	366,514	67,455	16,726	94,956
Survivors' Benefits												
Old Plan (RSFPP)	4,581	4,521	7,395	4,755	4,658	7,184	4,874	4,815	7,525	4,989	1,233	2,145
New Plan (SBP)	3,462	1,850	8,325	5,976	4,831	19,145	7,410	6,693	25,823	8,479	2,011	7,363
Guaranteed Min. Inc.	1,134	857	1,344	1,665	1,410	1,562	1,952	1,808	2,147	2,202	519	624
DIC Suppl. Payments	67	39	184	110	88	395	188	149	695	248	55	199
Subtotal	9,244	7,267	17,248	12,506	10,987	28,286	14,424	13,465	36,190	15,918	3,818	10,331
Total	351,629	343,318	1,818,052	369,239	362,266	2,201,400	388,577	379,988	2,406,000	393,658	97,981	622,800

TABLE NO. 11

ANALYSIS BY FISCAL YEAR OF THE NUMBER OF RETIRED PERSONNEL AND OBLIGATIONS FOR THE DEPARTMENT OF THE NAVY (NAVY)

(Dollars in Thousands)

Activity and Category	Actual FY 1974			Estimate FY 1975			Estimate FY 1976			Estimate FY 197T		
	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.
Nondisability												
Regular Officers	45,645	45,244	399,777	47,007	46,840	480,392	48,042	47,878	513,292	48,939	12,137	130,626
Regular Enlisted	84,771	80,262	299,118	93,307	89,632	380,327	101,843	98,168	429,170	104,059	25,817	112,508
Nonregular Officers	15,064	14,668	72,652	16,124	15,660	88,338	17,224	16,737	96,301	17,538	4,353	24,816
Nonregular Enlisted	4,805	4,455	10,971	5,372	5,120	14,636	5,939	5,687	16,868	6,083	1,506	4,468
Subtotal	150,285	144,629	782,518	161,810	157,252	963,693	173,048	168,470	1,055,631	176,619	43,813	272,418
Temporary Disability												
Regular Officers	831	909	11,492	802	840	12,866	721	785	12,687	745	184	2,981
Regular Enlisted	4,664	4,838	16,637	3,867	4,332	18,161	3,070	3,535	16,998	2,994	756	3,301
Nonregular Officers	199	225	1,875	165	178	1,947	142	158	1,823	144	36	412
Nonregular Enlisted	282	285	779	247	269	997	212	234	984	209	53	227
Subtotal	5,976	6,257	30,783	5,081	5,619	33,971	4,145	4,712	32,492	4,092	1,029	6,981
Permanent Disability												
Regular Officers	5,635	5,612	44,831	5,594	5,616	51,389	5,553	5,557	52,708	5,522	1,384	13,121
Regular Enlisted	14,460	14,006	36,076	15,347	14,784	43,688	16,234	15,672	47,704	16,220	4,059	12,326
Nonregular Officers	3,140	3,145	15,948	3,098	3,120	18,051	3,051	3,072	18,397	3,041	762	4,558
Nonregular Enlisted	1,139	1,132	2,308	1,158	1,146	2,629	1,177	1,165	2,739	1,176	294	688
Subtotal	24,374	23,895	99,163	25,197	24,666	115,757	26,015	25,466	121,548	25,959	6,499	30,693
Fleet Reserve	78,873	79,922	332,193	78,063	78,878	382,644	77,414	77,727	396,359	76,861	19,259	98,617
Survivors' Benefits												
Old Plan (RSFPP)	2,868	2,812	3,750	2,966	2,927	4,432	3,075	3,019	4,583	3,098	774	1,173
New Plan (SBP)	2,105	1,231	4,244	3,356	2,821	10,275	4,600	4,067	15,058	4,964	1,214	4,461
Guaranteed Min. Inc.	1,978	1,759	1,497	2,771	2,371	2,588	3,564	3,164	83,410	3,753	923	991
DIC Suppl. Payments	28	26	73	42	35	140	64	53	219	70	17	66
Subtotal	6,979	5,828	9,564	9,135	8,154	17,435	11,303	10,303	23,270	11,885	2,928	6,691
Total	226,487	260,531	1,254,221	279,286	274,569	1,513,500	291,925	286,678	1,629,300	295,416	73,528	415,400

TABLE No. 12

ANALYSIS BY FISCAL YEAR OF THE NUMBER OF RETIRED PERSONNEL AND OBLIGATIONS FOR THE DEPARTMENT OF THE NAVY (MARINE CORPS)

(Dollars in Thousands)

Activity and Category	Actual FY 1974			Estimate FY 1975			Estimate FY 1976			Estimate FY 197T		
	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.
Nondisability												
Regular Officers	9,290	9,109	80,195	9,616	9,484	95,897	9,983	9,833	106,972	10,242	2,566	27,952
Regular Enlisted	10,225	9,442	40,568	11,683	10,846	53,191	12,918	12,930	65,551	13,244	3,398	18,002
Nonregular Officers	1,237	1,197	8,033	1,297	1,253	9,672	1,396	1,354	11,252	1,431	343	2,854
Nonregular Enlisted	125	118	285	145	139	373	155	146	428	159	38	111
Subtotal	20,877	19,866	129,071	22,741	21,722	159,133	24,452	23,723	184,203	25,076	6,345	48,919
Temporary Disability												
Regular Officers	358	406	4,161	284	322	3,817	250	286	3,656	260	62	794
Regular Enlisted	2,941	3,353	9,515	2,210	2,529	8,521	1,521	1,934	7,054	1,573	378	1,381
Nonregular Officers	91	115	856	60	76	630	51	65	581	53	13	117
Nonregular Enlisted	13	14	34	7	8	23	2	3	10	3	1	3
Subtotal	3,403	3,888	14,566	2,561	2,935	12,991	1,824	2,288	11,301	1,889	454	2,295
Permanent Disability												
Regular Officers	1,638	1,586	12,452	1,684	1,630	14,599	1,721	1,667	16,099	1,733	416	4,023
Regular Enlisted	6,828	6,340	14,704	7,119	6,614	17,070	7,795	7,241	20,156	7,933	1,904	5,307
Nonregular Officers	964	921	4,185	967	941	5,027	979	953	5,489	984	236	1,362
Nonregular Enlisted	334	334	377	336	334	451	336	333	484	337	81	118
Subtotal	9,746	9,181	31,218	10,106	9,519	37,147	10,831	10,194	42,228	10,987	2,637	10,810
Fleet Reserve	17,883	17,817	82,818	18,746	18,672	101,120	19,687	19,608	114,500	20,257	5,012	29,305
Survivors' Benefits												
Old Plan (RSFPP)	291	293	507	301	303	561	316	318	619	316	76	149
New Plan (SBP)	252	144	580	452	410	1,826	549	497	2,384	585	140	673
Guaranteed Min. Inc.	91	75	63	136	125	115	155	142	138	162	39	38
DIC Suppl. Payments	1		1	6	3	7	11	10	27	16	4	11
Subtotal	635	512	1,151	895	841	2,509	1,031	967	3,168	1,079	259	871
Total	52,544	51,264	258,824	55,049	53,689	312,900	57,825	56,780	355,400	59,288	14,707	92,200

TABLE No. 13
ANALYSIS BY FISCAL YEAR OF THE NUMBER OF RETIRED PERSONNEL AND OBLIGATIONS FOR THE DEPARTMENT OF THE AIR FORCE
(Dollars in Thousands)

Activity and Category	Actual FY 1974			Estimate FY 1975			Estimate FY 1976			Estimate FY 197T		
	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.	End No.	Avg. No.	Obligs.
Nondisability												
Regular Officers	28,907	27,797	331,115	32,020	31,047	425,903	34,046	33,409	480,349	34,748	8,632	124,437
Regular Enlisted	208,566	199,037	819,406	233,075	233,419	1,065,664	247,376	241,193	1,209,236	253,266	62,822	315,931
Nonregular Officers	48,286	47,394	378,145	49,653	49,074	439,074	50,618	50,242	462,494	50,834	12,692	117,016
Nonregular Enlisted	782	693	1,542	969	893	2,300	1,151	1,072	2,894	1,187	294	791
Subtotal	286,541	274,921	1,530,208	315,717	304,433	1,932,941	333,191	325,916	2,154,973	340,035	84,440	558,175
Temporary Disability												
Regular Officers	206	244	3,023	187	201	2,648	172	182	2,447	172	43	566
Regular Enlisted	2,529	2,799	8,279	2,327	2,520	8,774	2,171	2,251	8,848	2,157	541	2,152
Nonregular Officers	231	282	2,194	204	223	1,998	184	195	1,973	184	46	477
Nonregular Enlisted	12	15	39	8	11	41	7	9	48	9	2	12
Subtotal	2,978	3,340	13,535	2,726	2,955	13,461	2,534	2,637	13,316	2,522	632	3,207
Permanent Disability												
Regular Officers	6,215	6,168	74,403	6,304	6,254	85,337	6,379	6,343	89,684	6,398	1,598	22,693
Regular Enlisted	28,319	28,199	99,393	28,625	28,237	112,783	28,888	28,759	119,875	28,960	7,234	30,326
Nonregular Officers	11,872	11,935	79,172	11,721	11,761	87,252	11,566	11,646	89,536	11,530	2,886	22,336
Nonregular Enlisted	107	106	216	110	107	256	105	109	270	108	27	70
Subtotal	46,513	46,408	253,184	46,760	46,359	285,628	46,938	46,857	299,365	46,996	11,745	75,425
Survivors' Benefits												
Old Plan (RSFPP)	3,135	2,973	5,523	3,459	3,327	5,932	3,785	3,624	6,607	4,010	984	1,795
New Plan (SBP)	1,353	756	2,903	3,203	2,257	9,324	4,872	4,039	18,981	5,253	1,282	5,742
Guaranteed Min. Inc.	258	229	295	325	291	320	374	351	386	359	91	100
DIC Suppl. Payments	86	48	152	166	133	494	234	202	872	251	62	256
Subtotal	4,832	4,006	8,873	7,153	6,008	16,070	9,265	8,216	26,846	9,873	2,419	7,893
Total	340,864	328,675	1,805,800	372,356	359,755	2,248,100	391,928	383,626	2,494,500	399,426	99,236	644,700

SIZE AND COST OF RETIRED POPULATION

Senator YOUNG. You might discuss further the size and cost of the retired population during the past 5 years, as well as the projections for the next 10 years, what foresight are your future predictions based on.

Mr. SPENCE. There has been a gradual increase in the size of the retired population and a rather substantial increase in the cost of the retired pay appropriation.

The increase in the numbers of people on the retired rolls is a direct reflection of the fact that the retired population on the rolls currently are relatively young and there has not been a great deal of attrition because of death from the population.

In addition, during part of the 5-year period you have mentioned, we have had substantial numbers of disability retirements as a result of the Vietnam conflict.

Also, we have the gradual retirement of the large numbers of people who initially entered the active force during World War II. The last of those people are beginning to go on the retired rolls.

Insofar as the future is concerned, we expect that the retired population will ultimately level off at about a million and a half people which will not occur until somewhere in the neighborhood of 1990, according to our estimate.

In addition to the military retirees who will be receiving retired pay from this appropriation, there will be 300,000 persons receiving survivor benefit payments. Accordingly, there will be a total of 1,800,000 beneficiaries under this appropriation around the year 1990 to 2000.

Senator YOUNG. Retirement benefits go to the wife or beyond?

Mr. SPENCE. There is provision for the retired member to elect to receive a reduced retired pay in order to provide an annuity for his surviving wife, his children, or, if there is no wife or child, for a person with an insurable interest. If he does make such an election, the surviving beneficiary will receive payment from this appropriation. If he does not make such election, there is no continued payment.

Senator YOUNG. We have about the same thing.

Mr. SPENCE. Yes, sir; very similar.

As a matter of fact, the military plan was patterned after the civil service plan in many respects.

Senator YOUNG. How many retired personnel did you say there are?

Mr. SPENCE. At the present time, there are 1,100,000 in fiscal year 1976. We estimate that that number will gradually increase until about the year 1990, at which time the retirees on the rolls will be about a million and a half.

AVERAGE AGE OF RETIREES

Senator YOUNG. What is the average age?

Mr. SPENCE. Of those on the retired roll?

Senator YOUNG. Yes.

Mr. SPENCE. Mr. Chairman, I can supply that for the record.

We do have the data but I do not have it with me today. I will be happy to supply it for the record.

[The information follows:]

The average age for military nondisability retirements occurring in Fiscal Year 1974 was 46.0 for officers and 41.9 for enlisted personnel.

QUESTIONS SUBMITTED BY SENATOR YOUNG

Mr. SPENCE. Senator, that completes my statement. I'll be happy to answer any questions you may have.

Senator YOUNG. I will submit a list of questions for you to answer for the record.

[The questions and answers follow:]

GROWTH IN NUMBER OF RETIREES

Senator YOUNG. What has been the growth in number of retirees since 1964?

Mr. SPENCE. The total number of individuals being paid on the military retired rolls, to include survivors, at the end of Fiscal Year 1964 was 434,736, while the end of Fiscal Year 1974 shows 1,011,524. This is a net increase of 576,788 for the ten-year period, or an average annual net increase of 57,679.

LEVEL OFF OF RETIRED POPULATION

Senator YOUNG. When will the retired population level off assuming the United States will not be involved in another crisis in the next 20 years or so?

Mr. SPENCE. Assuming that the armed forces level off at about their current size, the retirees' retired rolls will level off at about one million five hundred thousand. This will occur in the period 1990 to 2000.

PIVOTAL YEAR FOR MILITARY RETIREMENTS

Senator YOUNG. Would Fiscal Year 1971 be considered a pivotal year for military retirements? In fact, did the trend begin to decrease in Fiscal Year 1972?

Mr. SPENCE. In a sense, the pivotal years insofar as nondisability retirements are concerned are the years 1971–1976. During those years the last of the so-called World War II hump representing the large number of persons who initially entered service during World War II will have completed 30 years of service and can be expected to have retired. The number of "new retirements" thereafter should begin to diminish.

QUESTIONS SUBMITTED BY CHAIRMAN M'CLELLAN

Senator YOUNG. I will ask you at this point to answer a series of questions for the record which have been submitted by Chairman McClellan.

Mr. SPENCE. We will supply the answers, Senator.

[The questions and answers follow:]

SIZE AND COST OF RETIRED POPULATION

Chairman MCCLELLAN. Discuss the size and cost trends of the retired population during the past five years, as well as the projections for the next ten.

Mr. SPENCE. A review of the actual trends for the past five years reveals costs increasing by an average of about $539 million annually, while numbers of retirees are increasing by an average of approximately 58,000 annually. Costs show the impact of annual military pay raises and numerous CPI increases, some of which lately have been occurring semi-annually. Numbers indicate the regular retirements from World War II entrees as well as disability retirements due to the Vietnam conflict.

A review of the estimated trends for the next ten years reveals annual costs increasing by an average of about $445 million, while numbers are increasing by an average of between 40–50 thousand annually. During this ten-year period no future military pay or CPI increases have been assumed, so the trend shows a lesser average annual increase than the past five years. Numbers also show a smaller average annual increase than the past five years, primarily due to most of the World War II retirements having taken place as well as the absense of disability retirements due to the Vietnam conflict.

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Chairman McCLELLAN. What force size are your future projections based on?
Mr. SPENCE. Approximately 2.1 million active forces military personnel.

RECOMPUTATION OF RETIRED PAY

Chairman McCLELLAN. Would you describe for the Committee the major proposals involving recomputation of retired pay and explain the system previously existing prior to 1958.

Mr. SPENCE. As a general rule, before enactment of Public Law 85–422, which was effective June 1, 1958, each time military basic pay was increased retired pay of persons on the retired rolls was recomputed on the basis of those newly established pay rates. That practice was discontinued on June 1, 1958 and the pay of retired personnel was increased by 6 percent which approximated the increase in the cost of living since 1955 when retired pay was last increased. In 1963 a permanent system of increasing retired pay, based on a formula geared to increases in the cost of living, was adopted. Except for a number of liberalizing changes, that system remains in effect at the present time.

In recent years there have been a number of proposals for increasing military retired pay by authorizing restoration of practice of recomputing retired pay each time that military basic pay rates are increased. However, most proposals would authorize a one-time recomputation of the pay of persons on the retired rolls based on some recent rate of basic pay. Under the proposals, for a one-time recomputation, the present system of adjusting retired pay automatically would be retained as the normal continuing method for protecting the purchasing power of retired pay.

The one-time recomputation proposals have differed as to:

1. The pay rates to be used. Scales proposed most frequently are: (a) Current pay rates; (b) January 1, 1972 pay rates; and (c) January 1, 1971 pay rates.

2. The time when the individual retiree's pay would be recomputed. In some proposals, all retirees would receive recomputed pay immediately; in others, disability retirees would receive recomputed pay immediately, with nondisability retirees receiving recomputed pay at age 55, 60 or at a later age.

RECOMPUTATION OF RETIRED PAY

Chairman McCLELLAN. What would be the additional cost of each of these proposals for recomputation for each of the next 10 years?

Mr. SPENCE. I will supply for the record tables showing the cost of an immediate recomputation at current retired pay rates, and at the January 1, 1972 pay rates under several assumed situations.

(The tables follow:)

IMMEDIATE ONE-TIME RECOMPUTATION AT THE CURRENT RETIREMENT RATES

Projected Annual Cost of Recomputing Military Retired Pay, Including Price Index Increases

	Average Number of persons		Annual Cost ($000), Including Future Annual Price Index Increases of					
FY	Total	Recomputed	0%	1.5%	3.0%	4.5%	6.0%	7.5%
1975	801,589	0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
1976	787,255	787,255	1,129,961	1,129,961	1,152,281	1,160,650	1,169,020	1,177,390
1977	772,756	772,756	1,101,711	1,123,583	1,168,399	1,193,855	1,219,556	1,245,502
1978	757,888	757,888	1,072,873	1,116,029	1,183,312	1,226,527	1,270,739	1,315,961
1979	742,541	742,541	1,043,388	1,106,876	1,196,808	1,258,401	1,322,293	1,388,539
1980	726,674	726,674	1,013,247	1,096,403	1,208,707	1,289,236	1,373,948	1,463,000
1981	710,275	710,275	982,462	1,084,134	1,218,844	1,318,791	1,425,419	1,539,077
1982	693,337	693,337	951,049	1,070,496	1,227,047	1,346,808	1,476,390	1,616,450
1983	675,856	675,856	919,030	1,054,895	1,233,143	1,373,012	1,526,505	1,694,738
1984	657,831	657,831	886,434	1,037,900	1,236,959	1,397,116	1,575,378	1,773,503
1985	639,266	639,266	853,298	1,018,803	1,238,324	1,418,820	1,622,586	1,852,243

Beginning with year 2001, the price index increases shown are assumed to decrease to zero in 2040 when the accumulated price index increase amounts to 3 percent or more, one percent is added.

NOTE: It is assumed that no one will receive reduced retired pay.

RECOMPUTATION AT JANUARY 1972 PAY SCALE AT AGE 60, OR IMMEDIATELY WITH 30% OR MORE DISABILITY.

PROJECTED ANNUAL COST OF RECOMPUTING MILITARY RETIRED PAY, INCLUDING PRICE INDEX INCREASES

FY	AVERAGE NUMBER OF PERSONS		ANNUAL COST ($000), INCLUDING FUTURE ANNUAL PRICE INDEX INCREASES OF					
	TOTAL	RECOMPUTED	0%	1.5%	3.0%	4.5%	6.0%	7.5%
1975	801,589	0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
1976	787,255	283,841	534,687	534,687	545,583	549,669	553,756	557,842
1977	772,755	296,543	557,378	568,541	591,528	604,569	617,739	631,036
1978	757,985	312,811	584,947	606,476	648,657	669,424	692,747	718,631
1979	742,541	331,385	614,510	652,390	705,392	741,896	779,773	819,055
1980	726,674	351,294	644,711	696,539	766,455	819,875	873,979	930,870
1981	710,275	372,101	671,327	741,314	833,423	901,992	975,103	1,053,176
1982	693,337	390,526	691,377	778,210	892,488	979,785	1,074,258	1,176,389
1983	675,856	405,241	701,929	806,954	942,255	1,049,299	1,166,789	1,295,581
1984	657,931	414,414	706,964	827,764	986,923	1,114,671	1,257,105	1,415,833
1985	639,766	429,588	706,422	843,715	1,025,508	1,175,123	1,344,047	1,534,456
1986	620,172	437,635	699,129	851,517	1,059,425	1,226,813	1,423,078	1,647,481
1987	600,561	444,878	687,837	854,465	1,079,884	1,273,331	1,496,019	1,758,457
1988	580,450	453,998	675,662	855,335	1,163,197	1,319,582	1,574,502	1,874,146
1989	559,864	464,780	662,513	856,125	1,124,994	1,365,044	1,651,886	1,993,738
1990	538,831	475,348	647,039	852,749	1,142,580	1,406,856	1,726,844	2,112,478
1991	517,387	488,322	626,187	841,428	1,149,645	1,435,441	1,786,788	2,217,263
1992	495,575	476,327	596,584	820,622	1,142,996	1,447,619	1,827,414	2,299,494
1993	473,442	465,879	567,374	793,034	1,125,662	1,447,477	1,853,169	2,364,536
1994	451,044	448,204	534,545	762,107	1,103,674	1,438,628	1,867,993	2,416,819
1995	428,441	427,647	501,035	728,406	1,078,607	1,422,510	1,873,293	2,457,610
1996	405,703	405,383	467,355	693,297	1,043,775	1,399,778	1,869,536	2,487,024
1997	382,901	382,707	433,963	656,216	1,007,924	1,371,173	1,857,339	2,505,398
1998	360,115	359,986	401,171	619,056	968,990	1,337,199	1,837,044	2,512,721
1999	337,433	337,354	369,163	583,830	927,380	1,298,101	1,808,657	2,508,532
2000	314,947	314,892	338,065	542,660	866,564	1,253,395	1,770,865	2,496,086
2001	292,751	292,710	308,027	494,443	815,347	1,202,842	1,722,783	2,495,867
2002	270,944	270,911	279,177	459,486	764,696	1,147,015	1,664,671	2,483,603
2003	249,623	249,595	251,614	425,475	710,619	1,086,580	1,597,469	2,336,175
2004	228,880	228,857	225,500	391,286	658,125	1,022,303	1,521,994	2,253,622
2005	208,806	208,787	200,861	347,594	603,423	954,994	1,439,302	2,197,106
2006	189,486	189,471	177,782	315,600	551,245	885,924	1,350,581	2,048,062
2007	170,994	170,985	156,310	277,483	498,098	814,788	1,257,135	1,926,285
2008	153,402	157,397	136,472	247,520	445,270	743,658	1,160,344	1,795,573
2009	136,770	136,768	119,298	219,722	398,642	673,049	1,061,657	1,664,420
2010	121,151	121,150	101,728	188,975	352,950	603,833	962,563	1,524,874
2011	106,586	106,585	86,795	164,417	308,497	536,834	864,525	1,383,445
2012	93,106	93,106	73,440	142,289	268,360	472,803	768,942	1,242,542
2013	80,731	80,731	61,609	119,366	230,263	415,169	677,115	1,104,580
2014	69,466	69,466	51,332	99,527	196,549	367,328	598,614	971,456
2015	59,299	59,299	42,217	83,594	165,441	296,578	589,866	845,291
2016	50,204	50,204	34,471	70,046	138,507	249,059	434,447	727,462
2017	42,140	42,140	27,881	56,655	114,226	208,314	366,746	619,858
2018	35,054	35,054	22,332	45,379	93,682	171,217	306,155	520,778
2019	29,885	28,885	17,759	36,662	75,631	140,116	252,664	432,959
2020	23,569	23,569	13,900	29,449	60,699	112,596	202,673	359,648
2021	19,039	19,039	10,797	22,875	47,148	90,867	161,972	288,593
2022	15,223	15,223	8,299	17,583	37,043	70,725	129,030	231,322
2023	12,050	12,050	6,314	13,375	28,981	55,295	104,710	183,201
2024	9,448	9,448	4,757	10,261	21,834	42,465	78,405	141,112
2025	7,344	7,344	3,542	7,844	16,609	32,518	59,869	108,287
2026	5,666	5,666	2,632	5,812	12,613	24,934	45,718	83,152
2027	4,347	4,347	1,919	4,281	9,291	18,465	34,360	62,743
2028	3,322	3,322	1,423	3,142	6,828	13,554	25,903	47,543
2029	2,534	2,534	1,043	2,324	5,095	10,138	19,328	35,593
2030	1,933	1,933	766	1,692	3,826	7,643	14,525	26,865
2031	1,476	1,476	564	1,246	2,825	5,628	10,696	20,137
2032	1,128	1,128	417	937	2,088	4,161	8,062	15,239
2033	863	863	309	711	1,548	3,142	6,133	11,597
2034	656	656	229	528	1,148	2,389	4,549	8,537
2035	499	499	170	390	849	1,767	3,365	6,471
2036	379	379	125	287	635	1,298	2,472	4,754
2037	278	276	91	208	472	963	1,827	3,456
2038	203	203	65	149	339	675	1,340	2,474
2039	145	145	46	105	231	476	943	1,743
2040	101	101	31	72	164	328	649	1,210
2041	69	69	21	49	110	220	436	806
2042	46	46	14	32	72	144	285	526
2043	29	29	9	20	46	91	180	333
2044	18	18	5	12	28	56	110	203
2045	11	11	3	7	16	33	65	120
2046	6	6	2	4	9	18	37	67
2047	3	3	1	2	5	10	20	36
2048	2	2	0	1	2	5	10	18
2049	1	1	0	0	1	2	4	8
			TOTAL COST TO YEAR 2000 ($MIL)					
			14,625	18,367	23,857	29,049	38,562	43,778
			TOTAL LIFETIME COST ($MIL)					
			17,054	22,655	31,510	41,510	54,984	73,838

757,036 OF THE INITIAL 809,746 PERSONS WILL RECEIVE RECOMPUTATION

BEGINNING WITH YEAR 2001, THE PRICE INDEX INCREASES SHOWN ARE ASSUMED TO DECREASE TO ZERO IN 2040 WHEN THE ACCUMULATED PRICE INDEX INCREASE AMOUNTS TO 3% OR MORE, 1% IS ADDED

FY	AVERAGE NUMBER OF PERSONS: TOTAL	AVERAGE NUMBER OF PERSONS: RECOMPUTED	ANNUAL COST ($000), INCLUDING FUTURE ANNUAL PRICE INDEX INCREASES OF: 0%	1.5%	3.0%	4.5%	6.0%	7.5%
1975	801,589	0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
1976	787,255	247,683	460,863	468,883	469,376	472,868	476,360	479,858
1977	772,756	254,406	475,424	483,102	502,370	513,423	524,585	535,855
1978	757,888	263,585	490,481	512,210	541,315	561,214	581,578	602,411
1979	742,541	275,337	511,298	542,795	586,894	617,261	648,769	681,446
1980	726,674	290,355	536,654	580,696	640,689	683,574	728,699	776,150
1981	710,275	307,505	563,834	622,668	700,835	757,653	819,148	884,698
1982	693,337	325,456	590,567	664,739	762,548	837,208	918,885	1,005,368
1983	675,856	345,815	615,674	707,203	826,698	920,707	1,023,899	1,137,831
1984	657,831	361,788	633,398	741,628	884,351	999,053	1,126,748	1,268,788
1985	639,266	374,913	641,903	766,781	931,972	1,067,994	1,221,578	1,394,784
1986	620,172	386,495	645,863	785,667	973,967	1,132,198	1,313,395	1,520,526
1987	600,561	396,894	642,843	798,539	1,009,331	1,190,177	1,400,234	1,643,722
1988	580,450	407,655	634,138	803,429	1,035,395	1,238,479	1,477,729	1,754,954
1989	559,864	418,407	621,635	803,258	1,055,547	1,280,780	1,549,912	1,870,716
1990	538,831	415,944	608,361	801,774	1,074,325	1,322,865	1,622,987	1,986,877
1991	517,387	425,084	594,268	798,755	1,091,378	1,362,714	1,696,267	2,105,141
1992	495,575	433,998	578,816	792,425	1,103,938	1,398,251	1,765,218	2,221,865
1993	473,442	437,511	556,663	778,152	1,105,519	1,420,374	1,818,545	2,328,453
1994	451,044	432,396	529,129	754,583	1,092,751	1,424,161	1,849,247	2,392,614
1995	428,441	428,340	498,252	724,364	1,078,866	1,414,672	1,862,998	2,444,126
1996	405,703	402,954	466,852	691,365	1,048,869	1,395,919	1,864,396	2,488,285
1997	382,901	382,133	433,454	655,453	1,006,752	1,369,583	1,855,193	2,502,511
1998	360,115	359,807	408,965	618,737	968,494	1,336,515	1,836,106	2,511,441
1999	337,473	337,247	369,841	588,439	926,994	1,297,674	1,808,862	2,507,707
2000	314,947	314,824	337,989	562,538	866,378	1,253,115	1,770,472	2,489,586
2001	292,751	292,675	307,989	494,382	815,248	1,202,696	1,722,494	2,454,778
2002	270,944	270,892	279,158	459,455	764,644	1,146,987	1,664,559	2,403,441
2003	249,623	249,583	251,625	425,461	710,596	1,086,544	1,597,415	2,336,896
2004	228,890	228,848	225,495	391,279	658,111	1,022,279	1,521,964	2,253,577
2005	208,806	208,779	208,856	347,586	603,489	954,971	1,439,269	2,157,055
2006	189,485	189,463	177,777	315,592	551,230	885,499	1,350,544	2,048,025
2007	170,994	170,976	156,305	277,474	498,882	814,755	1,257,095	1,928,224
2008	153,402	153,389	136,468	247,493	448,256	743,685	1,168,389	1,799,618
2009	136,770	136,762	118,278	219,718	398,655	673,036	1,061,637	1,664,389
2010	121,151	121,146	101,727	188,972	352,945	603,824	962,548	1,524,851
2011	106,586	106,583	86,793	164,413	308,491	536,822	864,506	1,383,415
2012	93,106	93,105	73,439	142,287	268,356	472,796	768,930	1,242,523
2013	80,731	80,731	61,608	119,366	230,262	405,168	677,113	1,104,497
2014	69,466	69,466	51,230	99,257	196,589	347,318	598,181	971,465
2015	59,299	59,299	42,217	83,594	165,441	296,578	509,866	849,291
2016	50,204	50,204	34,471	78,046	138,507	249,859	434,447	727,462
2017	42,140	42,140	27,881	56,655	114,226	208,314	366,746	619,858
2018	35,054	35,054	22,332	45,379	93,682	171,217	306,155	526,778
2019	28,885	28,885	17,709	36,462	75,631	148,116	252,664	432,959
2020	23,569	23,569	13,989	29,449	60,699	112,596	202,673	355,840
2021	19,039	19,039	10,797	22,875	47,148	98,067	161,972	288,588
2022	15,223	15,223	8,299	17,583	37,043	78,725	129,838	231,322
2023	12,050	12,050	6,314	13,378	28,981	65,295	108,718	188,281
2024	9,448	9,448	4,767	10,261	21,834	42,465	78,485	141,112
2025	7,344	7,344	3,552	7,844	16,609	32,518	59,489	108,287
2026	5,666	5,666	2,632	5,812	12,613	24,584	45,718	83,152
2027	4,347	4,347	1,939	4,281	9,291	18,465	34,560	62,749
2028	3,322	3,322	1,423	3,142	6,828	13,554	25,903	47,548
2029	2,574	2,574	1,043	2,304	5,005	10,138	19,328	35,598
2030	1,933	1,933	766	1,692	3,836	7,648	14,525	26,865
2031	1,476	1,476	564	1,246	2,825	5,628	10,696	20,137
2032	1,128	1,128	417	937	2,088	4,160	8,062	15,239
2033	863	863	309	711	1,548	3,142	6,133	11,597
2034	658	658	229	528	1,148	2,389	4,549	8,587
2035	499	499	170	398	849	1,767	3,365	6,371
2036	375	375	125	287	635	1,298	2,472	4,754
2037	278	278	91	208	472	963	1,827	3,456
2038	203	203	65	149	339	676	1,340	2,476
2039	145	145	46	105	238	476	943	1,743
2040	101	101	31	72	164	328	649	1,208
2041	69	69	21	49	110	220	436	806
2042	46	46	14	32	72	144	285	526
2043	29	29	9	20	46	91	180	333
2044	18	18	5	12	28	56	110	203
2045	11	11	3	7	16	33	65	120
2046	6	6	2	4	9	18	37	67
2047	3	3	1	2	5	10	20	36
2048	2	2	0	1	2	5	10	18
2049	1	1	0	0	1	2	4	8
TOTAL COST TO YEAR 2080 ($MIL)			13,433	17,809	22,268	27,258	33,560	41,522
TOTAL LIFETIME COST ($MIL)			15,864	21,308	29,921	39,729	52,981	71,581

738,687 OF THE INITIAL 808,746 PERSONS WILL RECEIVE RECOMPUTATION

BEGINNING WITH YEAR 2001, THE PRICE INDEX INCREASES SHOWN ARE ASSUMED TO DECREASE TO ZERO IN 2048 WHEN THE ACCUMULATED PRICE INDEX INCREASE AMOUNTS TO 3% OR MORE, 1% IS ADDED

FY	AVERAGE NUMBER OF PERSONS: TOTAL	AVERAGE NUMBER OF PERSONS: RECOMPUTED	ANNUAL COST ($000), INCLUDING FUTURE ANNUAL PRICE INDEX INCREASES OF: 0%	1.5%	3.0%	4.5%	6.0%	7.5%
1975	801,589	0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0
1976	787,255	210,715	379,181	379,181	386,833	389,782	392,572	395,441
1977	772,756	214,874	385,859	392,853	408,522	417,480	426,526	435,659
1978	757,888	219,958	398,492	406,199	430,867	446,670	462,840	479,382
1979	742,541	219,334	397,989	422,428	456,748	488,334	524,813	530,199
1980	726,674	224,882	409,002	442,568	488,196	528,837	555,180	591,291
1981	710,275	232,559	423,322	467,446	525,527	568,761	614,696	664,084
1982	693,337	242,536	441,831	496,422	569,456	625,218	685,553	758,793
1983	675,856	255,478	462,872	531,755	621,605	692,325	769,954	855,872
1984	657,831	270,314	486,273	569,363	679,121	767,282	865,438	974,564
1985	639,266	286,163	509,111	606,361	739,441	847,475	969,473	1,107,013
1986	620,172	302,652	530,294	645,882	808,953	931,187	1,080,352	1,250,881
1987	600,561	316,802	544,463	676,585	855,875	1,008,373	1,186,449	1,392,883
1988	580,458	327,458	549,954	696,778	898,138	1,074,386	1,282,838	1,526,140
1989	559,864	336,595	558,442	711,401	934,837	1,134,391	1,372,857	1,657,124
1990	538,831	343,911	548,943	719,512	964,169	1,186,828	1,456,651	1,782,843
1991	517,387	348,163	535,472	719,732	983,485	1,227,899	1,528,457	1,896,886
1992	495,575	351,748	521,591	715,070	996,196	1,261,795	1,592,963	2,004,631
1993	473,442	356,999	507,169	709,886	1,007,396	1,294,385	1,657,339	2,114,882
1994	451,044	363,758	492,190	701,985	1,016,711	1,325,176	1,720,865	2,226,788
1995	428,441	370,294	475,428	691,382	1,021,313	1,350,347	1,778,458	2,333,426
1996	405,703	371,511	454,168	673,735	1,014,499	1,360,691	1,817,324	2,417,715
1997	382,981	365,331	427,451	646,427	992,889	1,350,763	1,829,753	2,468,265
1998	360,115	352,490	397,982	614,135	961,333	1,326,655	1,822,591	2,492,994
1999	337,431	334,848	367,683	578,320	923,618	1,292,950	1,801,498	2,498,629
2000	314,947	314,225	337,442	540,660	884,967	1,251,196	1,767,640	2,485,565
2001	292,751	292,462	307,745	493,991	814,688	1,781,758	1,721,142	2,452,847
2002	270,944	270,771	279,020	459,228	764,265	1,146,371	1,663,738	2,402,257
2003	249,623	249,509	251,542	425,320	710,362	1,086,187	1,596,891	2,335,331
2004	228,880	228,809	225,454	381,210	657,992	1,022,095	1,521,690	2,253,173
2005	208,806	208,758	200,836	347,552	603,350	954,878	1,439,128	2,156,849
2006	189,485	189,449	177,767	315,574	551,199	885,451	1,358,478	2,047,913
2007	170,994	170,965	156,298	277,463	498,062	814,721	1,257,343	1,926,163
2008	153,402	153,378	136,462	247,481	446,235	743,599	1,160,253	1,799,532
2009	136,778	136,758	118,271	219,705	398,612	672,997	1,061,575	1,664,292
2010	121,151	121,135	101,721	188,961	352,924	603,788	962,491	1,524,760
2011	106,586	106,573	86,789	164,485	308,475	536,795	864,463	1,383,346
2012	93,186	93,098	73,436	142,281	268,345	472,778	768,988	1,242,474
2013	80,731	80,727	61,606	119,361	230,254	405,152	677,088	1,104,455
2014	69,466	69,463	51,228	99,254	196,581	347,305	598,159	971,429
2015	59,299	59,298	42,216	83,592	165,437	296,578	529,854	845,271
2016	50,204	50,204	34,471	70,046	138,586	249,858	434,445	727,459
2017	42,140	42,140	27,881	56,655	114,226	208,314	366,746	619,060
2018	35,054	35,054	22,332	45,379	93,682	171,217	306,195	528,776
2019	28,885	28,885	17,709	36,662	75,631	140,116	252,664	432,959
2020	23,569	23,569	13,908	29,449	60,699	112,596	202,673	355,640
2021	19,039	19,039	10,797	22,875	47,148	90,867	161,972	288,583
2022	15,223	15,223	8,299	17,583	37,043	70,735	129,938	231,322
2023	12,050	12,050	6,314	13,378	28,981	55,295	100,718	183,201
2024	9,448	9,448	4,757	10,261	21,834	42,465	78,405	141,112
2025	7,344	7,344	3,552	7,844	16,609	32,510	59,889	108,287
2026	5,666	5,666	2,632	5,812	12,613	24,584	45,718	83,152
2027	4,347	4,347	1,939	4,281	9,291	18,465	34,360	62,743
2028	3,322	3,322	1,423	3,142	6,820	13,554	25,903	47,543
2029	2,534	2,534	1,043	2,304	5,005	10,138	19,328	35,593
2030	1,933	1,933	766	1,692	3,676	7,643	14,525	26,865
2031	1,476	1,476	564	1,246	2,825	5,628	10,696	20,137
2032	1,128	1,128	417	937	2,088	4,168	8,062	15,239
2033	863	863	309	711	1,548	3,142	6,133	11,297
2034	658	658	229	528	1,148	2,389	4,549	8,537
2035	499	499	178	398	849	1,767	3,365	6,471
2036	375	375	125	287	635	1,298	2,472	4,754
2037	278	278	91	206	472	963	1,827	3,496
2038	203	203	65	149	339	676	1,340	2,476
2039	145	145	46	105	238	476	943	1,743
2040	101	101	31	72	164	328	649	1,200
2041	69	69	21	49	110	220	436	806
2042	46	46	14	32	72	144	285	526
2043	29	29	9	20	46	91	180	333
2044	18	18	5	12	28	56	110	203
2045	11	11	3	7	16	33	65	120
2046	6	6	2	4	9	18	37	67
2047	3	3	1	2	5	10	20	36
2048	2	2	0	1	2	5	10	18
2049	1	1	0	0	1	2	4	8
			TOTAL COST TO YEAR 2000 ($MIL)					
			11,522	14,758	19,542	24,133	29,942	37,333
			TOTAL LIFETIME COST ($MIL)					
			13,952	19,056	27,193	36,591	49,360	67,387

703,554 OF THE INITIAL 801,746 PERSONS WILL RECEIVE RECOMPUTATION

BEGINNING WITH YEAR 2001, THE PRICE INDEX INCREASES SHOWN ARE ASSUMED TO DECREASE TO ZERO IN 2040 WHEN THE ACCUMULATED PRICE INDEX INCREASE AMOUNTS TO 3% OR MORE, 1% IS ADDED

RETIRED PAY REFORM LEGISLATION

Chairman MCCLELLAN. Would you describe in general terms the legislation that has been submitted for retired pay reform and compare the present system of retirement with that proposed.

Mr. SPENCE. The proposed Uniform Services Retirement Modernization Act, which was submitted to the 93rd Congress, was not acted upon before final adjournment. It is expected that similar legislation will be submitted to the 94th Congress as a part of the Department of Defense Legislative Program.

The major features of the proposed system are as follows:

Increased multipliers for members with long service (over 24 years).

A reduced annuity for members who retire short of a full career (30 years), with an increased annuity paid at the point when they would have reached 30 years had they remained on active duty.

Use of high–1 average basic pay instead of terminal basic pay as the basis for computing retirement annuities.

Integration at age 65 of the military retired pay and social security annuity (one-half of the social security retirement annuity attributable to military service would be offset from military retired pay).

A payment to both voluntary and involuntary separatees who leave active duty before 20 years of service.

The legislation will include save-pay and transition provision to minimize the impact of the proposal on persons in service on the date of enactment, particularly for those who had completed substantial periods of service.

I will furnish for the record a table which compares the present system with that proposed.

(The table follows:)

Comparison of Present and Proposed Plan

Area of Comparison	Present System	Proposed System
o Formula for computing full annuity	-- 2 1/2% / YOS -- Paid from retirement for rest of life	-- 2 1/2% / YOS for 20 to 24 YOS -- 3% / YOS for 25 to 30 YOS -- Paid from time member would have reached 30 YOS
o Formula for computing reduced annuity	-- No reduced annuity is paid under the present system; only a full annuity	-- Reduced annuity paid from retirement to the time when 30 YOS would have been attained -- 15 percentage point reduction in multiplier for full annuity
o Base for computing annuity	-- Basic pay rate in effect on the date of retirement	-- Average of last year's basic pay (High-1)
o Relation between military and social security retirement annuities	-- Annuities are completely additive	-- Combines annuities at age 65 by offsetting one-half of social security flowing from military service
o Payments to members separating before 20 YOS -- Voluntary separations	-- No payment under present system	-- Equity payment .. paid to those with 10 to 19 YOS .. deferred annuity payable at age 60 (2 1/2% times basic pay times YOS)
-- Involuntary separations	-- Lump-sum payment ($15,000) to a small category of officers; no payment for enlisted personnel	-- Lump-sum readjustment payment .. paid to those with 5 or more YOS .. 5% times basic pay times YOS -- Plus equity payment (choice of either deferred annuity or second lump-sum payment)

RETIRED PAY REFORM LEGISLATION

Chairman MCCLELLAN. What would be the additional cost or savings of the retired pay reform?

Mr. SPENCE. The estimated additional costs through Fiscal Year 1980 are $535 million, with a cumulative savings through the year 2000 of $5.7 billion. These estimates are based on the economic assumptions through 1980 reflected in the Fiscal Year 1976 budget document. After 1980, pay increases are assumed to be 7 percent annually, while Consumer Price Index increases are assumed to be 4.5 percent annually.

NORMAL RETIREMENTS

Chairman MCCLELLAN. Explain why there is such a large discrepancy between the "normal" retirement rate and what is expected in FY 1976, as shown on table 4.

Mr. SPENCE. During each of the years shown on table 4, the actual number of retirements shown exceed the "normal" number of retirements by rather substantial amounts.

This reflects two things. First, during the years through FY 1973, there were abnormally large numbers of disability retirements reflecting the additional retirements associated with the larger active duty force, and the combat casualties suffered in Vietnam. The number of disability retirees has reduced dramatically, reflecting the reduced force size, the current peacetime environment, and the use of more restrictive criteria for granting disability retirement. Second, the higher than "normal" nondisability retirements reflect the retirement from active duty of the last of the so-called World War II "Hump", that is, those persons who entered service in World War II. We expect that in the next 2–3 years the number of nondisability retirements will drop substantially.

RETIRED PAY INVERSION PROBLEM

Chairman MCCLELLAN. What is being proposed this year to eliminate the retired pay inversion problem?

Mr. SPENCE. The retired pay inversion problem is now being reviewed within the Administration to determine what action should be taken. One possible approach would guarantee each retired member that he would not receive less retired pay than a member of the same grade and length of service who retired at an earlier date. This is similar to the savings provision in the proposed Uniformed Services Retirement Modernization Act as it was submitted to the 93rd Congress. Another possible approach would guarantee that no retired member would receive less retired pay than he would have been entitled to receive if he had retired at any earlier date. A decision as to what action, if any, will be proposed is expected in the near future.

RETIRED PAY INVERSION PROBLEM

Chairman MCCLELLAN. What will it cost (to eliminate the retired pay inversion problem)?

Mr. SPENCE. To guarantee that each retired member would not receive less retired pay than a member of the same grade and length of service who retired at an earlier date would cost an estimated $478 million for the period fiscal year 1976–1979, assuming an effective date of 1 July 1975. To guarantee that no retired member would receive less retired pay than he would have been entitled to receive if he had retired at any earlier date would cost an estimated $142 million for the period fiscal year 1976–1979, assuming an effective date of 1 July 1975.

QUESTIONS SUBMITTED BY SENATOR THURMOND

Senator YOUNG. Senator Thurmond, who was unable to appear today, has asked that we submit a list of his questions for you to answer.

Mr. SPENCE. Yes, sir.

[The questions and answers follow:]

RETIREMENT COSTS IN DEPARTMENTAL BUDGETS

Senator THURMOND. Mr. Spence, retirement costs for the military now make up about 7 percent of the Defense budget. Are retirement costs of the other Departments of Government included in their budgets?

Mr. SPENCE. The actual disbursement of retired pay to civilian employees of the Government is from the Civil Service Trust Fund. However, it is my understanding that each Department or Agency is required to transfer to the Treasury a sum matching the 7 percent contribution of the employees. That matching sum, of course, would be from the appropriation of the Department or Agency.

EMPLOYEE VERSUS GOVERNMENT COST OF RETIREMENT

Senator THURMOND. Taking an average civil service employee, about how many years after he retired before the Government begins assuming the cost of his retirement pay?

Mr. SPENCE. The Office of the Actuary for the Civil Service Commission advises that the contributions of the average Civil Service retiree would be exhausted approximately one and a half years after his retirement. Of course, if the retiree was credited with interest accrual on his contributions, that period would be extended.

INCLUSION OF ALL RETIREMENT COSTS IN DEFENSE BUDGET

Senator THURMOND. While I recognize Civil Service personnel contribute to retirement and the military do not, my interest in this line of questioning was to determine if the inclusion of all military retirement costs in the Defense budget resulted in inflated budget factor not reflected in other Departments?

Mr. SPENCE. Yes sir, I believe that the inclusion in current Defense budgets of retirement costs of earlier, larger forces distorts and inflates current Defense budgets. Other Department budgets include only the government's share of the retirement costs of the present force (employees). Payments to retired employees are made from the Trust Fund. The Defense budget would more accurately compare with other Department budgets if it included only the costs of the present force.

EXCLUSION OF MILITARY RETIRED PAY FROM DEFENSE BUDGET

Senator THURMOND. Mr. Spence, has any real consideration ever been given to taking the military retired pay, or some portion of it, out of the defense budget?

Mr. SPENCE. Yes sir, a proposal recently considered was to include, as part of the national defense function, only the current cost of retired pay and to shift the current benefit payments for military retirees to the income security function of the Federal budget. In essence, the dollar benefits or compensation to former defense personnel and their dependents would be excluded from the National Defense category of the Federal budget since these amounts are paid when the recipient is no longer actively contributing to the National Defense. It was generally agreed that this approach would provide a much better measure of current defense costs instead of including in retired pay those costs rightly chargeable to the past. This approach would show the current service cost of military retirement on a basis reasonably comparable to that for civil service retirement without setting up a fund. At the same time, the functional presentation of Income Security would be more complete.

INFLATION OF DEFENSE BUDGET

Senator THURMOND. Do you feel that this heavy burden for the defense budget causes an "inflation" of the budget which gives a false picture compared to other executive agencies?

Mr. SPENCE. Yes sir, I certainly do, and for the very reasons cited previously.

REMOVING RETIREMENT COSTS FROM DEFENSE BUDGET

Senator THURMOND. Would there be justification for removing from the defense budget any portion of this retirement cost?

Mr. SPENCE. Yes sir, I believe so, as I stated previously, a proposal recently considered was to shift the current benefit payments for military retirees to the income security function of the Federal budget. If this proposal were adopted, the functional presentation of Income Security would be more complete.

Defense Contract Audit Agency

STATEMENT OF BERNARD B. LYNN, DIRECTOR

ACCOMPANIED BY:

FRED NEUMAN, DEPUTY DIRECTOR
HARRY KETTLES, DEPUTY DIRECTOR FOR RESOURCES MANAGEMENT
MICHAEL J. FRANCONE, DEPUTY DIRECTOR FOR AUDIT MANAGEMENT
CHARLES STARRETT, JR., ASSISTANT DEPUTY DIRECTOR FOR AUDIT MANAGEMENT

INTRODUCTION OF ASSOCIATES

Senator Young. Mr. Lynn, Defense Contract Audit Agency will speak next. Mr. Lynn.

Mr. Lynn. Good morning, Mr. Chairman.

I would like to introduce my colleagues at the table.

Fred Neuman, Deputy Director; Harry Kettles, Deputy for Resources Management.

As backup, Mr. Michael J. Francone, Deputy for Audit Management; and Mr. Charles Starrett, Jr., Assistant Deputy for Audit Management.

Senator Young. Do you have a statement?

Mr. Lynn. Yes.

Senator Young. You may proceed.

BUDGET REQUEST

Mr. Lynn. Mr. Chairman and members of the committee:

I am pleased to appear before you again, and to support the budget request of the Defense Contract Audit Agency (DCAA) for fiscal year 1976 and for the transition period, July 1, 1976 through September 30, 1976.

This is indeed a lean budget request, substantially lower in manpower resources than for fiscal year 1975.

However, we believe that the resources requested in the budget will enable the Agency to perform its highest priority work in an effective and timely manner.

First, I would like to say a few words about our mission.

AGENCY MISSION

Our mission is to provide financial assistance to Department of Defense (DOD) procurement authorities in achieving sound contract pricing by (i) evaluating the reasonableness and allowability of cost and pricing data submitted for proposed contracts; (ii) verifying the propriety and acceptability of the costs charged or allocated to flexibly priced Government contracts; and (iii) deterring inefficient practices by contractors which, if not detected and corrected, would lead to excessive costs and contract prices.

WORK FOR OTHER AGENCIES

We also provide contract audit services to about 25 other Federal agencies at those contractor locations where the Department of Defense has a continuing audit interest, or where it is economical from a Government-wide point of view.

The principal non-defense agencies for which we provide audit services are:

The National Aeronautics and Space Administration, the Energy Research and Development Administration, the Department of Health, Education, and Welfare, and the Department of Transportation.

This work is done on a reimbursable basis and our fiscal year 1976 earnings are estimated to be $8.5 million.

SAVINGS ACCOMPLISHED

In previous years, the committee has asked about the net savings resulting from our audit efforts.

For fiscal year 1974, it cost $71 million to do our work, including reimbursement earnings of $8 million, and we achieved savings to the Government of $720 million.

Senator YOUNG. Will you explain a bit more how you achieved this $720 million in savings?

Mr. LYNN. Yes, sir.

Senator YOUNG. I can see where you would have a more difficult problem now with inflation than you would ordinarily have, in your kind of work.

Mr. LYNN. Yes, sir; inflation is a very definite problem.

The largest area in which we achieve savings is our review of pricing proposals submitted by contractors seeking awards. We examine the proposals to determine whether the cost representations they submit are fair and reasonable and, in fact, appropriate.

Senator YOUNG. These are mostly negotiated contracts?

Mr. LYNN. Yes, sir; only negotiated contracts.

This work generates most of the savings, amounting to some $500 million of the $700 million total.

The other $200 million results from our audits of incurred costs. We examine the cost the contractor incurs under a negotiated flexibly priced contract, his material, his labor, his overhead. We look to see if the costs are allocable to the contract, whether they are reasonable, whether they are otherwise appropriate and allowable. If they are not, we question them.

Generally, we try to come in before the costs are incurred so as not to be charged with the auditor's 20–20 hindsight.

GOVERNMENT COLLECTION ON CONTRACTOR OVERCHARGES

Senator YOUNG. If, after the contract has expired, you find that the contractor has overcharged, can the Government still collect?

Mr. LYNN. Yes, sir.

Assuming the contracts involve multi- or no-year funds, which most of those we audit do, monies usually remain available for obligation. We can arrange for their collection, offset them against other contracts, or recommend other means of recovery. I know of no case offhand

where the expiration of funds has precluded us; we try not to wait that long.

Senator YOUNG. In other words, there are no uncollected funds which you save here. You say you saved about $720 million. Have all of these been reimbursed to the Government?

Mr. LYNN. I don't believe all, but I would say most.

Now, these are actually hardcore savings, Mr. Chairman.

I was also about to refer to some costs which are in dispute at the Board or the courts but they would not be included here.

The savings I mentioned refer to actual recoveries collected by various methods depending on type of audit and contract. As I will describe later on, they are hardcore savings. The return on the taxpayers' investment in DCAA amounted to approximately $10 in hardcore savings for each dollar we spent.

By hardcore savings, I mean only those actual savings which were specifically identified and reported to us by procurement officials.

There are also numerous instances where we have recommended that contractors avoid the incurrence of costs by eliminating inefficient or wasteful practices. This preventive type of audit approach has resulted in further savings to both the contractor and the Government.

Senator YOUNG. Do you work with the General Accounting Office or do they work with you in their investigations?

Mr. LYNN. No, sir.

We audit for the Department of Defense. We audit while the work is going on, as the pricing proposal is submitted, as the contract is being performed.

The General Accounting Office generally enters after the fact. It comes in at the request, as you know, of a congressional committee or individual Congressman, or maybe on its own.

GAO will examine the contract and other matters. During the review they will ask us for our working papers to see what we have done. So, to that extent, we may be said to assist them, but we do not work together with them.

Senator YOUNG. You seem to know more about a military contract than most of them do.

Mr. LYNN. Well, we live there, so I guess we should.

FISCAL YEAR 1976 BUDGET SUMMARY

A total of $68.7 million is requested for fiscal year 1976, a net increase of $1 million from the 1975 funding level.

The most significant item in this year's budget request is a reduction of $2 million relating to a decrease in our personnel strength. This lower staffing level reflects the effect on DCAA of actions taken by the Office of the Secretary of Defense to reduce the resources devoted to support functions and to reallocate these resources to combat units.

However, the decrease is offset by certain built-in increases in the amount of $3 million—primarily caused by circumstances beyond our control.

Examples of these increases are: annualization of the October 1, 1974 civilian pay raise, within-grade step increases, one additional paid day in fiscal year 1976, price increases for goods and services, and increased payments to the General Services Administration for rental of office space.

WORKLOAD TRENDS

Our workload is generated essentially by requests from Government procurement and contract administration officials.

Many factors affect the number of people required to respond to these requests. One significant factor is the increasing interest which Department of Defense officials have expressed in special financial advice on the progress and future contract costs of major weapons systems.

Other factors to be considered are (i) the types of contracts awarded by DOD; and (ii) the timelag required for changes in the procurement level to affect the annual expenditures under Government contracts and our related audit responsibility.

During fiscal year 1974, DCAA audited $22 billion in costs incurred under 44,000 contracts. We reviewed over 19,000 pricing proposals aggregating $54 billion, a total of $76 billion for both of our major responsibilities.

This work, plus effort on defective pricing, cost accounting standards, and other requested audits, required the issuance of about 50,000 reports.

We estimate that we will examine $83 billion in fiscal year 1975, an increase of $7 billion over the 1974 level, and we expect to maintain the same level in fiscal year 1976.

Workload and performance data are set forth in exhibit I.

The increase of $9 billion in the fiscal year 1976 President's budget for procurement and research and development, will, if approved by Congress, further increase the demands on our audit resources in fiscal year 1976 and future years.

EMPLOYMENT LEVELS

We operate our Agency with lean staffing patterns considering the scope and complexity of our mission.

Our fiscal year 1975 authorized strength approved by Congress was 3,647. However, the Secretary of Defense reduced our strength by 230, with the new end strength of 3,417 to be achieved by June 30, 1975.

Senator YOUNG. Are these all civil service employees?

Mr. LYNN. That is right, sir.

This cut was part of a much larger DOD action taken to reduce the resources devoted to support functions and to permit reallocation of these resources to combat units.

To accommodate this reduction, we have cut our headquarters and administrative staffing, both in Washington and in the field, and have reduced our planned efforts in the areas of defective pricing and cost accounting standards.

I would now like to discuss our work in the area of cost accounting standards.

Senator YOUNG. May I ask a question at this point?

Do you hire retired military personnel at times?

Mr. LYNN. We have no military personnel on our staff at all.

We had, back in 1966, authorization for military personnel. We do not have any now.

Mr. KETTLES. Mr. Chairman, we do hire retired military personnel.

Mr. LYNN. Sorry, I thought you were referring to those on active duty. We do hire military retirees.

Senator YOUNG. Very many?

I can see where some of them would be helpful to you because they know the inside working operations of the Pentagon.

Mr. LYNN. We hire some but not too many because the largest percentage of our recruitment is directly from the college campus. We hire students just as they graduate and we put them through some considerable schooling, of the kind I will be mentioning in a little bit.

So, we sort of bring them up through the contract audit agency.

Senator YOUNG. Do you pay for the schooling at a university or do you have a school of your own?

Mr. LYNN. We have a school of our own, Mr. Chairman.

Several years ago, we set up what we call the Defense Contract Audit Institute in Memphis, at what was then an old Army depot that had available space. We use it now and the school is active 12 months of the year. We send students there and teach them fundamentals of contract auditing, advance audit techniques such as statistical sampling, auditing in a computer environment, and other subjects. It is a fine, practical place of learning.

Senator YOUNG. How long a course is that?

Mr. LYNN. The courses vary.

We do not keep the students there too long. We think a combination of classroom and on-the-job training is effective. So, the courses tend to be 5 to 8 days. I think 10 is the longest single course we have. They then get right back on the job to apply what they have learned. Maybe 6 months later they will go back for another course.

COST ACCOUNTING STANDARDS

Public Law 91–379 added new responsibilities for the Defense Contract Audit Agency.

We must now review cost accounting disclosure statements submitted by defense contractors, ascertain whether these contractors comply with cost accounting standards, rules, and regulations, and evaluate related contract price adjustment proposals.

The Cost Accounting Standards Board continues to issue additional standards and each one adds to our workload. For the most part, however, we have had to incorporate the expanding requirements of the law into our workload without a commensurate increase in manpower resources.

PERSONNEL RECRUITMENT AND DEVELOPMENT

DCAA maintains, and this is the point I was making earlier, an active and carefully planned recruitment, training, and development program in an effort to meet our current and future staffing needs.

The best college graduates with an accounting major we can get are employed as junior auditors.

Through self-study courses, formal classroom training, and planned rotational job assignments, auditors are qualified for progressively more complex and responsible audit work. Training and development activities are carefully monitored in our headquarters.

Specialized technical training courses are conducted at the Defense Contract Audit Institute, located in Memphis, Tenn. These courses,

which are tailored to the needs of contract auditors, are augmented by supervisory and managerial training given by universities and other Government agencies.

Self-development, such as preparing for the CPA examination, is encouraged and several hundred members of our staff are certified public accountants.

Employees having the highest potential for assuming top executive responsibilities are provided specific developmental assignments and training in a planned effort to prepare them for such positions.

COMPARATIVE AUDIT WORKLOAD AND PERFORMANCE DATA

Mr. Chairman, this concludes my prepared statement. I would like to submit a table for the record.

[The information follows:]

EXHIBIT I

DEFENSE CONTRACT AUDIT AGENCY COMPARATIVE AUDIT WORKLOAD AND PERFORMANCE DATA

[Dollars in millions]

	Actual fiscal year 1974	Estimated	
		fiscal year 1975	fiscal year 1976
Contractors/contracts/proposals:			
Number of contractors	6,169	6,200	6,200
Number of auditable contracts:			
Completed during the year	11,300	11,000	11,000
In inventory at the end of the year	44,199	44,000	44,000
Number of pricing proposals completed	19,455	20,000	20,000
Dollars examined:			
Value of pricing proposals completed	$54,325	$60,000	$60,000
Incurred costs examined	21,738	23,000	23,000
Total dollars examined	76,063	83,000	83,000

QUESTIONS SUBMITTED BY CHAIRMAN M'CLELLAN

Mr. LYNN. I will be pleased to answer any questions which you and members of your committee may have.

Senator YOUNG. Senator McClellan did have some questions for you. If you will respond to them, we will print them in the record at this point.

[The questions and answers follow:]

REIMBURSABLE ACTIVITIES

Chairman MCCLELLAN. Describe the activities that your agency audits for other non-defense agencies. Indicate how many personnel are involved at each audit activity. Why is it more economical for DCAA to do this work than for the Department of Health, Education and Welfare or the Department of Transportation?

Mr. LYNN. The activities DCAA audits for non-defense agencies are generally the same ones we audit for the Department of Defense, mainly industrial companies and some colleges and universities performing under Government negotiated prime and subcontracts. The type of contract audit services provided for non-defense agencies is essentially the same as for DoD.

The number of DCAA people involved in audits for non-defense agencies is shown below:

Non-defense agency	*Personnel man-years expended fiscal year 1974*
National Aeronautics and Space Administration	232
Energy Research and Development Administration	26
Department of Transportation	31
Department of Health, Education, and Welfare	30
Department of State	6
National Science Foundation	9
Department of the Interior	12
U.S. Postal Service	7
Environmental Protection Agency	8
Other	34
Total	395

It is more economical to the Government for DCAA to do these audits because we have resident audit staffs at many of the larger contractor locations where both defense and non-defense contracts are performed. Our experience with the contractors' people, accounting systems and operations would take other groups a long time to acquire. Additionally, it would be wasteful and duplicative for the non-defense agencies to send auditors into plants in which we maintain permanent staffs.

In addition to our residencies, we have a number of branch offices throughout the country located wherever there is a concentration of small and medium size concerns doing business with DoD. We audit these companies on a "mobile" basis, i.e., people from our branch offices visit them periodially as needed. Many of these companies perform contracts for non-defense agencies and the economies and efficiencies available where all Government contracts are audited by one agency are similar to those described in connection with our residencies.

In some instances we are asked to audit a contract of a non-defense agency performed by a company which has no defense business at the time. Because of our network of residencies and branches throughout the country, we will generally have an office in the geographical proximity. There is a considerable saving of travel costs if we do the work.

There are other, broader considerations which motivate some non-defense agencies to ask DCAA to audit their contracts. DOD has the longest and most substantial experience in awarding and monitoring negotiated contracts, and DCAA is the largest contract audit entity in the world. We have a well established organization with full control and supervisory capabilities; policies and procedures, e.g., a Contract Audit Manual; and carefully planned recruitment, training and professional development for our audit staff. A department or agency considering the establishment or expansion of its own contract audit group sometimes concludes that such action would not be in the Government's interests. It would have to compete with DCAA in recruiting qualified people from the college campuses or proselyte DCAA auditors by offering them higher grades. Additionally, the non-defense agency would need to develop a field audit organization, promulgate policies and procedures, and provide for training and development of its staff—much of this clearly duplicating DCAA operations.

Savings Accomplished From Audit

Chairman McClellan. Explain how savings accomplished are measured. To what extent are these numbers accepted as valid by the Defense community? Are the savings money that is actually returned to the Government, or not paid out to contractors?

Mr. Lynn. The amount of savings we accomplish represents that portion of the difference between a contractor's cost representation and the amount paid or made available to him by the Government which is attributable to DCAA audit effort. To illustrate, assume a contractor claims $1 million of costs were incurred under a flexibly-priced negotiated contract. As a result of our audit, we report to the contracting officer that we believe $200,000 of costs are unreasonable, not allocable or otherwise unallowable. The engineers on the contracting officer's staff advise him the amount the contractor is entitled to should be reduced by an additional $100,000 for certain technical reasons. Assuming the contracting officer considers these recommendations appropriate, he would initiate negotiations with the contractor by offering him $700,000.

Contract negotiations are complex and the contractor may submit new data not previously disclosed to the auditors or engineers. After considering all of the available facts, the give and take may result in a negotiated amount of $800,000. Our review of the contracting officer's negotiation memorandum shows the contractor was able to persuade him to accept as reasonable, $50,000 of the costs questioned by the DCAA auditor and $50,000 of the costs questioned by the Government engineer, a total of $100,000 more than the opening Government negotiating objective ($800,000 minus $700,000).

DCAA had recommended reduction of $200,000 but $50,000 was reinstated in negotiations. We consider $150,000 as savings attributable to DCAA.

You asked whether the amount of savings we report are considered valid by the Defense community. As indicated by the above illustration, we report as savings the amount by which the contractor's cost representation is actually reduced as a result of the DCAA audit. The agreement on this amount by both parties in negotiation indicates "it has been accepted as valid by the Defense community."

Another facet of this question relates to whether the savings are money returned to the Government or not paid out to contractors. It could be either, depending on the nature of the contract action and type of audit. For example, a contractor may have been paid $10 million during the year under provisional overhead rate agreements. As a result of the DCAA audit after the end of the year, the parties negotiate a lower, final overhead rate which reduces the amount of overhead applicable to the contracts to $9 million. The excess of $1 million may be returned to the Government or offset against payments due the contractor under other contracts.

Another illustration involves a contractor's submission of a reimbursement voucher under a Cost-Plus-Fixed-Fee (CPFF) or Cost-Plus-Incentive-Fee (CPIF) contract in the amount of $200,000. The DCAA auditor finds that $50,000 was incorrectly charged and attaches a "Notice of Suspension or Disallowance" (DCAA Form 1) to the voucher. The Finance Officer will only pay the net amount of $150,000.

Employment Levels

Chairman McClellan. Provide a breakdown of your military and civilian employment. Explain why it is allocated that way. Has there been civilianization of any military positions to date? Are other civilianizations planned?

Mr. Lynn. All of our people are civilians. When DCAA was established in July 1965 about 87 military personnel spaces were transferred to DCAA. None were filled and under the DOD Civilianization Program all military personnel spaces were converted to civilian spaces in July 1966.

CONCLUDING REMARKS

Senator Young. That was a very good statement.

You are one of the most important agencies of the Government.

Mr. Lynn. Thank you very much, Mr. Chairman.

Defense Investigative Service

STATEMENT OF:
B. L. WILLARD, ACTING DIRECTOR
DR. FREDERICK E. TAYLOR, COMPTROLLER
CHARLES E. FORSYTHE, BUDGET OFFICER

PREPARED STATEMENT

Senator Young. The next is Mr. B. L. Willard, Acting Director of Defense Investigative Service.

Did you want to read all of your statement?

Mr. Willard. No, sir, I will summarize it, if the Chair agrees.

Senator Young. Your whole statement will be placed in the record.

[The statement follows:]

Mr. Chairman and Members of the Committee, I am Bevelyn L. Willard, Acting Director of the Defense Investigative Service (DIS). It is a distinct pleasure for me to appear before you for the first time to discuss our budget request for fiscal year 1976. Before discussing the specifics of that request, I would like to comment on a few developments that have affected our workload and, hence, our need for resources.

THE DIS MISSION

The major mission of the Defense Investigative Service in terms of volume is to conduct personnel security investigations for the defense establishment. In this task we are responsible for developing information which DOD officials utilize in determining the suitability of individuals for employment in DOD, for entry into military service, or for access to sensitive information.

DIS does not undertake these investigations on its own initiative. The investigations are requested by appropriate authorities pursuant to pertinent statutes, executive orders, and DOD directives. Nor does DIS prescribe the scope of these investigations. The scope is prescribed by various DOD directives. In sum, both the number of investigations that DIS performs, and the general level of work involved in each investigation, is beyond DIS control. An example of this is an OSD policy decision of 15 July 1974, which reduced the scope - the content - of a category of investigations called "Bring-Ups." A bring-up investigation is conducted to obtain current information concerning individuals who have previously been subjects of a background investigation and who have, during the preceding five years, continuously occupied either Critical Sensitive positions or positions requiring access to Sensitive Compartmented Information, i.e., highly sensitive

intelligence information. It was determined that the degree of effort being expended in this area was excessive relative to the security obtained thereby. The savings from the workload reduction are reflected in the FY75 and 76 columns of our budget request.

Conversely, we must make provisions in FY76 for a task that was assigned to us early in FY75 without any extra resources being provided therefor. DIS, together with the military investigative agencies, was directed to provide investigative support to the Defense Supply Agency. The FY 1975 and FY 1976 columns of our budget request include resources for criminal and fraud investigation support, including crime prevention survey support, for 97 DSA facilities throughout the continental United States.

FREEDOM OF INFORMATION ACT

I would like to mention the impact on DIS of the amendments to the Freedom of Information Act (FOIA) (PL93-502) which became effective on 19 February 1975. The Freedom of Information Act has occasioned a major policy change with respect to the release of investigative reports to the subject of those reports. The Act, of course, imposes stringent time schedules for responses to requests for files. Because DIS is now the central agency for conducting PSI's, and because it also operates the Defense Central Index of Investigations - the index to the investigative holdings of all DOD investigative agencies - DIS is potentially the initial point to which most FOIA requests for DOD investigative data may be directed. The impact of the potential workload generated by these additional requirements cannot be estimated at this time, but is expected to be substantial in the months ahead.

DIS has organized a program which implements both the spirit and letter of the Freedom of Information Act. A central

office in Headquarters has been designated to handle all FOIA requests. Appropriate forms to facilitate timely action have been printed. Action personnel have been drilled on the requirements of the Act and the need for timely and responsive action on requests under the Act. We expect this to be a task of some dimensions. But since we have no idea of the number of requests for information that we will receive, we have not earmarked any funds in this budget for that purpose. We will attempt to meet our responsibility through the reprogramming of resources as the requests develop.

OPERATION AND MAINTENANCE

The Defense Investigative Service budget request for fiscal year 1976 includes $28.437 million for Operation and Maintenance and $1.142 million for Procurement. The Operation and Maintenance amount represents an increase of $2.647 million over the amount requested for fiscal year 1975. I shall first itemize and then discuss the factors responsible for this increase.

		($ millions)
1.	Civilianization of 295 military spaces	+3.909
2.	Annualization of programs and costs	+ .860
3.	Investigative Files workload (24 spaces)	+ .332
4.	Upgrading of the Defense Central Index of Investigations Computer	+ .138
	SUB TOTAL INCREASES (319 Spaces)	+5.239
1.	Reduction in workload (79 spaces)	-1.245
2.	Revision in scope of bring-up investigations (55 spaces)	- .847
3.	Consolidation of District Headquarters from 20 to 14 (18 spaces)	- .332
4.	Reduction in DIS Headquarters (12 spaces)	- .168
	SUB TOTAL DECREASES (164 Spaces)	-2.592
	NET INCREASE (155 Spaces)	+2.647

MILITARY CIVILIAN CONVERSION

When DIS was established in October 1972, it was manned heavily with military personnel. Since the conduct of our mission does not require a predominance of military skills, we embarked in FY74 on a substantial civilianization program. This budget proposes to continue that program. We have identified 295 military spaces for conversion to civilian spaces in FY76. Although this action will require an increase of $3.909 million in the Operation and Maintenance, Defense Agencies Appropriation, it will not require a net increase in DOD costs. The military department appropriations provide for 295 fewer spaces and associated costs than otherwise would have been requested. By the end of fiscal year 1976, we will have civilianized a total of 563 military spaces, and will have reversed the original personnel mix of 59 percent military and 41 percent civilian to a 59 percent civilian, 41 percent military, mix.

ANNUALIZATION OF PROGRAMS AND COSTS

This budget includes $.860 million for the full year costs of items which were effective for only part of fiscal year 1975. Of this, $.361 million is required for the classified employees pay raise which was effective for only nine months of fiscal year 1975. $.274 million is required for annualization of the non-personnel cost levels in effect when the budget estimates were prepared. $.178 million is required for the latest Standard Level User Charge rates from the General Services Administration for the Federal Building Fund. $.047 is required for other minor items.

INVESTIGATIVE FILES WORKLOAD

DIS must retain a copy of the report of each investigation it conducts. Our files repository is at the DIS Support Systems Center at Fort Holabird, Maryland, and the reports

are maintained either in paper form or in a microform medium. (Physical space limitations as well as economy considerations require that we miniaturize - micromate - our file holdings where practicable.) We are responsible for providing information from these files to authorized DOD requesters, as well as to requesters under the Freedom of Information Act. The requirement to provide information grows in direct proportion to the growth in the number of files, and the growth in the number of files is determined by the number of investigations we conduct. In calendar year 1974 the file holdings increased from 246,000 to 584,000. An additional 24 spaces and $.332 million is required to maintain the files, insure their integrity, and implement the micromation program.

UPGRADE OF THE DCII COMPUTER

The Defense Central Index of Investigations (DCII) computer, located at Fort Holabird, Maryland, was transferred to DIS by the Army when we assumed operational control over the DCII. This computer was initially designed for one task - the maintenance of an index of the location of all DOD investigative files. Subsequently additional requirements have arisen, most importantly the Defense Case Control System. This is a computerized case management system that maintains an inventory of each case we do, tells us where the work is, and renders the necessary statistical reports on both operations and manpower utilization. A large battery of statistical clerks would be necessary if we did not have this computer capability. The equipment, however, is obsolete. Many component parts are no longer being manufactured. And computer failures are becoming increasingly frequent and costly, both in repair expenses and in operational dislocation. We propose to update the central processing unit, and shift from the use of data

cells (which are no longer being manufactured) to disk storage. We will retain many of the current components.

REDUCTION IN WORKLOAD REQUIREMENTS

During the past year DIS conducted an extensive in-house study to develop workload, productivity, and manpower data in order to provide a basis for more informed judgments on resource requirements. Based on this study we project a workload savings of 79 spaces and $1.245 million. We expect 4,000 fewer background investigations and 18,000 fewer National Agency Checks during fiscal year 1976.

REDUCTION IN THE SCOPE OF BRING-UP INVESTIGATIONS

At the beginning of my statement I noted the OSD directed reduction in the scope of bring-up investigations. This budget reflects a savings of 55 spaces and $.847 million in fiscal year 1976. Since the revised policy was effective 15 October 1974, the budget also reflects a savings of 44 spaces and $.597 million in fiscal year 1975. Thus the cumulative fiscal year 1976 savings is 99 spaces and $1.444 million. The estimated savings are based on an extrapolation of the manhours we will save as a result of the decision to reduce the number of bring-up investigations and to reduce the number of steps to be accomplished in completing bring-up investigations.

CONSOLIDATION OF DISTRICT HEADQUARTERS

Since becoming operational in October 1972, the DIS has been organized into 20 geographical districts. This structure was the subject of intensive review during the budget formulation period. It was determined that 6 of the 20 districts could be disestablished and the field activities reorganized into 14 districts. This action will provide for a more effective, efficient and economical administration of our field activities. The budget provides for a savings of 18 spaces and $.332 million.

REDUCTION IN DIS HEADQUARTERS

This budget also provides for a reduction of 12 spaces and $.168 million for civilian personnel assigned to the DIS Headquarters in Washington, D. C. The total civilian and military Headquarters personnel end strength for fiscal year 1976 is 135 which is 25 spaces fewer than the 160 reflected in the fiscal year 1974 budget.

The items I have been talking about result in an increase of 155 civilian personnel spaces to be funded from the Operation and Maintenance, Defense Agencies Appropriation. The military department appropriations, however, provide for a decrease of 305 military spaces assigned to DIS. Thus we are planning on a net reduction of 150 spaces in fiscal year 1976. The fiscal year 1975 column of our budget provides for a net reduction of 230 spaces (an increase of 55 civilian and a decrease of 285 military). Over the two year period we are planning for a net reduction of 380 spaces (an increase of 210 civilian and a decrease of 590 military) or 13.3 percent of the fiscal year 1974 end strength.

PROCUREMENT

The fiscal year 1976 procurement appropriation request is for $1.142 million. All except $39 thousand of this is for the procurement of 395 vehicle replacements for our light sedan fleet. The 395 vehicles will replace some of the vehicles which meet the criteria of being over six years old or having more than 72,000 miles. The remaining $39 thousand is for dry copy machines, security cabinets, and computer disk packs.

With respect to our need for vehicles it should be noted that a safe and adequate fleet of motor vehicles is an absolute prerequisite for successful accomplishment of the DIS mission since the character of our work precludes the use of commercial transportation except in a few metropolitan centers. DIS

investigators travel extensively in neighborhood and rural areas as well as in the inner city. By the beginning of fiscal year 1976, 573 of the vehicles or 42% of our fleet will exceed the age or mileage (or both) criteria for replacement. By the end of FY 1976, 636 vehicles or 49% of the total fleet will exceed the replacement criteria. The alternative to replacing over-age vehicles would be major outlays on repairs, high losses of manhours as investigators await repair of the vehicles, and most crucially a large number of vehicles that would not be safe for our personnel to drive.

Mr. Chairman, this concludes my prepared statement. I shall be happy to attempt to answer any questions you may have.

BUDGET REQUEST

Mr. WILLARD. It is a pleasure to be here this morning, sir, and give you this summary.

We are asking for a total of $45,271,000 for fiscal 1976, including the operation and maintenance, procurement and military personnel categories.

This is a reduction of $1,450,000 from fiscal 1975.

However, we are adjusting our appropriation request. We are asking for an increase in the operation and maintenance appropriation of $2,647,000. The first constituent of this is about $860,000 for the annualization of various cost raises that occurred in fiscal 1975 such as the civilian pay raise which is around $361,000; $178,000 for increase in GSA costs we are paying, then a general inflation factor of about $274,000 in the various supplies and services and equipment we have to buy and $47,000 for other minor items.

COMPUTER

We are also asking for an increase of $138,000 to upgrade our computer which at the moment is built around an obsolescent configuration with an increasing amount of operational problems and down time.

Senator YOUNG. How much was that amount?

Mr. WILLARD. $138,000 to upgrade our configuration.

Senator YOUNG. Are you renting these machines?

Mr. WILLARD. This would be primarily a lease situation.

We own a computer now but we are also having to lease quite a bit of equipment.

This $138,000 would be an increase in various leases and we would dispose of the currently-owned computer back to the IADP resources group which might be able to put it somewhere else.

Senator YOUNG. How do you lease these computers? Is it on a bid or negotiated basis?

Mr. WILLARD. In this particular case, sir, we would hope to get it under what we call a selective acquisition process.

We are tied down by software, by equipment that we already own and by other things to primarily IBM equipment.

The only way that we can keep within reasonable bounds the costs of upgrading the computer, is in a sense, just to graft onto certain equipment that we will retain material that we would hope to lease from IBM. Much of the software we have would be applicable to the new lease material. Much of the equipment we already have would be compatible with it.

For this particular exercise, we would go the selective acquisition route; we hope.

Senator YOUNG. You don't use competitive bidding at all?

Mr. WILLARD. We do not contemplate that in this particular proposal to upgrade.

Senator YOUNG. Why do you select IBM? Are there others who compete in this area?

Mr. WILLARD. Our current computer configuration was taken over from the Army, when DIS was established. It is a basic IBM configuration.

Through a period of time we grafted certain IBM material essentially on to that and now to upgrade it, to really upgrade it as we feel we need to—I would raise one point.

A lot of companies buy IBM equipment. Then they will lease it to the Government. Very often, and I don't know how this works, Mr. Chairman, Very often the lease cost from one of these companies for IBM equipment would be less than the cost of leasing it from IBM.

To that extent, we would be going competitive. It would not be a competitive situation of going out and asking several to bid on a particular thing. We would look over the total market with GSA and get it from the cheapest source.

COMPANIES IN COMPUTER BUSINESS

Senator YOUNG. What other companies are in this kind of computer business?

Mr. WILLARD. We are not going for anything that is particularly peculiar. So, in most any computer company, large company, sir, would have the capability, Honeywell, National Cash Register, most of the large names in the computer field.

Senator YOUNG. One reason why I asked this question is that Senator Stevens offered an amendment to the Defense appropriation bill last year requiring that there be competitive bidding in this area, as I recall.

Mr. WILLARD. Yes, sir.

We are entirely in accord with the new provisions of the law into looking into means for trying to upgrade our computer as cheaply as possible.

Actually, we would have to go through the General Services Administration and be fully in accord with all of these requirements as a means of trying to get them.

Senator YOUNG. Since you have IBM equipment, of course, the cheapest thing for you to do is to upgrade it rather than to purchase some other equipment.

Mr. WILLARD. That is so.

As I say, a lot of the equipment we have either on lease or that we own is totally compatible with the new configuration we would like to get.

The greatest amount of the software, the programing, would transfer readily from one to the other. Some modification, of course, but the basic structure is there.

Senator YOUNG. One reason I am asking these questions is that some people think that one company or two have a monopoly on this kind of business. I was just seeking information so as to be better able to answer some of these questions.

Mr. WILLARD. We looked over the possibility of various manufacturers, Mr. Chairman. We did not look into it too deeply because it very quickly became apparent that the costs would go up by several orders of magnitude if we scrapped what we had and went to a new system.

VEHICLE PROCUREMENT

Senator YOUNG. Do you have a shortage of automobiles?

I understand you are rather hard put in that area.

Mr. WILLARD. We don't have a significant shortage in terms of numbers. We certainly have a shortage in terms of quality.

We are requesting $1,103,000 for vehicle procurement in fiscal 1976.

By the end of fiscal 1975 we will have approximately 1,382 vehicles in our fleet of which 573, or 42 percent of the fleet will be either overaged or will have excessive mileage by the end of fiscal year 1975. Failure to obtain the number of vehicles we are trying to get, namely, 395, would put us in a situation by the end of fiscal 1976 where 49 percent of our fleet would be either overaged or would have excessive mileage.

Senator YOUNG. If my information is correct, I believe the House is considering an appropriation now to buy some 121,000 automobiles that would replace overaged automobiles. That situation would take care of your problem, would it not?

Mr. WILLARD. It would help a great deal if we could get an early procurement. We have in the 1975 appropriation funds for 236 additional vehicles but we have not been able to procure them yet.

I believe that the matter to which you referred talked about an accelerated procurement looking toward, among other things, to helping out the depressed state of the automobile manufacturers. We would, of course, welcome any acceleration of the procurement effort because we are experiencing considerable down time with our automobiles. They are in the shop with some frequency.

This means that our personnel are not out using them and being productive.

Of course, it means that we are having a great amount of repair cost.

Senator YOUNG. Do you have your own repair shops?

Mr. WILLARD. No, sir.

Essentially, we try to use the Department of Defense repair facilities where we can, if our automobiles are stationed near a service center run by the Department of Defense, or we would go commercial. Again, we would look at the economics of a situation in a particular area.

Senator YOUNG. You may proceed.

Mr. WILLARD. We are asking for $1,649,000 increase in our operations and maintenance appropriation for an additional 155 civilian spaces for fiscal 1976.

CIVILIANIZATION PROGRAM

I can summarize the personnel posture, sir.

We had identified 295 military spaces that we would have civilianized in fiscal 1976 had we needed them all. We need about 24 additional civilian spaces for certain functions, which totals around 319 spaces. However, we forecast a decrease in investigative work and by early fiscal 1976 we will be making certain organizational adjustments which will permit us to decrease our what we might call personnel overhead.

We are reducing the number in our districts and reducing the size of the headquarters staff.

So, adding these all up, it comes out that we need an increase of 155 civilians but a decrease of 305 military for a net decrease in our strength of 150 spaces from our fiscal 1975 strength.

So, the military departments should be able to reduce their appropriations request for military personnel to the tune of the 305 spaces that we will be giving up.

We are asking, as I say, operation and maintenance appropriations funds to support an increase of 155, for a net reduction in our total strength of 150, which, I might add, continues a trend. We had a decrease in 1975 from the 1974 level of 230. So, over the 2-year period we will have decreased 380 or 13.3 percent from fiscal 1974.

Senator YOUNG. Do you need that many with our reduced military force?

Mr. WILLARD. The projection of military manpower, as I see it in fiscal 1976, sir, is not very much reduced from fiscal 1975. So, the total size of the Department of Defense in this time frame does not affect our requirement for personnel too much.

We do anticipate a decrease in the number of investigations that we will be requested to conduct by virtue of some strong emphasis out of the Office of the Secretary of Defense on the elimination of unnecessary investigations and by a policy change there with respect to what we call bring-up investigations which will actually reduce the extent of each investigation so that we anticipate quite a reduction in the work load on us.

Senator YOUNG. Do you have anything further?

Mr. WILLARD. I believe, sir, that I have covered the major items that we are asking for.

Senator YOUNG. Senator Hruska.

DIS MISSION

Senator HRUSKA. In what activities do you engage with other investigative agencies? Is there a cross-reference? Is there an FBI connection, and so on?

Mr. WILLARD. One of the most basic things we do, sir, in any investigation is immediately run what we call a national agency check which is a check of the existing Federal record, investigative records.

Senator HRUSKA. Existing what?

Mr. WILLARD. Record of Federal investigative agencies, including FBI, CIA, if the individual has traveled abroad.

Senator HRUSKA. Is that the purpose of the central index?

Mr. WILLARD. No, sir. I will get to that in a moment.

Essentially, we would go to the departmental agency check; we would check the records of the investigative agency of the Federal Government to see if they had anything already on record. If they did not or if they do, as the case may be, then we would go ahead with our own investigation.

If they had done a complete investigation, we would utilize it. If they had not, then we would go ahead and do our own.

As far as cooperative effort and so forth with the Bureau, we do exchange information but we do our own investigation.

Did I address your problem, sir?

Senator HRUSKA. With reference to the FBI, there are other agencies, of course, which engage in the same thing, are there not?

Mr. WILLARD. Yes, sir.

Our clientele, if you will, will be the Department of Defense, of course, the military personnel, the civilian employees of the Department of Defense and then the employees of industrial contractors that have classified contracts.

Senator HRUSKA. What about civil service? Does that come into it at all?

Mr. WILLARD. We do the background investigations on civil service employees of the Department of Defense through an agreement dating back to 1950, I guess, with the Civil Service Commission.

We do the background investigations of civilian employees of the Department of Defense.

Senator HRUSKA. The civilian employees?

Mr. WILLARD. Correct; yes, sir, and, of course, the military personnel of DOD.

FREEDOM OF INFORMATION ACT

Senator HRUSKA. There is one thing I do have an interest in and that is the Freedom of Information Act. It is in its incipient stages and I sympathize with your inability to forecast just what load that is going to cast upon you and other agencies of the Government.

If some of the estimates of that added burden are going to be correct, one of these days there will be a modification and an amendment of that law. It is a potential source of a great burden and also vexation; is it not?

Mr. WILLARD. At the moment, we have had an extremely modest number of requests. Actually, we have had only 13.

Senator HRUSKA. They have not learned about it yet.

Mr. WILLARD. I dare say that is so; yes, sir. I understand other agencies have had a much more severe impact. I dare say our turn will come.

Senator HRUSKA. It will be a hard line to follow.

Mr. WILLARD. I think it is going to be very hard, sir, to live within both; that on the one side and the Privacy Act on the other.

As you say, we are caught between two millstones here. But we will grow with it, I guess, and guidelines will develop over a period of time.

Senator HRUSKA. What restrictions are there on the disclosure of informants in the personnel records, informants that operate on a confidential basis?

Mr. WILLARD. Informants that operate on a well-defined confidential basis can be protected under the act, as we see it.

Now, I dare say, we, and that is a very collective we, for the Government as a whole, will probably go to the courts on that and get definitive guidelines in time to come.

As we read the statute, we would be free to withhold the identity of a genuinely confidential informant. If it is a neighbor who says don't tell so-and-so that I told you about them but didn't give us very good information, very favorable information, it would be very hard to say that they were a confidential informant.

There is a lot of interpretation that we feel still needs to be done before we know precisely under this law what we have to do, all the time keeping an eye cocked for September 1975 when the provisions of the Privacy Act come into play.

Senator HRUSKA. Thank you very much.

If you will keep track of that in either the supplemental or next year, and update us on the impact, we would appreciate it very much.

Mr. WILLARD. Yes, sir.

QUESTIONS SUBMITTED BY CHAIRMAN M'CLELLAN

Senator YOUNG. Chairman McClellan has some additional questions for you to answer. Without objection, the questions and answers will appear at this point in the record.

[The questions and answers follow:]

INVESTIGATIVE SUPPORT TO DSA

Chairman MCCLELLAN. Why was your agency directed to provide investigative support to the Defense Supply Agency? How many personnel will be required to provide such support?

Mr. WILLARD. To answer your second question, it is estimated that it will require 15 personnel to provide for such support. Six spaces are budgeted in the Operation and Maintenance appropriation and nine spaces in the Military Personnel appropriations. I will have to refer your first question to OSD and furnish the information for the record.

[The information follows:]

The Defense Investigative Service shares with the U.S. Army Criminal Investigations Command (USACIDC), Naval Investigative Service (NIS) and Air Force Office of Special Investigations (AFOSI) the responsibility for providing criminal investigative support to the Defense Supply Agency upon the request of that agency. DIS provides only 16% of the criminal investigative support to the Defense Supply Agency while the other 84% is provided by the military department investigative agencies.

The decision to include the DIS as one of the investigative activities which would support the Defense Supply Agency was made primarily on the basis of cost-effectiveness. By taking advantage of DIS geographical locations in the major metropolitan areas, the need either to reestablish military department investigative operating locations in those areas or to fund costly extended TDY trips were obviated. The metropolitan operating locations of the military departments had been closed as a result of the centralization of the personnel security investigative function in the DIS.

MILITARY INVESTIGATIVE AGENCIES

Chairman MCCLELLAN. What military investigative agencies now exist and why can they not be consolidated with the Defense Investigative Service?

Mr. WILLARD. I will have to refer your question to OSD and furnish the information for the record.

[The information follows:]

At present, the military departments each have their own investigative organizations:

Army has two separate organizations: Army Military Intelligence for the counterintelligence investigative function; and the U.S. Army Criminal Investigations Command for criminal investigations.

Navy has combined all investigative functions into one organization, the Naval Investigative Service (NIS).

Air Force also has combined its investigative functions into one organization, the Office of Special Investigations (AFOSI).

The investigative functions within the DoD consist primarily of personnel security, criminal and counterintelligence. The personnel security investigative function was centralized in the DIS because of the commonality of the function within the military departments, and the potential for realizing significant economies and efficiencies. The criminal and counterintelligence functions are oriented on the morale, welfare and mission accomplishment of the military departments and are less susceptible to consolidation within a Defense agency.

When the DIS was established in 1972, the Secretary of Defense considered the assignment of criminal and counterintelligence missions to the DIS. The assignment of additonal missions to a Defense Agency was unanimously opposed by the civilian and military leadership of the military departments and the JCS. The primary reason was that it would be unacceptable and deleterious to mission accomplishment not to have an investigative capability directly responsive and

responsible to the Service Chiefs. It was vigorously argued that if security is to be retained as a responsibility of the field commander, then the commander must have his own in-house counterintelligence/security investigative capability. Also, the close tie-in between criminal investigative capability and the military justice system for which the military departments are directly responsible, was an overriding reason for retaining their own in-house criminal investigative capability. Based on these strong representations, Secretary Laird determined not to assign Service criminal and counterintelligence tasks to a Defense agency.

Since that time, the feasibility and desirability of extending the mission of the DIS to include criminal and counterintelligence has been under continuous study. No new evidence or persuasive arguments have been presented to indicate that efficiency or effectiveness would result by consolidating all DoD investigative functions within the DIS.

Civilianization of Agency Positions

Chairman McClellan. What are the long-term prospects for civilianization of further positions in the Agency? Is the current military-civilian mix considered optimum? Please explain why or why not.

Mr. Willard. The mission currently assigned to DIS does not require military skills. Military personnel spaces are needed in DIS in order to provide an adequate CONUS rotation base for the periodic reassignment of overseas investigators. The use of DIS as a rotation base also provides an opportunity for military investigators to enhance their skills in tasks within the DIS mission (Since the geographic jurisdiction of DIS is limited to the United States, its overseas mission is performed by military departments.). The Army, which has 62% of all military personnel assigned to DIS, has informed us that military spaces also provide opportunities for enlisted personnel promotions, officer career development and training.

The overall reduction in the number of military personnel assigned to investigative agencies in recent years has reduced the size of the rotation base. The current military-civilian mix is not considered an optimum. Additional long-term civilianization appears feasible but the amount and phasing have not yet been determined. This determination will be made during the FY 1977 programming cycle. The schedule provides for the submission of revised FY 1977 plans to the Office of the Secretary of Defense by May 2, 1975.

Cost of Micromation Program

Chairman McClellan. What do you estimate the total cost of the micromation program to place existing materials on microfilm will cost?

Mr. Willard. In Fiscal Year 1976 we are budgeting $158 thousand for the micromation program: $46 thousand for material and equipment rentals and $112 thousand for the pay of 12 people. The objective of the micromation program is to achieve zero growth in the hard copy file holdings in order to live within the space currently available. We have not budgeted any funds to reduce the current level of hard copy file holdings. If, however, there were a shortfall in the estimated volume of new cases, resources would be used to reduce the level of hard copy file holdings.

Central Processing Unit of Case Control System

Chairman McClellan. What is the cost of updating the central processing unit of the case control system?

Mr. Willard. The Central processing units accounts for $113.000 of the additional $138,000 requested for the computer. The remaining $25,000 is for the rental of peripheral equipment to change the configuration of the system from data cell storage to disk storage, the replacement of other components, and for software. In addition, the procurement appropriation request contains $30,000 for the purchase of disk packs.

The case control system is only one of several users of the computer. The largest user is the Defense Central Index of Investigations. It utilizes 60% of the available time. The remaining time is used for the case control system, for various administrative reports, and computer overhead (preventive maintenance, testing, etc.).

Investigations to Be Undertaken

Chairman McClellan. How many total background investigations and other types of investigations will you undertake in FY 1976 compared with previous years? Explain the difference between the various types of investigations.

Mr. Willard. I will provide that information for the record.

[The information follows:]

Types of investigations	Number of cases opened		
	Fiscal year 1974 actual	Fiscal year 1975 estimated	Fiscal year 1976 estimated
Background investigations:			
Standard Background Investigations (BI)	52,645	54,986	53,410
Special Background Investigations (SBI)	56,675	54,407	52,849
Bring-Up investigations (BU)	21,836	20,380	15,820
Expanded National Agency Checks (ENAC)	11,691	9,752	9,471
Limited Inquiries (LI)	1,517	5,166	5,018
Special Investigations Center cases (SIC)	7,062	7,610	7,610
Total background investigations	151,426	152,301	144,178
Other types of investigations:			
National Agency Checks (NAC)	840,721	1,032,494	1,014,741
Secretary of Defense investigations	13	10	10
DSA crime prevention surveys		15	35
DSA criminal investigations		41	100
Reciprocal investigative leads	26	30	30

Definitions

Standard Background Investigation (BI): A BI consists of an inquiry into the loyalty, trustworthiness, and suitability of an individual in order to determine whether his access to classified information is consistent with the interests of national security. This investigation normally consists of a check of the records of national and local agencies, educational institutions and employers, and interviews with persons acquainted with the individual being investigated.

Special Background Investigations (SBI): A SBI is a BI which requires additional investigative effort, such as a check of credit records and interviews of neighbors, in order to satisfy the security requirements of certain highly sensitive programs.

Bring-Up Investigations (BU): A BU investigation is an update of a previously conducted BI or SBI relating to certain specified programs. Normally a BU is conducted at five year intervals and covers only the period since the previous investigations.

Expanded National Agency Check (ENAC): An ENAC consists of an investigative inquiry conducted in order to substantiate or disprove unfavorable information disclosed during the conduct of a NAC (explanation provided below).

Limited Inquiry (LI): A LI is an investigation conducted in order to prove or disprove an allegation or to make other security determinations.

Special Investigation Case (SIC): A SIC case is one which involves security, suitability, or hostage situations related to individuals coming within the purview of the military, civilian, and industrial security program.

National Agency Check (NAC): A NAC consists of a search of the indices and the files of appropriate national agencies for information bearing on the loyalty, trustworthiness, and suitability of an individual.

Secretary of Defense Investigation: This category includes investigations of a special nature—including counterintelligence, criminal or fraud—which may concern highly sensitive matters and highly placed persons within the DoD and its agencies and which are directed by the Secretary of Defense.

Defense Supply Agency (DSA) Crime Prevention Survey: A DSA crime prevention survey is an official inquiry or analysis of procedures, personnel, or conditions within a facility, activity, or area. It is undertaken at the request of DSA for the purpose of detecting crime and identifying and isolating conditions or systematic weaknesses which may be favorable to the commission of criminal acts and/or illegal diversions of government property or funds.

Defense Supply Agency (DSA) Criminal Investigations: A DSA criminal inquiry is an official inquiry conducted by a special agent. Investigations are undertaken at the request of DSA in order to identify offenders, provide facts and evidence upon which to base a legal prosecution and effect recovery of property which has been wrongfully appropriated.

Reciprocal Investigative Leads: Investigative leads are conducted on a reciprocal basis for the military services on their counterintelligence and criminal investigations. Military services provide investigative assistance to DIS in overseas areas.

Civilization of DIS

Chairman McClellan. Are additional civilianizations of Defense Investigative Service military personnel contemplated?

Mr. Willard. Yes, sir, they are. When DIS became an operating agency, it was authorized 1,750 military positions. By the end of FY 1976 we will have reduced the number of military personnel by 750—563 of them by civilianization. Our review indicates that many of the 1,000 positions that remain can also be civilianized.

Chairman McClellan. How many of the 1,000 military occupy positions that must remain military, and how many are candidates for civilianization?

Mr. Willard. We do not know how many of these positions can be civilianized because we have not yet obtained the coordination of the miiltary departments or the approval of the Office of the Secretary of Defense. There is, in addition, another critical factor which impacts upon civilianization plans and that is the factor of timing. Civilianization involves the replacement of experienced military investigators with inexperienced civilian investigators. Other experienced investigators have had to use part of their time to help the new inexperienced investigators learn their jobs. The result is a decline in productivity. It takes time for new investigators to become experienced and for the learning curve to have an impact. It may be necessary, therefore, to defer further civilianization for a few years until that experience is gained and learning curve developed.

Civilian Personnel Increase—DIA

Chairman McClellan. Explain the increase in civilian personnel in the Defense Agency for "Intelligence production analysis and operational capabilities." Also in connection with increases in civilian personnel for the Defense Itelligence School, explain what this school is, where it is located, and what its missions and student load are.

Gen. Graham. In a Joint organization such as the Defense Intelligence Agency (DIA), wherein officer and enlisted personnel from all the Services, and civilian professional, technical, and clerical personnel are fully integrated within all functional activities at all levels in the chain of command, it is normally impossible to consider increases, or decreases, by individual category in isolation. These considerations come into play in discussions of FY 1976 increases under the heading of "production analysis and operational capabilities."

Since early 1973, the DIA has been involved in a major undertaking at the request of the Joint Chiefs of Staff to upgrade and modernize the National Military Intelligence Center (NMIC). The object of this effort has been to upgrade the NMIC from a 24 hour-per-day alert/warning and indications center [deleted] which would bring together for the first time, [deleted].

The NMIC modernization project will begin to move into an [deleted]. The requested increases for FY 1976 are to provide [deleted].

[Deleted.]

The implementation of this initial NMIC [deleted] on each NMIC shift and requires a total of 15 manpower spaces, eleven military and four civilian.

The modernized NMIC facility will also make extensive use of computerized intelligence data base storage and retrieval techniques, advanced message handling procedures, and a [deleted] system. A total of 42 manpower spaces (7 military and 35 civilian) are required to develop and monitor the necessary software for these new systems as well as provide operator personnel for a Pentagon-based computer network on a 24 hour-per-day basis. Through the use of desk top terminals, analysts and watch personnel in the NMIC will be able to recall previous messages on a specific topic of current interest, [deleted] and ascertain the status of foreign military forces and other related basic intelligence items in order to present senior personnel with a complete [deleted] intelligence picture.

The twelve-space civilian increase in FY 1976 for production analysis will significantly upgrade the present level of effort on adjusting scheduled and unscheduled DoD-wide intelligence production to meet the needs of our national-level consumers in a constrained resource environment. This analysis encompasses increased efforts in identifying and evaluating the needs of intelligence users and in ascertaining the responsiveness and objectivity of resultant DoD intelligence production. The objective of this pursuit is to improve the quality and responsiveness by all DoD intelligence components to the needs of the National Command Authorities and other senior DoD decision makers.

The Defense Intelligence School is a joint professional educational institution operated and controlled by the Director, Defense Intelligence Agency under the direction of the Joint Chiefs of Staff.

The mission of the Defense Intelligence School as prescribed by Department of Defense directives and by the Joint Chiefs of Staff Charter is:

To provide educational programs in intelligence which will enhance the preparation of selected military officers and key Department of Defense civilian personnel for important command, staff, and policymaking positions in the national and international security structure.

To prepare Department of Defense military and civilian personnel for duty in the Defense Attaché System.

To assist the broad career development of Department of Defense military and civilian personnel assigned to intelligence functions.

The School is housed in the temporary buildings at the Navy Anacostia Annex, Washington, D.C.

Twelve formal courses of instruction are presented to meet a variety of needs. Three are Attaché courses, four are orientation intelligence courses and four are intelligence career courses. Course offerings range from once to eleven times per year per course. The total student load for these courses is over 1500 per year. Included in the curriculum is the two year Post-graduate Intelligence Course Leading to a Masters Degree in Strategic Intelligence. In the Masters Program the student completes a number of resident subcourses the first year and then enters the practicum phase, usually for a year, wherein he works in an intelligence position at his permanent duty station. Additional civilian manpower is required to cope with the workload associated with the number of courses, the large student load, and particularly in the implementation of the newly developed Masters Degree Program in Strategic Intelligence which is included in the 1975 DoD Legislative Program being submitted for congressional consideration in the current session.

Defense Attaché Offices

Chairman McClellan. If there are currently Defense Attaché Offices in many countries, why does a small increase in number result in an approximately 15% cost increase in the Defense Intelligence Agency request. (Numbers are classified).

Gen. Graham. Total Operation and Maintenance costs for the Defense Attaché System in FY 1976 are estimated at $19,084,000 which is an increase of $1,169,000 or 6.5% over the estimated FY 1975 level. The FY 1975 funding level provides for the operational support of [deleted] Defense Attaché Offices (DAO's) located worldwide. The FY 1976 fund level provides for the continued support of all previously opened DAO's and full year costs associated with those stations opened in FY 1975. FY 1976 estimates include support for the [deleted].

The majority of the costs of the Defense Attaché System are associated with the Shared Administrative Support (SAS) agreement negotiated between the Department of State and the Department of Defense. This agreement provides for the administrative and logistical support by U.S. Embassy staffs to the U.S. Defense Attaché Offices and is estimated at $11,658,000 for FY 1976. The majority of the increase in operating costs over the FY 1975 levels for the Defense Attaché System is primarily associated with increased Shared Administrative Support costs. This cost has risen sharply as a result of inflationary increases experienced by the State Department for goods and services procured on the various local economies, foreign currency exchange rate fluctuations and full year State Department costs of the October 1974 U.S. civilian pay raise which is prorated back to the various Agencies, such as DIA, who have entered into support agreements with the Department of State.

Other increases in the Defense Attaché System are associated with full-year costs of FY 1975 Foreign National pay raises, increased travel costs related to

higher overseas per diem rates and air fares, and other minor increases primarily related to full-year costs of supply and fuel increases that are purchased directly from foreign economies by the attaché offices.

IMAGERY RELATED DATA HANDLING SYSTEM

Chairman MCCLELLAN. Provide information on the background of the Imagery Related Data Handling System, for which an increase of $2.1 million is requested in FY 1976. What was its development cost, annual operating cost? Describe the system and the basic functions it will fulfill.

Gen. GRAHAM. Background/Description: [Deleted.]

Development/Operating Costs.—The program was initiated in FY 1974 with the development of design concepts and unique software modifications to transform similar capabilities of an existing imagery related system at the Strategic Air Command to perform DIA imagery related functions. During FY 1975 contract assistance is continuing for the modification of software and the development of unique programming capabilities. [Deleted.]

Specifically, the FY 1976 DIA Budget request includes a total of [deleted] for IRDHS, as compared to [deleted] million in FY 1975. The FY 1976 request, with comparison to FY 1974 and FY 1975, are detailed below:

TOTAL IRDHS RESOURCES BY APPROPRIATION

	Fiscal year—			
	1974	1975	1976	1975 to 1976 increase
[Deleted.]				

As reflected, the largest increase in the O&M appropriation in which $2.3 million is requested for full-year computer rental and maintenance, communications circuit lease and continued software modification contracts. In Procurement $1.6 million is requested to purchase three communication controllers at $650,000 to perform an orderly scheduling of the flow of queries and responses to the main computer necessary to support the remote data terminal network. The balance of the funds, $920,000, requested in Procurement [deleted].

Fiscal year 1976 RDT&E funding provides for continued modification of ADP software and the development of unique programming capabilities for the on-line system.

NATIONAL MILITARY INTELLIGENCE CENTER

Chairman MCCLELLAN. What is the total annual cost of the National Military Intelligence Center. Provide a breakdown of the costs.

Gen. GRAHAM. The term National Military Intelligence Center (NMIC) is commonly used in two ways. In the formal sense, it identifies a large physically secure area of the Pentagon assigned to DIA. This area is directly below the present National Military Command Center, and contains the headquarters of several divisions of the DIA Directorate for Intelligence and the DIA Directorate for Collection, as well as associated production, collection, and administrative offices, and the present DIA Alert Center that operates 24 hours-per-day. The DIA Alert Center is being modernized, expanded and collocated within the JCS Expanded National Military Command Center. This project is informally referred to as NMIC Modernization.

The mission and functions of the Modernized Alert Center in the NMIC will differ somewhat from the current alert function. [Deleted.] This upgrading will result in enhanced support to the National Command Authorities, Joint Chiefs of Staff, senior level DoD decisionmakers, and the U&S Commands.

This improved intelligence function will necessitate a modest increase in intelligence analyst manning. The intelligence analyst staffing will come from existing DIA assets.

DIA has requested in the FY 1976 President's Budget an increase of 42 manpower spaces for NMIC computer operations, collection analysis and communications functions. Beginning in FY 74, the Agency was augmented by 27 spaces for NMIC Research and Development project management.

The present Manpower authorizations for the NMIC Alert Center and the

R&D project management office for FY 74 and FY 75 are shown below. The projected manning of the NMIC Alert Center and related support and R&D functions as identified for FY 76 through FY 78 is subject to future refinements as the center becomes operational.

	End strengths, fiscal year—				
	1974	1975	1976	1977	1978
Alert function	73	73	95	95	95
Support functions	0	0	42	72	72
Subtotal [1]	73	73	137	167	167
R. & D.	27	27	27	27	27
Total NMIC modernization	100	100	164	194	194

[1] Continuous round-the-clock operation requires 5 teams of 3 shifts per day.

TOTAL ESTIMATED COST OF THE NMIC ALERT CENTER INCLUDING OPERATIONS COSTS

[In thousands of dollars]

	NMIC resource summary, fiscal year—				
	1974	1975	1976	1977	1978
[Deleted.]					

The Air Force, as Executive Agent for the Expanded National Military Command Center (ENMCC) project, budgeted $4.1 million in FY 72 for the construction of the ENMCC including collocation of the NMIC Alert Center in the Pentagon. This amount, which includes the DIA NMIC Alert Center, is not included in the above estimates. DIA has utilized approximately $.5 million for facility modifications in other areas of the Pentagon to house computer and related support facilities, which is included in the FY 1974 and FY 1975 costs above.

Strategic Arms Limitation

Chairman McClellan. Explain why contractual support relating to Strategic Arms Limitation is decreasing in FY 76, but travel requirements are increasing.

Gen. Graham. DIA provides support to the Strategic Arms Limitation (SAL)/Mutual and Balanced Force Reduction (MBFR) programs in two ways: (1) [Deleted] and (2) Defense intelligence representation on the U.S. Delegations at the SAL/MBFR negotiations. While both efforts are directly related to the SAL/MBFR programs, there is no relationship between the amount of travel being requested in support of SAL and [deleted].

Increased travel requirements associated with the Strategic Arms Limitation Treaty result from the requirement that DIA provide a representative to all sessions of the SALT/MBFR negotiations. One military officer is required at each negotiation site, i.e. Vienna and Geneva. This support is provided from the DIA's Washington, D.C. activities for a three month period on a rotating schedule. While on duty at the negotiating sessions, the DIA representatives are in a temporary duty status. The combination of increased overseas per diem rates experienced in FY 1975 and increases in overseas air fares have contributed significantly to the DIA's travel requirements associated with the SAL/MBFR negotiations. In addition, DIA during part of FY 1975 provided civilian clerical support to the MBFR negotiations in Vienna on a TDY basis, which since submission of the budget has been converted to a permanent duty assignment, using one enlisted man.

On the other hand, the FY 1976 budget request [deleted].

HUMINT Training

Chairman McClellan. What is the total cost of HUMINT training funded in FY 1976? How much was previously funded in the individual Service budgets prior to FY 1976 (FY 74 and FY 75).

Mr. Willard. [Deleted.]

Gen. GRAHAM. [Deleted.]

CONCLUDING REMARKS

Senator YOUNG. I believe that is all.
Thank you very much.
Mr. WILLARD. Thank you, sir.

Defense Advanced Research Projects Agency

STATEMENT OF DR. GEORGE H. HEILMEIER, DIRECTOR

ACCOMPANIED BY RUSSELL BEARD, DIRECTOR, PROGRAM MANAGEMENT

PREPARED STATEMENT

Senator Young. Dr. Heilmeier, Director, Defense Advanced Research Projects Agency, is our next witness.

Doctor, I notice you have a rather lengthy statement, which we can place in the record.

[The statement follows:]

INTRODUCTION

This is my first appearance before this Committee, having assumed my present position of Director, Defense Advanced Research Projects Agency in late-January. I would like to describe my background and what I bring to ARPA. I would also like to explain the role of ARPA, and my own view of the unique approach and contribution of ARPA to the solution of Defense problems. Finally, with your permission, Mr. Chairman, I will leave for the record a description and explanation of the ARPA programs that are included in the President's budget and respond to any questions the Committee may have concerning the program, my background and views.

I bring to this job a sense of commitment, a low tolerance for bureaucratic shuffling, a record as a market-oriented technologist and a determination to give the country a fair return on its R&D investment. I also bring a unique perspective to the job in that, in addition to my industrial R&D experience, I have also viewed ARPA from the vantage point of a position in the Office of the Director of Defense Research and Engineering where I was involved in the management of Service R&D programs.

THE MISSION

ARPA is a unique organization with a unique role. It is not another military R&D operation with the same charter as those in the Services. It was organized in 1958 to fill a need, and that need and unique role still exist. In discussions with the Secretary of Defense, the Deputy Secretary of Defense, and the Director of Defense Research and Engineering, I find that they feel as strongly as I do about the role of ARPA. Within the broad purview of potential Defense applications, they want an ARPA that:

- Tackles the tough, the unique, the unconventional and is not afraid of failure when the prospect of a major payoff in national security is great.

- Focuses on the revolutionary rather than the evolutionary.
- Fills the R&D gaps between Service lines of responsibility or handles high priority problems that cross Service lines.
- Has the freedom to take alternative paths that run counter to popular beliefs or widely held opinions in order to provide decision makers with a set of alternative options.
- Has no vested interest in the status quo. They want ARPA to ask the question, for example, how do we deliver fire power to the target rather than how do we make this airplane fly faster? To be sure, the scientists and engineers at ARPA understand the need for tanks, airplanes, and ships. But our search is for the breakthrough, the elegantly cheap, the simple, the effective technical solution. These may be very different from traditional approaches.

There will be failures. The purpose of R&D is to determine what will work, what won't, and why. When the Congress reviews the balance sheet at the end of each year, I invite them to examine the failures as well as the successes. But please look at the balance at the bottom. As Director, I believe that I can guarantee to you that the bottom line will show a clear gain in future national security...a fair return for the public investment.

THE UNIQUENESS OF ARPA

Clearly the mission of ARPA is unique in the U. S. Government and, based on my industrial experience, unique to that sector as well. But what separates it from other organizations? ARPA is built on ideas, on people, and on organizational simplicity and flexibility. Of course,

the Services and industry can and do have fresh ideas, outstanding people, and even the ability to create a flexible organization for a special project. But let me explain how ARPA puts ideas, people, and flexibility together to create a unique and effective R&D organization. Let's begin with ideas. ARPA draws on the most creative talent in industry, universities, and government. Because of its stature and reputation in the technical community, the most imaginative scientists and engineers in the country seek out ARPA's support. They know that at ARPA they will face:

- o A minimum of bureaucratic uncertainties
- o Tough, knowledgeable questioning of their ideas
- o An awareness of the intrinsic value of their work and its application to national security even though they themselves may be unaware of its total impact.
- o A willingness to take technical risks when the payoffs are high.

Now a word about the people. The ARPA staff consists of a relatively small, less than 60, group of first-class technical minds with a high esprit de corps and a sense of excited dedication. It is a place where fresh professional minds with special expertise converge on critical defense problems. Specialized technical problems require specialized people; over three-fourths of ARPA's professional staff hold advanced degrees. The people change as the focus of the technical problems change. Thus it is not surprising that the average tenure of the ARPA professional staff is under five years. This reflects the average time it takes to bring a new idea to the stage where it can be injected into the mainstream; the shifts in emphasis and technical thrust; and the search for fresh, new minds.

There is a third leg to the stool and that is organizational flexibility and simplicity. No other organization acts as freely across organizational and Service lines or has such high organizational visibility and access. In

funds, ARPA is small...about 12% of the technology base program. Based on DDR&E guidance, it has the charter to initiate and to work with the military R&D community, the university and industrial technical communities, and the highest levels of the Office of the Secretary of Defense. We report to the top of the chain, not the middle. ARPA is free of roles and missions dogma and is focused to do research for opportunity, that is, research that provides new options, or new ways of addressing old problems, as well as research directed toward recognized needs.

What kind of return has the nation received in the past from this synergistic combination of ideas, people and flexibility? The record is clear. The nation received:

- Its first earth satellite
- Phased array radars which are the backbone of ballistic missile defense
- The ability to remotely monitor nuclear tests paving the way to test ban treaties
- New hardware for seeing at night, thus turning the night into an ally instead of a foe
- The ability to identify unknown space objects
- The birth of high energy lasers
- The first computer network which made possible computer resource saving through computer resource sharing

THE MAJOR THRUSTS AND OPPORTUNITIES

ARPA has a simple but profound charge: Lead the nation in maintaining the technological initiative necessary for national security while preventing technological surprise that could alter the balance of power. As a nation, we do possess the technological initiative today. With your understanding and help, we, in ARPA, intend to do our part

to keep this initiative in the areas that are necessary for deterrence, both strategic and tactical, for improved manpower utilization and effectiveness, for cost reduction, reliability and critical materials. In sharply focused areas of new technology, we will exploit opportunities to break new ground for the future, such as in our work in organic superconductivity and new semiconductor materials to perform new tasks at microwave, submillimeter and optical wavelengths.

The President's budget requests $226.6M, an increase of $24.3M or 12% over last year. We must recognize, however, that this increase could be badly eroded by inflation. The increase in real level of effort will be $5.8M or less than 3%, if inflation has been accurately estimated. You should also note that ARPA is a lean organization - only 1.8% of this budget goes for management and support.

This budget contains important major thrusts and changes. I will outline a few of the more significant:

- o In the area of anti-submarine warfare, we are initiating a major new thrust to explore the limits of detection and localization of submarines. This work is an outgrowth of ARPA efforts on acoustic array signal processing technology. This program, called SEAGUARD, will explore the physical limits of acoustic propagation of submarine-generated noise in the ocean. In FY76 we will extend our work on signal processing using the giant ILLIAC IV Computer previously developed by ARPA. Our goals in this initiative are to dramatically improve the technology of detection and localization of submarines. We are working in close cooperation with the Navy on this project.
- o We are exploring the use of satellite-borne charge coupled device technology, a true breakthrough in modern electronics.

- ARPA pioneered the high energy laser field. Now we are still breaking new high payoff ground in laser technology. In FY76, chemical lasers will be pushed to higher power levels, the advantages of repetitively pulsed high energy lasers will be explored, and ultra-precise pointing and tracking schemes will be investigated. In addition, we will continue to explore new concepts and devices, as has always been our mission.

- Adaptive optics, another area pioneered by ARPA, enables us to compensate electrically, at high speed, for the effects of atmospheric distortion and fabrication imperfections on optical system performance. Adaptive optics has the potential of increasing performance while lowering cost by lessening our dependence on precision fabrication.

- Computer software continues to be a costly DoD problem. It is estimated that DoD spends $3B per year on software. Software is difficult to verify, specify, transfer, and document and is usually behind schedule. We are directing a major attack on the problem. Our program will focus on new kinds of tools for creating, editing, retrieving, verifying, testing, and debugging programs. In addition, the ARPA-sponsored National Software Works will make these tools widely available via linked computers.

- We are continuing to break new ground in our low-cost, mini-RPV program. Our FY76 initiatives include the test of a mini-RPV that can be missile or aircraft launched; development and test of shipboard launch and recovery techniques; battery and solar powered RPVs;

mini-infrared and laser designator and range finder systems that will enable the mini-RPV to find targets and guide weapons at night; and data links resistant to enemy jamming.

- Hostile weapon location is an age-old military problem. Currently we use ground-based radar, acoustics and optics to locate artillery, mortars and rockets when firing in defilade. We believe future systems should exploit the complimentary strengths of a multiplicity of distributed sensors, and the key elements for these are being developed. We envision using a mini-RPV to obtain a close-in, direct line-of-sight. This platform will be equipped with a light weight, low-cost, high performance radar, or a laser line scanner, and a direct line-of-sight flash detector. A small, low-cost system for locating a mortar projectile using a combination of infrared detectors and a laser radar is being designed. The expected target location accuracy of this equipment for the first time, will provide the Army with the ability to counter mortars with mortars. An investigation of radar options for down-leg projectile tracking, although less accurate than presently used up-leg tracking, is in progress. This approach will provide sufficient accuracy to guide the RPV near the weapons, and will be much cheaper and more survivable than the projectile tracking radars in current use or development. For the attack of the weapons, we are developing a novel seeker.
- In FY76 we will initiate a far-reaching effort on large, high density computer memories. Although the computer industry is one of the most technically vigorous industries

in this country, extrapolation of present industrial trends will not meet our future needs in the areas of simulation, sensor and image data storage, and retrieval related to intelligence data processing. We are breaking new ground to meet the defense needs of the 1990's.

- In the Materials area, the ceramic turbine work has passed a major milestone and now enters a critical phase. Ceramic turbines should be more efficient and lower in cost than turbines made from conventional metals. Our goal is a demonstration in an armored vehicle or truck within the next three years.
- In the weapons area, our 75 mm gun technology continues to show promise for a high velocity, rapid fire, anti-tank weapon. This is a high risk program requiring breakthroughs in propellants and our understanding of chemical kinetics and the physics of the detonation process. However, if the established milestones are met, this program could lead the way toward potent, mobile, lower cost armored forces in the 1990's.
- In the command, control and communications area, new satellite and ground radio packet communications techniques are under development which are expected to provide the capability for a secure, world-wide computer-communications network. Tactical forces in the field could be linked with operational, intelligence and logistics data bases as well as with computer resources which can support planning execution and monitoring of military operations. The goal is to develop the technology for high bandwidth, highly reliable systems which use low-cost equipment, and maximize the efficient use of computer resources and the available communications spectrum.

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- In the air defense area, we are exploring advanced radar concepts.
- APRA has actively pursued an aggressive spread spectrum communication and spread spectrum radar technology development program. This effort has led the way in the development and field demonstration of the technical feasibility for Service applications.

  The program encompasses several frequency bands and ranges from low data rate teletype to wide band radar. Technical efforts range from basic signal processing technology through utility demonstrations under real mission conditions. The technology developed under this program should be a significant step.

THE CHALLENGES

In addition to the maintenance of the technological initiative to preserve our future security, we face other challenges. I would like to outline several of them for you:

1. Priorities: ARPA is not idea-limited, it is resource-limited. We have many more good ideas than the funds to support them. With constrained resources, we are challenged with selecting projects that have the greatest promise for contributing to defense capabilities. We do not advance technology for its own sake but for the sake of its potential payoff to our security needs. Our choices must reflect both technical opportunities and defense needs. We must continue to be vigilant to see to it that prioritization and hardnosed assessment are the watchwords of ARPA's management. This is sometimes a painful process but it is my responsibility and you can expect me to fulfill it.

2. People: ARPA must continue to attract the very best in the country. Your strong endorsement of ARPA and the role it plays in

determining our future security will enable us to continue to attract highly motivated and gifted scientists and engineers who wish to participate in their own special way in maintaining our leadership and our security.

3. Inflation: In real dollars, the ARPA budget for FY76 is some $50M below our FY 1970 appropriation. To be sure, the effects of inflation are not unique to us, but ARPA's level of effort should be set with full understanding that it serves as a hedge against future uncertainties, and is a highly leveraged investment which in the long run saves dollars, saves lives, and provides options for more effective security. Stretching out or postponing programs is paid for later at greater cost in terms of dollars and risk of foreign technological surprise.

A CONCLUDING OBSERVATION

We would like to think of you as an essential partner in determining in a general sense, whether we wish to preserve our technological initiative and provide our children with the options required to survive in a complex world with potential adversaries whose societies are not open. We seek your understanding of the role of ARPA, its contributions to national security and its past, present, and future impact on our position as the world leader in technological initiative. I firmly believe that we do possess the technological initiative. We translate science into practical technology better than anyone in the world today, and we intend to keep it that way.

This budget request will not keep pace with the estimated Soviet investment in defense R&D but independent of that, the ARPA program stands on its own merits and contributions. The cutting edge of technological initiative for the Department of Defense is ARPA. I believe that you can make no better investment in America's present or future.

An overview of the FY76 program is provided in the following Table.

ARPA PROJECT SUMMARY
($K)

Program Element	Title	FY1975 Actual	FY1976 Estimate	FY197T Estimate	FY1977 Estimate
61101E	DEFENSE RESEARCH SCIENCES	$30,957	$37,100	$ 9,300	$43,700
	Materials Sciences	$14,957	$16,800	$ 4,200	$20,200
	Power Systems Materials	3,603	4,800	1,200	7,150
	Electro-Optical Materials	10,794	11,300	2,825	12,250
	Other Materials	560	700	175	800
	Human Resources Research	$ 2,930	$ 3,100	$ 800	$ 3,900
	Simulation and Communication	703	1,005	261	1,610
	Human Performance	2,227	2,095	539	2,290
	Computer and Communications Sciences	$13,070	17,200	3,300	19,600
	Image Understanding	3,527	4,024	1,006	4,000
	Intelligent Systems	4,987	7,233	1,808	8,215
	Advanced Memory Technology	880	5,943	1,486	7,385
	Speech Understanding	3,676	0	0	0
62101E	TECHNICAL STUDIES	$ 2,000	$ 2,300	$ 600	$ 2,300
62301E	STRATEGIC TECHNOLOGY	$68,550	$74,900	$18,700	$85,300
	Advanced Strategic Concepts and Strategic Technical Analysis	3,032	2,629	375	3,500
	Space Surveillance and Advanced Optics	7,644	9,761	2,500	9,200
	High Energy Laser Technology	21,140	22,885	5,575	26,700
	Strategic Deterrent	7,731	9,460	2,000	11,900
	Air Vehicles	1,305	2,524	750	4,250
	Warning Technology	7,006	8,765	2,200	10,600
	Special Applications Technology	3,538	2,570	600	3,400
	Space Object Identification	17,154	16,306	4,700	15,750
62701E	NUCLEAR MONITORING RESEARCH	$17,927	$15,400	$ 3,843	$15,943
	Seismic Verification and Evasion	8,364	9,410	2,302	9,100
	Nuclear Diagnostic Techniques	1,665	1,370	386	943
	Acoustic Array Signal Processing	5,867	0	0	0
	Defense Resource Technology	900	0	0	0
	Energy Information	181	300	75	0
	Geodesy and Gravitational Program	550	2,500	625	4,820
	TTBT Yield Verification Program	400	1,820	455	1,080

Program Element	Title	FY1975 Actual	FY1976 Estimate	FY197T Estimate	FY1977 Estimate
62702E	TACTICAL TECHNOLOGY	$35,585	$46,000	$11,500	$53,800
	Target Acquisition and Identification	14,732	17,800	4,450	19,000
	Weapon Technology and Concepts	7,372	11,900	2,975	13,200
	Ocean Monitoring and Control	10,113	16,300	4,075	21,500
	Tactical Analysis	3,368	0	0	0
62706E	DISTRIBUTED INFORMATION SYSTEMS	$17,209	$14,700	$ 3,700	$16,700
	Parallel Processing Applications	670	0	0	0
	Distributed Networks	4,634	200	50	0
	Climate Dynamics	2,815	1,603	401	0
	Secure Systems	1,846	0	0	0
	Software Technology	4,281	5,962	1,493	9,900
	Speech Processing	2,963	6,935	1,756	6,800
62708E	ADVANCED COMMAND, CONTROL AND COMMUNICATIONS TECHNOLOGY	$ 9,073	$12,700	$ 3,200	$14,000
	Integrated Command, Control and Communications Technology	6,873	9,000	2,265	9,000
	Special Communications Technology	2,200	3,700	935	5,000
62709E	TRAINING, FORECASTING AND DECISION TECHNOLOGY	$ 6,350	$ 7,100	$ 1,800	$ 8,200
	Forecasting and Decision Technology	2,855	3,677	930	4,100
	Advanced Training Technology	2,569	2,448	622	2,725
	Manpower Research	926	975	248	1,375
62711E	TECHNOLOGY ASSESSMENTS	$ 5,423	$ 6,200	$ 1,600	$ 7,400
	Military and R&D Assessments	1,656	2,500	650	$ 3,000
	Soviet/China/ME Strategic Factors	1,454	2,000	525	2,200
	New Technology Concepts	1,733	1,700	425	2,200
	Technology Exchange	580	0	0	0
62712E	MATERIALS PROCESSING AND RELIABILITY	$ 5,343	$ 6,100	$ 1,500	$ 8,300
65803E	PROJECT MANAGEMENT SUPPORT	$ 3,840	$ 4,100	$ 1,000	$ 4,100
	TOTAL	$202,257	$226,600	$56,743	$259,743

OVERVIEW OF SELECTED ARPA PROGRAM ACTIVITY

Earlier in this statement, I noted that ARPA has a simple but profound charge: Lead the nation in maintaining the technological initiative necessary for national security while preventing technological surprise that could alter the balance of power. ARPA responds to this charge by constructing and managing a program of research and development projects. In this section of my statement, I wish to describe for you a representative selection of ARPA activities in the context of why the work is being done and what we are accomplishing. Let me begin with a few words about Defense R&D in general.

R&D contributes to national security, and in various ways, but R&D programs and the technology they develop are not of themselves national security. What counts is deployed technology and human readiness. The R&D process is a way of providing information essential to the effective analysis and selection of the most economical and suitable weapons and operational techniques. Furthermore, the very existence of a viable R&D process contributes importantly to our overall security by assuring an available pool of talented and skilled individuals able to respond to national needs. The information provided by the R&D process clarifies the risks and the potential payoff of utilizing new technologies and thus paves the way for the most effective future use of resources. In addition to providing alternatives and the knowledge base required for informed judgements, R&D also enhances flexibility by exploring new ways to minimize production costs and improve operations. R&D efforts also create a valuable knowledge base which assists us in evaluating fragmentary intelligence on adversary developments. To an extent, the generation of new knowledge requires "act of faith" support- no one can guarantee success. The investment is relatively small, however, and we maintain an effective control over the process with the ability to turn away quickly from unpromising lines of approach.

The Secretary of Defense and the Director, Defense Research and Engineering depend on ARPA's R&D program to provide them and the military establishment with:

- Technological early warnings, evaluations, and risk-payoff assessments
- Well-considered options and alternatives for maintaining deterrence
- Tested ideas for extending resources and improving operations

It is within these three spheres of activity that I would now like to discuss the ARPA program, showing you the motivation, the impact as it can now be seen, and the return on our R&D investment for selected ARPA projects.

TECHNOLOGICAL INITIATIVES

Demonstrated technical feasibility and measured military utility provide a basis for generating the formal requirements of future systems. Often, technological innovations must be around for a while before their potential becomes recognized; the helicopter, for example, was not developed to meet stated requirements.

ARPA devotes approximately forty percent of its resources to technological initiatives; the following paragraphs describe salient efforts in this category.

Sensing and Imaging

Ultraviolet, infrared, and radio frequency detectors which are available for tactical applications are within a factor of 2 to 10 of theoretical limits. Where a more benign environment can be provided, still better performance is achieved. Current research is therefore pointed towards cost reduction, improvement in reliability and, especially, configuring detectors appropriately for their intended applications. For example, arrays of infrared cells in the charge coupled device and charge injection device formats now under development will provide new opportunities for the integration, sensing, and signal processing functions.

The infrared part of the spectrum is of special military importance because engines, gun barrels, and rocket exhausts radiate their power in this spectral region. Thus, these targets can be as easily imaged by night as by day. To detect such targets, arrays of infrared-sensitive detectors are placed in the image plane of reconnaissance optics. By building in silicon large scale integrated circuits adjacent to these individual detectors, the output signals can be processed directly resulting in large cost and weight savings as well as providing increased information processing capability. ARPA is pursuing several approaches to make these silicon arrays sensitive to the infrared radiation. One of these involves a simple sensor, based on Schottky barriers in silicon, which, although not highly efficient, is 100 to 1000 times more uniform in its response. This high uniformity reduces the complexity and costs involved in eliminating the strong signal radiated by the background of the target. These detectors have been successfully operated both in a vidicon tube and as a linear charge couple imaging sensor.

Optically formed images are degraded by several effects; including image motion, atmospheric distortion, manufacturing or alignment imperfections in the optical system, and undesirable response characteristics in the sensor elements or recording medium. So long as these degradations merely distort but do not remove information they can in principle be compensated to provide a more informative image, and several ways of doing this are under investigation by ARPA. An important field of this effort is the use of adaptive optical elements which are primarily useful in removing distortions due to the fact that the atmosphere itself bends light rays in an unpredictable manner. These distortions have a very significant impact on the quality of images for large ground based telescopes looking up through the atmosphere. The adaptive optics approach requires real-time measurement of the distortion and control of a flexible mirror to cancel the distortion.

While adaptive optics systems show great promise for eliminating certain degradations, they cannot in principle compensate for film or sensor errors since they act on the light before it reaches these elements. Thus, ARPA is also investigating postdetection compensation techniques which enhance an image after it has been formed and recorded. While these techniques are generally less efficient at correcting atmospherically induced errors, they are effective in removing blur due to instrument errors and in enhancing contrast in particular areas of the image. Here, ARPA's main thrust has been the development of computerized methods of blur removal when the precise mathematical representation of the cause of the blur is initially unknown.

The effectiveness and ability of offensive weapons systems to reach their targets are directly related to the susceptibility of the systems to early warning detection and track. The ability to control the radar cross section(RCS) of air vehicles can decrease their detectability and thus improve the overall effectiveness of offensive systems. Both passive and active techniques as well as vehicle design parameters are being employed to control RCS. Vehicle design practices have been established but are generally compromised by mission constraints in an actual design. Passive technology is fairly well established. The active techniques under investigation, while as yet unproven, do offer the potential for high RCS reduction and minimum air vehicle redesign. To be effective the active RCS control technology must demonstrate adaptive wide band control through large variations in target aspect angles for targets which are roughly the same size as the incident energy wavelength. Several new techniques as well as new design practices are being evaluated to determine their capability to control RCS.

ARPA is currently developing advanced imaging radars operating at both microwave and laser frequencies. There are, however, limitations in resolution, image detail, and range. The first approach to overcome

these limitations is ARPA's modification of the one hundred twenty foot diameter Haystack radar in Massachusetts by the addition of a new RF box and signal processing system. This system uses a more advanced form of the data processing technique previously developed. Operational testing at the system level is scheduled to begin in FY77. The second approach is the development of a wideband laser radar operating at 10.6 μm wavelength. Operational testing of the laser radar is scheduled to occur in FY78. Compared to the costs of the various concepts of the past decade, the ARPA investment in imaging radars has been extremely modest ($28.4M FY72-75), while the information that has and will be provided is significant.

An RPV radar demonstration is being started to provide destroyer escort and smaller ships with ocean surveillance. This RPV radar could provide targeting when used on DDG class ships and is sufficiently small and inexpensive that non-recoverable RPV's, equipped with such radars, could be used. Finally, investigations in progress indicate that millimeter radars can potentially out-perform their microwave radars in a variety of battlefield applications and should be obtainable at much lower cost.

In the mid/late 1960's experience in underwater imaging exposed fundamental deficiencies in our knowledge of optical transmission in the ocean. ARPA implemented a major program, called DEEP LOOK, to determine the fundamental physical limits applicable to underwater imaging and to develop and demonstrate an advanced system which would perform near those limits. The major experimental system development to date has been a volume scanning, high resolution imaging system. Since the range is principally limited by the laser source, work is continuing to develop more efficient light sources for these applications. A laboratory model copper chloride laser has demonstrated a capability to achieve an increase in efficiency.

Laser Research

X-ray lasers are of interest due to their potential for wide ranging applications in microscopy of atoms, photography, nuclear studies, weapons effect studies, and precision materials processing. It may be possible now to achieve x-ray laser action because of two recent developments which ARPA is exploiting: the advent of ultrahigh power picosecond solid state lasers, and efficient techniques for generating higher frequency radiation from visible wavelength lasers through nonlinear mixing processes. The former development may serve as the "pump" or energy source for x-ray lasers; in this case, the x-ray lasing medium would be a non-thermal-equilibrium plasma generated on the surface of aluminum, say, by the intense picosecond pulse. The second development leads to a lower risk approach since ultraviolet-wavelength lasers have already worked in this way. Furthermore, the nonlinear mixing technique for generating higher frequency radiation preserves the coherence of the pump source, and requires no mirrors. In the next year, substantial progress is expected in achieving x-ray laser action and understanding what limits the process.

We are now developing new laser devices and techniques for improving the performance of existing devices. In particular we are exploring the possibility of electronic laser transition through purely chemical reactions or through novel electrical excitation techniques. With the development of fuels, nozzles, and pressure recovery techniques, we are improving the utility of chemical lasers, and we are investigating the interaction between the laser radiation and the laser medium.

ARPA has established the analytical base and is developing the component technology to correct for atmospheric beam degradation by adaptive optical compensation techniques. Several approaches are being explored which, although they differ in implementation, are similar in that they adjust the phase of the laser beam wavefront to compensate for laser medium, optics, and/or atmosphere-induced phase distortion. The basic components

of each technique are a sensor to measure the phase front a deformable mirror or array of small movable mirrors, and an electronic system which couples the two together.

The ready availability of strong, large windows with low absorption and low back-reflection of the laser power is necessary for many significant military applications of high power lasers. During the past year major progress has been made along several lines. Calcium fluoride windows, transparent to three to five micron radiation, of high strength and low absorption have been made by a process which permits easy scale-up to sizes of operational interest. Anti-reflection coatings for potassium chloride windows possessing a reflection of but 0.1% of the laser power have been successfully fabricated. This material is transparent in the ten micron range. Also, we have reached an understanding of the basic limits to reflecting high pulsed laser power densities before the mirrors will become damaged.

Weak points in this technology include lack of options for coating materials, high coating absorption, lack of moisture protective coatings, high cost of these components, anomalously high absorption in all materials except potassium chloride, and the lack of test data demonstrating the performance of these windows. The ARPA program will address these areas in the FY 1976-1977 time span.

Another aspect of this problem is the study of the interaction effects of laser beams and target surfaces. We have developed models for this interaction and confirmed them in laboratory tests. ARPA has continually taken the lead role in laser device development where the biggest investment risks are involved. Device developments with the supporting preliminary technology have been our major laser technology product transferred to the Services.

In addition to device specific programs, issues of concern to all Services regarding CO_2 propagation and adaptive optics are being pursued.

Although ARPA and others have made lasers operating in the ultraviolet-to-visible spectral region these devices do not yet possess the high power which laser experts feel confident can be attained. A major bottleneck in these efforts is basic knowledge of the complex interactions that occur between the excited gaseous atoms, molecules, and ions which comprise the laser media. Therefore, ARPA is initiating a major new effort in FY 1976 to develop the knowledge. Depending on the wavelength and power, the range of applications of such lasers would include underwater propagation and satellite-to-satellite communication. In addition to having applicability to lasers, the basic knowledge obtained would be applicable to IR signatures of re-entering missiles and atmospheric communications.

Weapons Concepts

ARPA is developing the technology for a very high velocity 75 mm automatic cannon, both solid and liquid propellant. Tests and calculations indicate that high length to diameter ratio heavy metal penetrators can penetrate armo targets. Such ammunition is one third the size and weight of the current standard 105 mm tank ammunition and lends itself to use in semi-automatic cannons. In the case of the liquid propellant (LP) gun, a five to one advantage in ammunition packing density can be achieved. The potential for liquid propellant guns in the future is very encouraging and represents an important technological initiative. The LP gun also will allow for a substantial increase in muzzle velocity, perhaps to six or seven thousand feet per second, and a higher sustained rate of fire. Development of such a gun and ammunition is a high risk effort; if, however, feasibility can be demonstrated, it should be possible to develop in the 1990s a 35-ton tank killer which would have superior mobility, firepower and armor protection compared to the 55-ton M60A1 tank now in inventory.

The relative combat power of the individual soldier has been decreasing as we improve our supporting arms systems. However, this trend may be dramatically reversed with the advent of new, lightweight seekers, more powerful warheads, small fast manportable missiles, and beam rider

guidance technology. A low-signature, anti-armor/anti-air missile that can be carried and fired by the soldier is needed as an alternative to large expensive vehicle-dependent weapons. The ARPA laser beam rider technology program has been the first step in this new direction. The coded beam and stabilized optics now allow us to postulate a fast, deadly, man-portable missile. More work is needed in warhead lethality for a mixture of targets and "fire and forget" seeker technology. The Army's STINGER ALTERNATE SAM is based on the successful ARPA beam rider guidance developments.

The advent of the mini-computer/micro-processor has been widely acclaimed as the means to obtaining truly "smart" weapons. ARPA is vigorously pursuing applications wherein low cost computer technology can be married with weapon guidance.

In other work on navigation and targeting problems, we observe that current ground-based or shipborne techniques for collecting geodetic and gravitational information are costly, time-consuming, and are not readily accomplished in remote or oceanic areas. Measurements of satellite orbit perturbations have defined the large scale undulations of the earth's gravity field. However, large gaps that remain in our knowledge of the intermediate and shorter length undulations of the shape of the gravity field are of particular concern in the operation of inertial navigation and guidance equipment and in the initialization of ICBM's. Studies have shown that the desired information might be obtained by more accurate measurement and analyses of satellite altitude data over oceanic areas, since the sea surface approximates a surface of constant gravity; ARPA is investigating this approach. Another aspect of the problem, detailed local perturbations of the gravitational field, is being addressed by development of a gravity gradiometer which can be operated from aircraft. The same instrument might also provide direct gravity input to a vessel or aircraft to reduce navigational errors. Existing navigation satellites are also being studied as a possible means of closely defining the location of points on the

earth's surface without costly expansions of the worldwide ground tracking network. Experimental examination of the potential of these techniques would provide an option for accuracy improvement at low cost, as well as an estimate of the threat posed by such potential accuracy.

Computer Research

In the computer area, ARPA is beginning a major new program in very large databases and advanced memory concepts. It is necessary to find new ways of storing data and organizing very large databases that will solve today's acute database problems in logistics, command, control, communications and intelligence as well as to discover new technological bases for computer memories that will make it possible by the 1990's to store and process thousands of times as much information as can be handled by present-day computers. The first thrust will make it possible for DoD personnel to interrogate multiple databases in a single data-management language and with a uniform and consistent set of procedures. This will greatly improve the efficiency of computer-based operations that involve large collections of data. Thus, the diversities of format and protocol which inhibit use by non-programmers will be overcome. ARPA has a strong foundation for this program as a result of its earlier work on the ARPA Network, Intelligent Systems, and Automatic Programming projects, and major results are expected to be ready for application in 3 to 5 years. The second thrust will be aimed at important defense applications that cannot now even be approached, such as immediate processing of high-resolution intelligence data for direct injection into command and control systems and the real-time simulation of complex weapon systems and military operations. The program will explore media, architectures, and concepts that the computer industry, itself, cannot be expected to explore because of the high risk or the uniquely DoD (limited market) applications. For example, organic molecular memory elements, x-ray beams, three-dimensional storage media, self-organizing cellular assemblies that work despite the presence of defective cells, and semiconductor chips with memory and

processing integrated together. For several years, most of the work in memory technology will be very fundamental, multi-disciplinary research, but several promising ideas for devices and systems are ready for exploratory development.

ARPA's speech understanding program is developing the technology base required to map speech wave patterns into symbolic representations usable by computers. The first of these mappings is acoustic to phonemic. Approximately forty phonemic symbols can represent speech without information loss. The next required transformation is phonemic to orthographic, the 26 character alphabetic representation used in the common English dictionary. Many of the mapping rules are context sensitive thereby requiring simultaneous top-down analysis in addition to the bottom-up mapping functions just mentioned. A unique aspect of the ARPA research is that it processes continuous speech. This imposes a difficult requirement to correctly parse phonenes into words. Most speech recognition systems expect the user to insert deliberate pauses between words. ARPA is now in the fourth year of a five-year effort. Mid-way through the effort five competitive systems were narrowed down to three designs which are now being pushed toward a final concept demonstration next year. The present goal is to process at 1/10 human speaking rates with 90% accuracy while using a 1000 word vocabulary and grammars of moderate syntactic complexity.

The ARPA project on intelligent systems continues to discover and invent new and more powerful ways to incorporate knowledge and intelligence into computers and computer-based systems. Although the science and technology that has been developed by the program is by no means mature, it has proven itself to be capable of supporting significant applications such as problem-solving systems in mass spectroscopy and nonnumerical mathematics. It has proved to equal the performance of the best human experts. Several concept demonstrations are now being undertaken in other areas such as maintenance and repair of electronic circuits, receiving Morse

code in the presence of interference, and making computers respond to ordinary DoD users helpfully and intelligently in natural English instead of in the highly demanding and impersonal manner that frustrates the non-programmer.

Research on fundamental problems in intelligent, knowledge-based computer systems is providing new insights into the automation of planning, perception, reasoning, control of movement and manipulation, understanding of natural language, in the representation of knowledge for use by computers, and in the organization of systems that must deal with many concurrent inputs and many aspects of complex situations.

The new ARPA Software Technology program is providing a novel and promising approach to DoD's critical software problem. While the cost of computer hardware to perform typical tasks has decreased by about one-half every two years for the past three decades, the cost of software has decreased only slightly. DoD now spends about three billion dollars per year on computer software. For the most part, software costs too much, is difficult to verify, transfer, and document and is usually delivered late. Software production is an art and not a science. We have held extensive meetings with industry, thinking that, because of the health and vitality of the computer industry, they would be working these problems. We found that the market incentives to solve the problems of transferability, verifiability, and documentation apparently are not sufficient to expect an industry generation solution any time soon. We believe that new advances in networking technology, artificial intelligence, and automatic programming make it possible to change programming from an art to an engineering discipline.

The key is to use the computer much more intensively in all aspects of software production and maintenance, gaining control by putting the process on-line and having significant events automatically recorded. This program, which is conducted jointly with Air Force, is developing a software production environment which is superimposed on a network of diverse computers, accessible nationwide. Because the most appropriate

machines will be used to develop software for other machines, the best possible development environment can be made available to DoD programmers.

The capacity and the requirements to collect and use photographs and radar image data have increased dramatically in recent years. Meanwhile, DoD costs for the interpretation and analysis of imagery have also increased while there is a shortage of the highly specialized personnel required to do this job. Several successful techniques, which have evolved through intelligent systems, pattern-recognition, and signal processing research suggest opportunities for automation. Thus, ARPA is building on this theoretical base to investigate the prospects of automatic and semi-automatic image interpretation. Powerful decision rules have been developed for the analysis of structural dependencies within a scene. One class of these decision rules utilizes the properties of vertices to interpret the relationship of edge delimited surfaces. For example, T-type vertices usually imply the intersection of surfaces from two distinct objects, while other vertices relate the surfaces of a single object. ARPA is extending such tools toward the development of an integrated image understanding system that will automatically map image data into knowledge-domain information to provide, ultimately, a basis for automatic classification of of pictures.

Power System Concepts

The ARPA program to develop ceramic gas turbine engines has drawn wide attention because of our bold attack on a new materials technology. The efficiency of gas turbine engines can be increased significantly by raising the temperature of operation through the use of temperature-resistant materials in the hot-section. This temperature has been pushed up slowly over the last twenty years through alloy development and complex air cooling schemes. However, alloy development was showing a very poor return on investment as the temperature limit of costly superalloys was rapidly being approached. Therefore, ARPA initiated a program to perfect ceramic

materials to increase inlet temperatures from 2000°F to 2500°F. Additionally, by using ceramics, the use of critical superalloys can also be circumvented, corrosion and erosion are minimized, a wider spectrum of fuels can be used, lighter weights are possible, and the power output for a given size engine can be increased by a factor of two. Elevated-temperature tests of all ceramic static components have been extremely encouraging to date. Steady improvements in materials, fabrication and testing indicate the 2500°F proof of principal engines will be attained in the spring of 1977.

ARPA has fostered a new machinery concept which is developing a segmented-magnet homopolar generator having a power density more than fifteen times greater than comparable conventional equipment. This has been possible through use of advanced liquid-metal brush technology and unique machine design. A 3000 hp prototype has been built and testing has verified that the initial innovative design concepts are valid. We are also developing structural design information for superconducting machinery.

Storage batteries having ten or more times the energy density of lead/acid would find military uses in propulsion; e.g., quiet jeeps, small submarines, practice torpedos, and RPV's. Major strides of this magnitude in battery performance may be possible by using solid rather than liquid electrolytes. This would add a new dimension in battery design and could lead to inexpensive, high energy density batteries with long lives. The two most promising solid electrolytes require elevated temperatures and conduct only sodium ions. A room temperature, lithium conducting solid would make a simpler battery, with perhaps twice the energy density of sodium sulfer batteries. This would be possible because lithium is both lighter and more energetic than sodium. A series of lithium titanates, for example, are under investigation by ARPA and show evidence of high conductivity, even below room temperature.

We are initiating a project to survey and evaluate new and novel energy conversion concepts for relevance to future DoD propulsion needs. Concepts with promise for future land vehicle, ship, or aircraft applications

will be developed and tested through proof of principle. Candidates for evaluation or proof of principle testing include the installation and testing of a ceramic turbine in a military vehicle such as a light truck or helicopter, testing of a Brayton cycle turbine in a military vehicle, development and testing of a light weight (0.5 lb/BHP) advanced diesel engine for tanks and trucks, and development and test of other non-conventional engine concepts.

Technology Assessments

To maintain our technological initiative it is important to be aware of emerging technology both domestic and foreign. ARPA assesses foreign science and technology in current ARPA problem areas to identify opportunities that could either be used by potential opponents to gain military advantage or could be exploited to our research advantage. More important than who is ahead or behind, is the identification of differences in technological thrusts, the determination of the possible military implications of such differences, and the identification of R&D required to counter potential military threats.

A major focus of our foreign science and technology assessment program is on the Soviet Union. Some results of our recent assessment of Soviet science include detailed analysis of the work of four key Soviet R&D groups conducting R&D on high current, high energy, charged particle beams. Soviet research in this area, which has grown steadily since the early sixties, is currently conducted at a manpower level about twice that of the U.S. work. The impressive Soviet research program includes a systematic effort to develop a comprehensive theory for the production and control of electron beams and investigations of applications in a broad range of technologies. The Soviet research on electron beams is important to the DoD because of its potential for the development of military technology including high resolution radar, beam weapons, and space communications. Also of particular interest to ARPA is an assessment of Soviet research in superconductivity which has shown the Soviet Union to be a world leader in

high pressure research in general and high pressure superconductivity in particular. Other assessment activity includes work on seismic instruments, magnetohydrodynamics, and electro-optical systems, for example.

In addition to assessments of foreign science and technology, ARPA conducts, for the Office of the Secretary of Defense, military assessments of strategic factors that affect future defense development choices. Assessments have been made of the impact of mutual balanced force reductions on NATO and options for dealing with such reductions have been identified and evaluated. Other military assessments include research on low intensity conflict situations, non-standard wars, and the impact on U.S. defense forces of Sino-Soviet competition. A basic macro-model of the Soviet economy has been completed to provide a new statistically based analytical capability for assessments of the Soviet dependence on outside trade and technology, of their capability to maintain or expand their military forces, and of their capability to re-allocate resources to meet crisis conditions.

MAINTAINING DETERRENCE

The maintenance of deterrence involves nearly the whole spectrum of Defense activities, and ARPA devotes approximately forty percent of its budget to research in this general category. Strategic and tactical hardware are of prime importance, of course, and the ARPA program puts major emphasis on applying new technology to enhance the effectiveness, survivability, and economy of deployed forces of the future. These elements of the deterrent, however, cannot be effective without the realistic perceptions of adversary capabilities and actions which ARPA research has made important contributions. Finally, the issues of command, control, and communication are vital to the management of our war fighting capabilities, so ARPA maintains a viable selection of programs developing and applying modern technology to these problems. The following paragraphs review highlights of ARPA's research relevant to maintaining deterrence.

Strategic Forces

Improving the ability of strategic aircraft and their offensive weapon systems to reach assigned targets has a direct payoff in the cost/effectiveness of the strategic bomber force. Emphasis is being placed on reducing the detectibility of aircraft. As a first step the feasibility of a low radar cross-section strategic penetration was investigated based on a conceptual flying wing design. The ability to penetrate can be improved by extreme shaping of the flying wing design, application of thrust vector control/reaction control technology; modified engine inlet designs, and techniques for wing leading edge RCS suppression. Investigations including the analysis of range test data are underway in the evaluation of these approaches.

Naval Task Forces are required to maintain a strategic posture through their mobility and ability to operate in large ocean areas where their presence is known although their actual locations are suppressed. If their electro-magnetic radiations are concealed, location can be ascertained only through extensive search efforts. Electromagnetic radiations stem from the requirements for ship-shore and ship-ship communication, radar threat search and ship-air intercept control communications.

Timely surveillance of space is required to warn of threats to U.S. satellites used currently for early warning of attack. A significant increase in capability beyond that of current radar systems can most cost-effectively be provided by ground and space-based optics. Ground optics is ideally suited for maintaining an accurate catalog, space-based optics can provide a rapid detection of space activity which could threaten U.S. strategic systems. The merit of these sensors can be directly measured by the speed with which they can search for and find dim satellite targets. A technology goal of this ARPA research activity is to develop sensors with several million detectors and elements employing advanced readout and focal plane data processing which will obviate the need for large ground data processing facilities and speed detection of

targets. The visible wavelength ground-based search sensor under exploratory development will have a search rate 2 1/2 times greater than that available with a single telescope using current sensor technology.

General Purpose Forces

Neither the U.S. nor any other nation has ever had a satisfactory means of locating artillery, mortars and rockets when they are used in an indirect fire mode. Thus, these weapons are not seriously threatened by effective counter attack. The DDR&E requested ARPA in 1973 to initiate with the Army a jointly managed and funded task to apply advanced technology to find and demonstrate solutions to the problem. The HOWLS(Hostile Weapons Location Systems) program consists of a multi-discipline approach to produce a number of technology developments and demonstration projects from which effective systems can be derived. Various types of information and observations provide rough location of hostile weapons, but means of precise location of guns are required. ARPA is developing a small very low cost radar which will weigh less than 30 lbs and cost about $15,000. Cost is as important as size because the required performance can be achieved only at close ranges so one must anticipate losing some of these investigator RPVs to air defense guns protecting the enemy artillery.

The HOWLS program also includes other technology investigation into the utility of locating radar and radio emitters which may be associated with artillery, the effectiveness of line-of-sight gun flash detectors on the investigator RPV, microwave radiometry, and RADAM. In addition, on-going work in acoustic artillery location, laser line scanners, synthetic aperture surveillance radar, and airborne MTI radars may provide viable options for candidate HOWLS systems.

Battlefield radars for personnel detection have typically employed doppler processing to detect the motion of troops. This is necessary at microwave frequencies to resolve the valid target returns from clutter produced by vegetation. An alternative which we are considering contemplates the use of millimeter waves. Both conventional and area-type

Moving Target Indicator radar techniques will be used to further enhance this postulated radar's performance. For detection, but not identification, this radar should equal the performance of a FLIR and provide all weather in performance. ARPA is also investigating techniques to counter the newly developing electromagnetic emitter location systems.

Surveillance

The military forces of the United States are dependent on credible and timely warning to ensure their survivability and/or their effective employment. The warning system, as currently configured, encompass diverse data types from which subjective conclusions are drawn, based on largely ad hoc analyses. The impact that modern advanced data processing technology could make on the credibility and timeliness of the indications and warning process is potentially very large, so ARPA has been developing a methodology for establishing, identifying and interpreting unusual military activity. Since the warning process affects all Services, ARPA applies and evaluates the new methodology in concert with the Services and the Defense Intelligence Agency. Based on a limited data base, this methodology has been implemented in an experimental station consisting of data processing hardware and in interactive display has been constructed at the DIA for intelligence analyst evaluation of the new techniques. Results to date are encouraging and the favorable reaction has led to efforts to provide an expansion of the system to include theatre threat descriptions.

ARPA's program in submarine detection and tracking concentrates on improving our understanding of the fundamental physical and technology constraints on ocean basin undersea surveillance. The current program (Project SEAGUARD) is examining the performance limits acoustic arrays netted together by shore processing centers in order to determine the maximum detection sensitivity and localization and tracking accuracies against very quiet submarines. The issues addressed in this effort are of national significance, not only to maintain the

effectiveness of our current undersea surveillance system(SOSUS) against future Soviet SLBM forces but also to resolve critical technical issues related to possible international agreements.

In response to the technology issues raised by these considerations, the ARPA program has achieved several key technical milestones in the areas of target characteristics, arrays, and array system processing. Under the LAMBDA program, a ship-towed passive acoustic array was developed and used to measure signal coherence, ambient noise directionality and array signal-to-noise ratio gain as a function of aperture. Surface ships are the primary sources of low frequency ambient noise. ARPA's work in acoustic surveillance processing techniques has been concerned with the development of new concepts to localize submarines and to conduct limited area search.

The VELA seismic verification research program is responsive to the safeguard conditions which the Congress imposed in ratifying the Limited Test Ban Treaty. Its technical results directly support the U.S. in international negotiations such as the UN Conference of the Committee on Disarmament and the recent US-USSR threshold test ban deliberations. In particular, results of VELA research formed the primary basis of the U.S. technical position at the negotiations which culminated in the signing of a Threshold Test Ban on July 3, 1974. The major unresolved problems preventing adequate verification of possible agreements banning nuclear tests at low yield (including a comprehensive nuclear test ban) are (1) an inability to confidently discriminate at teleseismic distances (1000-6000 miles) between all explosions and earthquakes down to body wave magnitude 4.0 (which is equivalent to an explosion of two kilotons in hardrock), (2) the occurance of extraneous signals from large earthquakes which overlap signals from suspicious seismic disturbances, preventing the positive identification of the nature of the source of the event of interest, and (3) the existance of deliberate evasion techniques which a potential violator might employ so as to thwart detection or identification. To solve these problems, the main current thrusts of the VELA program are to obtain and improve the worldwide data base required to conduct research on

the identification of low magnitude events occurring within the Eurasian landmass, and to conduct system engineering and network design studies leading to the development of the specifications of an advanced worldwide seismic surveillance network capable of verifying international compliance with a possible Comprehensive Test Ban Treaty, or other agreements covering low yield underground explosions.

The Threshold Test Ban Treaty will limit underground nuclear tests to 150 kilotons. Both the U.S. and the U.S.S.R. recognized the difficulty in verifying that this threshold is not exceeded. Consequently, to facilitate verification, both sides agreed to exchange data on geological and geophysical parameters of the rock at their respective testing sites, and to provide yield and other data on a limited number of explosions for calibration purposes. Because of the large asymmetry in the amount and type of information on nuclear testing published by the U.S. and the U.S.S.R., the U.S. will have to exploit the data to be exchanged to a far greater extent than will be U.S.S.R. to verify that the Soviet Union does not gain the advantage of testing at higher yields. This will require the extension the extension of previous ARPA studies into new areas of research to improve our understanding of the physics of generation of seismic waves by explosions, and the role played by the geophysical properties of the rock type at shot point.

Command, Control, and Communications

ARPA's special communications technology program is designed to develop and demonstrate feasible means of providing low-probability-of-intercept communications. The objective is to develop new technology for permitting military task force units to transmit communications. The program is providing the analytical basis for communications in all areas ranging from designing communications signals through performance of advanced systems. The program is developing advanced signal design technology which is combined on an experimental basis with existing communications satellites and satellite terminals in controlled tests.

These tests evaluate the communications technology, for its ability to transmit the appropriate messages. Certain advanced developments are being initiated including the development of optical processing techniques, new techniques in solid state physics to realize flexible, high-capacity signal processing in compact packages, the development of special antennas, and an examination of advantages to be gained by use of the optical communications.

The increased dependence of the DoD on computer based data systems to manage and direct tactical and strategic forces, logistics, personnel, and intelligence activities presents an ever growing need for data communications links between the forces, the command structure, and the computer sites distributed around the world. To interconnect all of these elements, a multi-destination, dynamically allocated world-wide computer-communications system is required. ARPA is conducting exploratory development in two relevant computer-communications technology areas. These are a satellite broadcast packet technology and ground radio packet technology. Packet transmission consists of sending, via wire or radio, groups of symbols in digitized form. Each group, or packet, contains the address of the intended recipient, a piece of the message, and an error correcting code at the end. When a packet is received at any station, it is analyzed to identify the recipient and then forwarded or used locally as may be appropriate. Coding schemes prevent use of the information by an unauthorized recipient, and the digital nature of the representation is easily amendable to encryption for security. A significant advantage is that messages to many different users can be sent over the same wire or broadcast on the same radio frequency. The satellite broadcast packet technique will permit a number of earth stations to share a communications satellite channel. This technique could replace the present point-to-point circuits now available through communications satellites with a multi-station, multi-access system which can be expanded quickly in time of emergency to new crisis locations and permit the priority allocation of capacity to emergency traffic. Both secure data and secure voice could be transmitted

over this type of link using packet-switching techniques developed in the ARPANET experiment. Using packet-switching techniques of routing data, various elements of a command could exchange information, access operational, intelligence and logistics data bases and connect to other data bases or headquarters through a connecting packet satellite network link.

Packet transmission is also very promising for the secure transmission of speech provided ways can be found for the efficient conversion of the spoken word into digital form. A direct digital representation of human speech waveforms generates a huge amount of data that cannot be directly handled in real time, but ARPA research on the compression of speech has resulted in reducing the numerical data requirements by more than a factor of ten, thus making digitized speech potentially viable. Analysis of the repetitive nature of speech sounds, special coding techniques, and minimizing the data required to indicate pauses or gaps in the speech proved to be difficult mathematical problems which are now mainly completed. ARPA's current work is concentrating on implementing and applying these results to experimental working systems. Recent experiences show that high quality speech can indeed be handled via packet transmission, using widely separated computers on the ARPANET.

The application of advanced computer-communications network techniques to military command and control problems requires the development of capabilities which will permit the operation of computers in a classified mode on a computer-communications network. This important problem goes beyond conventional encryption of communications links; ARPA research addresses the security of various levels of compartmented classified information inside computers and controls access to these classified operating systems over a computer-communications network which includes many computers and switches and many users.

In recent years, the role of our SSN fleet in a variety of escort, ASW surveillance and reconnaissance missions has increased markedly. New missions require reliable submarine communications with range capabilities

and intercept resistance well in excess of the accepted constraints of ocean acoustic paths. At the same time, the requirement for covertness and minimum submarine operating constraints limit communications. ARPA's effort has created new understandings of ocean acoustic signal propagation, specifically, recent recognition of the long time stability (coherence) properties of the sea and introduced advanced communication processing technology from other military areas. In the past year, we have been able to demonstrate several important new capabilities. FY76 activities in data analysis and advanced signal format development will complete this program. Follow-on to both of these communications techniques and system demonstrations are being pursued by the appropriate Navy project offices.

OPERATIONAL IMPROVEMENTS AND EXTENDING RESOURCES

ARPA devotes about one-fifth of its budget to activities for which the primary impact is expected to be measurable in terms of more efficient or more economical operations and procurements. These measures are common to many of the ARPA programs I have already discussed, of course, although they do not generally represent the primary motivation in those cases. We find that in many areas problems of enhancing efficiency are amenable to attack by the scientific method; sometimes it is necessary to construct the science from the ground up, but often it is a matter of innovative application of ideas and technology which we already possess. In the remaining sections of this statement, I will point out some of our efforts in this important area of endeavor.

Cost Reduction and Reliability

With the increasing cost of weapon systems alternatives to conventional airborne reconnaissance and target acquisition are needed. Remotely piloted vehicles (RPVs) were originally conceived as a means of reducing the cost of airborne operations in high threat areas but even these systems are becoming less cost effective as performance requirements increase. In FY72 ARPA

surveyed the state of technology of miniature sensors and avionics and concluded that 60 knot, 3000 foot altitude airborne systems of 100 pounds or less could handle much of the surveillance and target designation requirements and replace much larger and more costly systems, using small size and stealth rather than high speed and low altitude to ensure survival. We have successfully demonstrated that, for missions such as target acquisition, battlefield reconnaissance, large target designation, and defense suppression, mini-RPVs weighing less than 100 pounds and costing less than $10,000 can successfully compete with systems costing up to 100 times as much. In the past two years, ARPA has developed this technology area both to demonstrate mission feasibility and to act as a catalyst in establishing mini-RPVs as a viable option. In the future, ARPA will continue broadening the application base of the low cost mini-RPV concept, as well as pioneering low cost approaches to other RPV missions such as decoys and high altitude surveillance. For example, in FY 1976 ARPA will flight test a novel mini-RPV which folds into a missile case for rocket deployment from the ground or an aircraft. This aircraft deployment extends the operating range of small RPVs from 50 to several hundred kilometers.

ARPA's passive array satellite research is directed towards the demonstration of the relay of communications via a simple long boom shaped satellite supporting an orderly array of several thousand dipoles which provides coherent reflection of incident radio waves, as in an optical grating. The satellite is passive in that it requires no primary power source, being stabilized in synchronous (24 hr) equatorial orbit by action of the gravity-gradient field, and passively reradiating the ground generated radio signals. By frequency scanning the reradiated signal returns to earth in a narrow ring shaped area about the sub-satellite point. This area expands or contracts to establish the desired ground receiver coverage for establishment of the point-to-point link. The system thus enjoys some degree of privacy and requires a potential signal interceptor or jammer to occupy unique geometry and

frequency with respect to the transmitter and receiver. The promise of this technology is space hardware simplicity leading to lightweight (25-50 lbs), low-cost satellites (~$100-200K) capable of piggyback launch on other space missions. A future broad range of military applications is visualized if the demonstration is successful, although there is a high degree of risk in successful deployment and orbital stability.

In a different technology area, we have been exploring unique methods of manufacture which promise either to significantly reduce costs through increased productivity or to provide unique new capabilities. Ferrous die-casting is a program which should enable the automatic machine casting of steels and other ferrous alloys, thus avoiding the time-consuming sand casting process while producing a superior metallurgical product. The improved tooling materials ARPA is developing have already demonstrated much faster cutting rates on superalloys and phenolic composites such as are used in the Minuteman missile. Research in superplasticity and hydrostatic extrusion is developing methods of rapidly forming strong but brittle metals which could not previously be economically made into useful shapes.

Further, we are seeking stronger materials and methods of strengthening materials because of the constant demands to use materials to their utmost capability. For example, the imposition of fracture mechanics as a design criterion for such advanced systems as the B-1 focusses attention on the effects of flaws in materials. ARPA has a new program to determine the criteria to be used in establishing the level of flaw acceptability in such systems. Other programs address strength improvements through thermo-mechanical treatment, reducing the effects of sensitivity of materials to fatigue and fracture, plastic fracture mechanics, and tailored alloys having a modulated microstructure.

The conventional manner by which reliable electronic components are obtained is through purchase of more than are needed and then selection of those found to be reliable by various screening tests, such as measuring performance during temperature cycling. Although this procedure of "testing

in" reliability has worked reasonably well for discrete components, it is highly unlikely that it will be effective for large scale integrated (LSI) circuits since these are so complex that we are unable to devise sufficiently complete tests. As a result, it will be necessary to "build in" rather than "test in" reliability of LSI circuits. A joint ARPA-National Bureau of Standards program is doing this by developing new semiconductor processing measurement techniques to achieve improved control over the manufacturing processes. An example of a new measurement technique is the use of test patterns built into the integrated circuit wafer at selected sites during manufacture. Interpretation of test results from these test patterns circuits can yield new and detailed information on the starting silicon material quality, the processing procedures, and the degree of control obtained in the processing steps. This program will not only help us build in reliability but it will reduce parts cost to the DoD and help to obtain the specialized integrated circuits needed for Defense unique electronic equipment.

The cost of computer operations can be reduced by avoiding slack periods, by selecting the right computer for each job, by concentrating computers for economical operation and maintenance, and, of course, by developing inherently more economical computers. The computer network concept, demonstrated by the ARPANET, makes it possible to smooth computer loads by providing access to each computer on the net through remote terminals country-wide. The ARPANET also affords wide access to specialized machines such as the ILLIAC IV -- national resources which would be prohibitively expensive to replicate in all the places where there are users who need them. Thus the network makes it possible to let cost factors alone determine where to locate computers. Now encompassing over 50 nodes, it has proven to be a high-performance, low cost, reliable and survivable means of communication and resource sharing which will permit large DoD cost reductions when the technology is fully implemented. To this end, ARPA is preparing for the transfer of future net operation and management to the Defense Communications Agency during FY76. Although the network will continue to be used for ARPA research

as well as by the Services, such transfer is in keeping with the ARPA philosophy of divestiture of successful research projects after feasibility has been demonstrated.

Using network technology, ARPA has a small but very promising program that is developing system designs and techniques to ensure reliable operation of computers and communication systems even when some of the computers and some of the communication lines and switches are destroyed. The reliability-survivability program is developing techniques in which several geographically separated computers work together as a team. To each user, the team of computers presents itself as a single, integrated system; the user sees no complexities and is faced with no unusual procedures. If one or more of the computers cease to operate, the others can carry on. With the techniques being developed, a user can be assured as much reliability as he specifies and he can tell the system just how many computers he wants on the team that serves him. Under crisis conditions, a high-priority user might be served by a dozen machines, widely distributed in secure locations.

Manpower Utilization

National Security is not solely a matter of the implements of war. In all functions of the Defense Department--from combat, through training, to day-to-day administration--there are critical human activities that have a direct bearing on preparedness, combat effectiveness and the efficiency with which our military posture is maintained. In these areas, just as in those already discussed, research focused on reducing specific problems or on finding and applying new techniques can yield important improvements in our military capability.

Manpower costs are the largest single element of the Defense budget and probably the most rapidly rising cost element as well. In light of the cost and complexity of the manpower system, and the importance of the myriad functions it serves, we support a program of research focused on achieving a less costly, more efficient manpower system. In this area we work closely with elements of the Office of the Assistant Secretary of Defense for Manpower

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and Reserve Affairs in bringing to bear an independent OSD level perspective on manpower matters.

During the past year the ARPA manpower research program produced results of direct beneficial impact. Research concerned with assessing the potential of increased shipboard automation as a means of reducing total system life cycle costs, for example, demonstrated that such an approach would be cost effective in new ship construction programs, but that retrofitting existing ships would not yield the desired advantages.

Our general research strategy in this area is to focus on the development of new knowledge and analytical methods to help managers of the DoD manpower system identify the most cost effective policy options.

Advanced Training Technology is another program area we are pursuing to achieve more effective manpower utilization. Here, our focus is on the application of computer technology to DoD technical training functions. In this program, we work in direct collaboration with the Services in an attempt to achieve thorough integration and coordination of activities on a DoD-wide basis.

The impetus for development of computer-based training systems stems from research findings which have repeatedly demonstrated that individualized instruction can yield overall reductions in training time of on the order of 30%; training time, of course, is a major component of DoD personnel cost. The reality of rapidly decreasing costs for computing power, has created the attractive option of using computer-based training systems as a means of delivering and managing individualized instruction. In our joint program with the Services we are pursuing research objectives designed to provide the knowledge base for cost-effective design and use of advanced computer-based training systems.

National security decision making, whether in a strategic or tactical context, or concerned with force posture, deployment or resource allocation, is a critical function and one that is the unique province of the human brain. No matter how capable and dedicated people may be, research has demonstrated

that in complex decision problems, it is often physically impossible for the human decision maker to integrate all relevant aspects of a problem into an optimal, rational solution.

Because of the basic importance of decision functions we have embarked on a research program to develop decision aiding methods which will serve to improve both the accuracy and timeliness of national security decision actions. This work builds upon quantitative decision theory derived over the past 30 years from basic research in psychology laboratories and from the efforts of mathematicians and engineers alike. Quantitative decision methodology requires that the variables impacting a given decision problem and the set of possible choices and outcomes, be explicitly arrayed and the uncertainty and value associated with each be expressed in quantitative terms. One can then derive and evaluate the best alternatives in a given situation. To demonstrate the utility of the techniques and to disseminate and institutionalize the methods within DoD, we apply quantitative decision theory in its present state of development to selected large scale Defense decision problems. ARPA also manages basic research to improve quantitative decision methods and to extend their range of applicability.

Instructional handbooks for quantitative decision methods developed under ARPA support are now in use in formal training programs in all the Service Academies, at the Defense Intelligence School and the Defense Systems Management School. In addition, an array of applications have been made to important Defense decision problems including: trade-off studies of WWMCCS requirements, contractor selection for the Navy's design-to-price EW suite and trade-off studies of alternative system designs for providing task force commanders with near real-time ocean surveillance information. It is encouraging to note that ARPA's pioneering work in this area has generated interest in an application of these decision aiding methods on the part of the Services.

Another critical national security function which is totally the privince of the human element is the management of crises. While it is difficult to

say how well we are presently equipped to manage crises, the potential consequences of anything short of the best techniques compel a detailed search for areas of possible improvement. We will move ahead in FY 1976 with a planned five year research program in this area. Although the program is exploratory and will shift as problems and opportunities are identified, a number of relevant research directions are already available to serve as the core of our FY 1976 program. Among these are: research on prior crises to identify deficiencies or advantages inherent in different management arrangements used, use of simulation capabilities to determine the effect of alternative organizational arrangements, work to identify new sources of threat and conflict, analysis of legal and contextual constraints on crisis handling options, and research on information needs and systems for crisis management.

Critical Resources

It is important for the DoD to understand the impact of the changing raw materials situation on our defense capabilities and ARPA began an effort in FY74, in parallel with its research on defense energy problems, to examine the relationship of strategic mineral resources and national security. In FY75 this research led to the development of a data base on materials likely to be in short supply in the next decades, the DoD use of these materials both direct and indirect was estimated, and an input-output model for DoD use of some 71 materials was developed as a function of DoD procurement in the various industrial sectors. In FY76 this input-output model will be refined and concepts for advanced weapons systems and military hardware will be examined to identify potential future materials problems arising from possible DoD implementation of advanced military hardware. The model will allow us to examine not only the direct impact on material demand but also indirect material uses required to manufacture the final product.

This nation depends heavily on foreign sources for many critical materials and new technologies can have a major effect on the use of certain rare materials. These considerations led ARPA to initiate a program to

study the substitution and synthesis of materials which are in short supply. The ARPA program seeks to develop two substitute technologies which could provide new materials from abundant domestic resources. Ceramics are hard, have high melting points and low vapor pressures and many of them are corrosion resistant. They may be able to substitute in some applications for steel alloys which contain critical elements such as cobalt, nickel, and manganese. Unfortunately, they are brittle and thus lack tensile strength. ARPA is seeking to improve these properties of ceramics so that they can replace critical metals in structural uses.

A second major category of materials under consideration includes polymers and other organics. These find wide ranging DoD applications such as heat shields, structural composite materials for aircraft, and in windshields. At the present time, the raw material for polymers is oil; ARPA will initiate a new program to develop the necessary chemistry for converting domestically available resources directly to organic materials of interest to the DoD.

In another aspect, the U.S. capability in semiconductor integrated circuits is a critical resource to the Defense Department since these are critical to maintaining our ability to deploy technology. As integrated circuits become more complex, the cost to the manufacturers to make them for the Defense Department becomes so large that we can no longer pay the price. To assure the future availability of this critical resource, ARPA has initiated a major effort to develop an ability for the DoD to design new integrated circuits for manufacture on specific manufacturing lines. This program will, for the first time, incorporate processing effects into the design process and will minimize the sensitivity of these circuits to the process variabilities in the manufacturing operation.

In FY73 ARPA began to quantify the impact on the Defense Department of anticipated energy shortages and to initiate research to develop future options for dealing with these problems. Some results of the energy research completed in FY75 include: an assessment of alternate strategies for

optimizing energy supply, distribution, and consumption systems on Naval bases has been completed. Strategies investigated include use of solid waste to generate steam, retrofit of steam distribution systems, solar hot water heating, total energy systems and automatic building energy control and monitoring systems in new construction, and a variety of energy management practices to reduce energy use. An investigation of the feasibility of utilization of waste fission products to produce steam at military installations indicates that the concept is technically feasible and that a 5-MW plant, with failsafe natural-draft cooling could be built at a cost of $1.5 million. Operational costs of $0.5 million per year appear competitive with oilfired boilers; encapsulated surface storage of waste fission products could provide a useful solution to storage of waste fission products from nuclear power plants while partially satisfying military base energy needs. Techniques developed for interactive analysis and manipulation of the DoD fuel data collected by the Defense Energy Information System, which was based on an ARPA design, now allow bases, regions, or commands with fuel excess or shortage conditions to be identified providing a much needed capability to manage DoD fuel allocation.

Conclusion

The preceding highlights of ARPA's programs are intended to provide you with a deeper understanding of our motivations and expectations. I believe that it is an outstanding story from the standpoint of exciting scientific and technological progress we are making as well as for the outstanding military return on our research investment. We have selected our areas of effort carefully, weighing their urgency, potential utility, and scientific credibility. Along the way we have made some very hard decisions in order to present you with a strong, tight program. ARPA is proud of this program, as is the Director, Defense Research and Engineering, and the Secretary. It is our considered opinion that less would be too little. We welcome your scrutiny, and we invite your support of our efforts.

Senator YOUNG. If you wish, you may summarize your statement.

Dr. HEILMEIER. Yes; I would like to summarize my statement.

This is my first appearance before this committee; I would like to explore with you a few questions that I have attempted to address in my statement.

The first question is: What kind of organization is ARPA and why is there an ARPA? Why is there an Advanced Research Projects Agency? How does it differ from the service R & D organizations? Coming from industry, I think a very useful analogy of the relation of ARPA to the Department of Defense might be that of a corporate research activity.

A corporate research activity in industry has many roles. One of the primary roles is that it fills the gaps between high priority problems that may exist across service lines.

An example of that kind of activity in ARPA might be the work that we do in nuclear monitoring research. That research has enabled us to sign test ban treaties with adequate verification.

Senator YOUNG. Maybe first you should explain, I guess you have, to some extent, the duties of your office and how it differs from comparable agencies of the Defense Department.

You are really part of the research and development community, are you not?

Dr. HEILMEIER. That is right; we are part of the Defense R & D technology-based community. While we are a seperate defense agency, we are very much a part of the overall defense research and development technology base.

Senator YOUNG. You are the director of your agency, which is somewhat independent of research and development of the regular agency?

Dr. HEILMEIER. No. We take policy guidance from and coordinate our program very closely with Dr. Currie.

Senator HRUSKA. Some years ago, before NASA came along, there was a laboratory and I think there was one here in the nearby Washington area, but there was also one at Wright Air Field near Cleveland.

Dr. HEILMEIER. Wright-Patterson Air Force Base is at Dayton, but NASA has Lewis Research Center at Cleveland.

Senator HRUSKA. What was that, the National Advanced Research?

What they engaged in was that pure research that went 15 and 20 years ahead. It reminds me pretty much of what you try to delineate on pages 3 and 4 of your statement. What is the name of that? It has now been merged into NASA, I believe. National Aviation Research Center?

Dr. HEILMEIER. There was a National Advisory Committee for Aeronautics that was NASA's predecessor. At the current time the Wright Field complex, and it is a complex of a number of different laboratories, is essentially under Air Force jurisdiction. That complex conducts research very closely related to Air Force problems in propulsion, avionics, and air frame design.

Senator HRUSKA. It does not get into space?

Dr. HEILMEIER. No, sir; not at the present time.

Senator HRUSKA. That is NASA?

Dr. HEILMEIER. Space activity is NASA.

Senator HRUSKA. Forgive the interruption but I was trying to draw on some of my earlier experience with similar agencies to see how you tied in with them.

Dr. HEILMEIER. Of course; let me try to answer your question, sir. I mentioned that ARPA fills the gaps between programs which are quite properly the responsibility of one particular service. As an example of that, I spoke of our work in nuclear monitoring that had a DoD and, indeed, a national focus, a national mission.

COMPUTER SOFTWARE

One might also look at our work in computer software. Obviously all the services have a need for computer software R & D ARPA is the integrating agency for this, the focus for that type of research. But it has other roles and missions, as well. It is charged by the Secretary of Defense to tackle the tough problems, the ones that do not have obvious conventional solutions.

An example of that kind of work within ARPA might be the work that we are doing in speech understanding by computer. If the DoD is to ever make full use of computers, we are going to have to make it easier for people to interact with them; all kinds of people, not just people with special computer training. So, part of our work is designed to enable people to interact by voice with a computer and have a computer carry out the instruction by voice instead of by specific computer-coded instruction.

Our job is also to pursue the revolutionary item rather than the evolutionary item. An example of our work in that context might be the kinds of things we are doing in the high energy laser program.

LASER PROGRAM

Senator YOUNG. I was going to ask if you are in the laser program.

Dr. HEILMEIER. That is right. We were the agency that initiated the high energy laser research within the Department of Defense. We still play a leading role in that area.

ADOPTIVE OPTICS

We are also doing some work that I would call revolutionary in an area called adaptive optics. We are all familiar with the precision with which optical components have to be fabricated. We are familiar with the problems of assembling such components. We are also familiar with the problem that some times Mother Nature plays nasty tricks on us. That is, the atmosphere is not the way we thought it might be. Consequently, the images which we might seek to acquire are not perfect images. Adaptive optics is a new technology which we are pioneering that enables us to compensate optical equipment for the vagaries of the environment and for the vagaries in assembling equipment.

Now, there are some other things that make our organization unique. We have the freedom and, indeed, the charter and the responsibility to take the high risk alternatives that may sometimes run counter to popular belief. [Deleted.]

These concepts involve moving against the conventional knowledge in those fields.

We also have another interesting, I won't call it a charter, but an organizational role. We don't have any vested interest in the status quo, nor do we have any vested interest in specific doctrinal approaches to things.

You might look at our work in remotely piloted vehicles (RPV), in that light, as there is no stated requirement and no doctrine for their use. It was ARPA technology that developed that concept to the point where we have a number of the services taking a very hard look at this way of conducting surveillance operations and weapon delivery with moderate risk; with a risk that is much lower than that which one might have with a manned aircraft.

So, ARPA is an organization that serves, in many instances, as a catalyst. It is an organization that, in many instances, is our guard against technological surprise, because we are chartered with pushing the frontiers; we are chartered with going into areas for which there may not be a specific requirement today.

Last, but not least, in an organizational sense we report to the top. We don't report down in the bureaucracy. We report to the top, and we have a charter directly from him.

Senator YOUNG. The Secretary of Defense?

Dr. HEILMEIER. That is correct, sir.

Now, there is some history associated with the organization.

There have been some successes that we point to proudly, as, for example, in the area of nuclear monitoring research. We took a very knotty problem under our belt, a problem of how to verify nuclear tests without onsite inspection. We took a field called seismology which was more or less a black art with not a great deal of science associated with it. Over the years, we brought it to the point where it became a science; it became a science that enabled us to sign the threshold test ban treaty, because we could monitor nuclear explosions by seismic techniques remotely.

We laid the ground work in the past for large phased array radars which are the backbone of ballistic missile defense systems. We were the people who evolved the original concepts, got the program under way, and then transitioned it to the services when it looked like it was going to work and be a success.

ADVANCED RADAR DEVELOPMENT

Senator YOUNG. What difference is there between the radar developed for the ABM and others? This is quite an advanced radar.

Dr. HEILMEIER. Yes, sir, the main difference is the way the beam is pointed. Radar, as you know, works on a scanning electromagnetic beam. In conventional radar, the beam is steered mechanically. We have huge mechanical installations which move the beam from one place to another.

In the ballistic missile defense radars that is done electronically. Furthermore, that radar can control not only one beam looking at one target, it can control many beams looking at many targets at the same time.

Senator YOUNG. Is that technology developed for that powerful ABM radar useful in other military areas?

Dr. HEILMEIER. Yes, sir; it is. The problem has been the cost of doing that. It is very expensive to make large phased array radars that can handle multiple targets simultaneously. But the Air Force is reexamining that issue and I believe, at the present time is looking at a candidate airborne phased array radar that might do several different functions in a single radar.

That technology has had spinoff in our tactical radar field as well.

Senator YOUNG. One of the problems of running the military is that one service really doesn't know what the other is doing sometimes, what advancements they have made. I give this ABM as an example.

I was wondering if the other services were looking thoroughly into the new developments there.

Dr. HEILMEIER. Yes, sir; they are. A case in point: You mentioned the phased array radar; that is the backbone of the Navy's AEGIS system, antiship missile defense system. It is also the backbone of the Army's SAM–D system which is a field army defense system. There have been a number of spin offs of that radar technology in the services.

Senator YOUNG. Thank you.

SPACE OBJECT IDENTIFICATION

Dr. HEILMEIER. There are some other areas that ARPA pioneered, one being space object identification. You have the problem of trying to determine what kind of satellite someone may have put in orbit; what is its function, and what does it look like? ARPA pioneered this area using both optical techniques and radar techniques. If we have some time, I would like to show some of the things that have been done in that area.

ARPA also was a pioneer in the area of night vision, that is, turning the night into our ally instead of our foe. This little device here is a miniature night vision device that we hope to mount on a miniature RPV.

Senator YOUNG. Does it have any relation to infrared?

Dr. HEILMEIER. Yes, sir, this is an infrared device. There is an interesting aspect to that, if I may digress. We sometimes think of infrared technology as giving us simply the ability to see at night. It certainly does just that. Because of the way it functions, the particular spectral range in which it operates, it also gives us the opportunity to penetrate a limited amount of fog and smoke. This is a tremendously important finding for the Army because Russian tanks, for example, like to penetrate behind a smoke screen. The reason they like to do that is because their guns, their tank guns, do not have the same accuracy at long range as our tank guns do. So, they want to get close to us. Devices such as this enable us to see through that fog and smoke. I have an example of that here which we might dig out a little bit later and show you. So, this type of device, this type of infrared imaging device, really serves two functions: It enables you to see at night, but it also gives you a limited amount of fog and smoke penetration and on the battlefield which is generally covered with smoke and fog that is another dimension which is quite important.

Senator HRUSKA. Would that include the situation of a supply convoy across the Atlantic such as in World War II?

Dr. HEILMEIER. Yes; it would. It would give you in a limited range the ability to station keep, to note the position of other ships in the convoy without having radio communication which might give away your position. Yes, sir, it could serve that function, as well.

I don't want to belabor the point of the past, but there have been a number of successes. I thought I might also talk a bit about some of the current major thrusts in the ARPA program just very briefly.

I mentioned some of them in passing in trying to introduce you to what the Agency did in general, things like adaptive optics and high energy lasers and space object identification.

In the area of space object identification we are currently building a very large laser radar which will enable us to do much higher resolution imaging of space objects.

We are also having a go at this whole question of [deleted] in space, to do [deleted]. As you know, at the present time we use [deleted].

As you know, the finding of surface-to-air missile sites is a very, very difficult problem and a very important problem for our Air Force.

Senator YOUNG. One problem over in Cambodia now is that the enemy hides just outside Phnom Penh and launches missiles or rockets.

Would this be helpful in that area to determine exactly where these rockets are being fired from?

Dr. HEILMEIER. [Deleted.]

Senator YOUNG. In Cambodia now, they are firing from the jungles or what-not. Do we have anything new that would help to pinpoint where they come from and enable us to destroy them?

Dr. HEILMEIER. [Deleted.]

I think the best defense against systems of that sort is aircraft which have [deleted].

Senator YOUNG. Could you pick them out in the jungles with the A–10 system?

Dr. HEILMEIER. [Deleted.]

Senator YOUNG. Off the record.

[Discussion off the record.]

Dr. HEILMEIER. Yes, the technique would be applicable to the detection of [deleted]. But I don't want to mislead you; this is very high risk technology, very high risk technology indeed.

But, if it is successful, it is also very high pay-off technology. It involves pushing the state of the art in a new area and that is our charter. But we will not be successful in every development that we undertake. Secretary Schlesinger said to me just a few weeks ago if I am too successful he will know that I am not pushing the state of the art.

Senator YOUNG. They give you all the tough assignments.

Dr. HEILMEIER. That is right; the difficult technical assignments.

COMPUTER SECURITY

Senator HRUSKA. In computer resource saving and the shared computer time, do you run into a problem of security there?

Dr. HEILMEIER. Yes, sir.

Senator HRUSKA. Are you doing something about that?

Dr. HEILMEIER. Yes; we are working on the computer security problem.

That, incidentally, is a subject of a modest increase in our budget. We are concerned about the security problem. The distributed computer networks which we pioneered do not have secure communication between computers. That is the subject of current investigation, to make them secure.

COMPUTER LANGUAGE

Senator HRUSKA. Then to get down to a very elementary thing, you talk about making computers intelligible to everybody.

When are you going to get a universal language in the field of computers?

Dr. HEILMEIER. I agree that is a problem and it is a problem which part of our software R & D program is attempting to address.

We have a proliferation of computer languages that you mentioned. We need some guidelines by which we can standardize. You know, at the present time we really don't have the tools for picking a particular computer language because we really don't know how to measure the "goodness" of a computer language.

Part of our software R & D program, which we are quite excited about because of its potential, will address that question. For example, do you optimize computer language on the basis of how easy it is for a man to program a computer, or do you optimize it on the basis of how easy it is to check what he has done, or do you optimize it on the basis of how easy it is to transfer that piece of work from an IBM computer to a Honeywell computer?

There are many different factors which enter into the choice of a standard computer language. We really don't know yet how to weigh those factors. Part of our R & D effort in software will be an attempt to define the factors and measure the factors which determine the so-called "goodness" of a given computer language.

PHOTOGRAPHY

Senator HRUSKA. What about the field of photography, not only in space but other photography?

Are you doing anything in that?

Dr. HEILMEIER. Excuse me?

Senator HRUSKA. The perfection of the preciseness and range of photography.

Dr. HEILMEIER. Yes, sir, we are doing several things in that area.

One of the things we are doing is performing computer analysis of photographs to remove blurring, for example. Another thing that is in process in that area is the so-called electronic camera which is far more sensitive than a conventional photographic film [deleted]. So that, there are several things that are going on in that area. I mentioned earlier this field of adaptive optics which attempts to compensate for the vagaries of the atmosphere, for example. That will also bear on our ability to conduct improved photographic operations. There are several different items that are being undertaken by my agency in that area.

Senator HRUSKA. Is there reason to believe that we have a better technique and better technology in that field than our potential enemy, the Soviets, in aerial and space reconnaissance?

Dr. HEILMEIER. That is very difficult for me to answer, Senator, because I, frankly, do not know. [Deleted.]

I would venture to say that in the area of computer picture processing, that is, to remove blur or to enhance images, I feel that, due to our lead in computer technology, probably we can do that type of thing far better than the Soviets.

Senator YOUNG. That is one area where we seem to be ahead of them, in computers.

Dr. HEILMEIER. Yes, sir, it is. Another area is semiconductor technology.

Senator YOUNG. That is one of the reasons they have not been able to put a man on the Moon as we have.

Dr. HEILMEIER. I would say that it is very heavily tied with the ability to do real time information processing with computers that are on board the space craft; small computers, very powerful but small computers. That bears not only on the computer technology but the semiconductor technology with which one must implement those small computers. Those are the two areas we feel we are ahead in.

EARTH ENVIRONMENTAL LABORATORY

Senator HRUSKA. Senator Young and I are both interested in the earth environmental laboratory in South Dakota. Some of the results have been dramatic.

Has ARPA had a hand in the development of what we now get from such a laboratory?

Dr. HEILMEIER. Yes; I think much of the technology that is currently used in those systems was originally developed in the ARPA program.

Senator HRUSKA. What are your other programs in that area? Are you continuing the work or have you reached perfection?

Dr. HEILMEIER. That is one reason why we have such high hopes for adaptive optics. We have always felt that we were faced with dealing with Mother Nature on her terms, so to speak, but the so-called adaptive optics which enable us to compensate for the tricks Mother Nature plays on us [deleted].

Senator YOUNG. Does the infrared gadget you have there have anything to do with that?

Dr. HEILMEIER. No; this particular gadget, because of its small size and performance limitation, was designed primarily for remotely piloted vehicles. [Deleted.]

Senator YOUNG. I would like you to explain that gadget.

Dr. HEILMEIER. I guess, without seeing its big brother, it is kind of difficult to appreciate because its big brother would take up probably a cube this size and weigh several hundred pounds.

Senator HRUSKA. When you say "this size", what are you saying? Five feet?

Dr. HEILMEIER. I mean approximately 4½ to 5 feet, a very large installation and very heavy, weighing several hundred pounds.

This little job is something which we are planning to use on a mini RPV and it weighs 8 pounds. Of course, it does not have the per-

formance that the larger system has, but the imagery one gets from the system is adequate for short-range operations at night; the operations you would be performing with a remotely piloted vehicle.

I have a photograph here that I really would like to show you. In the far left-hand corner you see the type of image that one might see with a device like this at night.

Senator YOUNG. Is that the one in the lower corner?

Dr. HEILMEIER. This is looking at it from a distance. Down in this corner one sees it at much closer range. Now, this is a tank penetrating with the smokescreen. Now, using the infrared viewing device, the smokescreen bothers you not at all. This is what that same tank looks like if you were looking at it with a conventional TV camera.

Senator YOUNG. We don't have that in use now, do we?

Dr. HEILMEIER. No, sir; we do not. It is still in the experimental phase.

Senator YOUNG. That would be quite an advance if you could penetrate a smokescreen.

Dr. HEILMEIER. Yes, sir.

Senator HRUSKA. I am impressed with the smallness of your numbers.

You say you have a staff of 60?

Dr. HEILMEIER. Fifty-five, sir; 55 technical people. That is due to the way we operate. We are not a laboratory per se. Our organization essentially generates and filters ideas, formulates programs, and then does most of its work through contracts, with industry, with universities, with Federal Contract Research Centers, and with DoD laboratories.

So, our role is one of an initiator. We have an "on" switch. In so many instances in a bureaucracy there are too many off switches. A new idea gets beaten to death before it ever gets a trial. Our organization does not have so many "off" switches. We have "on" switches. That is why we are able to move into high risk, high payoff technology areas, very early, I might say, with good success.

We are a lean organization; you are right.

Senator YOUNG. Do you have a separate budget?

Dr. HEILMEIER. We have a budget this year of $226.6 million. That represents a 12-percent increase over last year's figure.

Senator YOUNG. You spend most of this by contract?

Dr. HEILMEIER. That is right; most is by contract.

RESEARCH AND DEVELOPMENT

Senator HRUSKA. In the field of research it has sometimes been demonstrated you get into high budgets for any project. I might say perhaps in the field of health, health institutes, you have so many hundreds of millions of dollars available, sometimes it is difficult to put them on board in a vehicle and go anyplace. Sometimes the funds are devoted to areas where there is not sufficient consideration of where they are going or why.

In addition to that, there is the matter of duplication when the field is so great, the duplication to which Senator Young referred a short while ago.

What of that type of thing might you encounter in your organization? If you don't, how come you can evade it or avoid it?

Dr. HEILMEIER. In regard to the duplication and overlap program, our overall program is coordinated with Dr. Currie and his staff so that we have insight into the service R & D programs.

With regard to the applicability of our research, our organization is in constant contact with people in the field, with people in the services, to understand the mission area deficiencies. But, our view is a longer-range view than that of the Services.

The service R. & D. people are tasked with meeting specific requirements; they are tasked with meeting day-to-day responsibility or immediate requirements that are perceived by the service chiefs.

Our view and the difference between our organization and the service R & D organization is that we step back and take a longer view of the question. Just as an example, the service R & D people might ask the question: How do we make this airplane fly faster or farther? Our view of a problem might be a little bit different: How do we deliver the same weapons to a target by different techniques? Maybe not a manned aircraft. Maybe a remotely piloted aircraft. Our view is a longer view than the service's.

Senator YOUNG. You say the Secretary of Defense is really your boss. Can the Joint Chiefs of Staff, or Chief of Staff of any of the services, request that you do something?

Dr. HEILMEIER. Yes, sir. We interact with the service R & D staffs on numerous occasions. We interact not only from the standpoint of learning each other's program but we need to transition our programs into the services when they mature. So, it is very important to keep the services on board and knowledgeable in the kinds of things that we are doing, albeit that they are revolutionary at times, although there may not be a given requirement, and although they may involve considerable risk. There is a great deal of coordination and cross-fertilization, I might add, between our program and the service's programs. It is also true that most of our programs are monitored by the services on a day-to-day basis.

Senator YOUNG. Doctor, yours was a very interesting statement. I have learned more about ARPA today than I have in all the years I have been here. You are providing a very important service.

Do you have anything else to add?

Dr. HEILMEIER. No, sir. I have some things here that, if you have the time, I might show you in passing but if you are pressed for time——

Senator YOUNG. Why don't you take a little more time?

CERAMIC TURBINE

Dr. HEILMEIR. Another concept that we are doing some things with is the so-called ceramic turbine. You know, turbines today are made using very expensive metal alloys. Those alloys are expensive because they have to operate at high temperatures. The efficiency of the turbine is determined by the temperature at which it operates. One of the things which ARPA is currently doing is making turbines using ceramics. This is a ceramic turbine rotor. Our goal, some time in fiscal year 1977, is to build a ceramic turbine engine that we can demonstrate in an Army vehicle such as a truck. Now, you ask: What is the importance of a ceramic turbine? Well, it will be smaller for the same power and it will be more efficient. So, we think it can have a tremendous impact in the future on military vehicles in general.

Senator HRUSKA. What cost differential would be involved?

Dr. HEILMEIR. We think that the costs will be substantially lower, Senator, because ceramics are relatively cheap; the basic materials are relatively cheap as opposed to super alloys which we currently use in turbines which are very expensive.

Senator HRUSKA. Easier to work with?

Dr. HEILMEIER. That is right.

Senator YOUNG. Do you use titanium?

Dr. HEILMEIER. Titanium is not used in turbines per se. Titanium alloys sometimes are.

Senator YOUNG. Let me ask this question.

I have often wondered how these new turbine jet engines could operate the same in 120-degree temperatures as well as 75 below zero, going over the North Pole. It does not seem to bother them.

Dr. HEILMEIER. No; because the temperatures in the engine, itself, are so high that the ambient temperature fluctuation does not really matter.

The temperature in a conventional aircraft turbine is somewhere around 1,900 degrees Fahrenheit. So that, because it does run so hot, it does not really matter whether the ambient temperature is 100 degrees Fahrenheit or 20 below zero.

Senator YOUNG. Could you briefly tell the difference between an engine developed for the SST or these newer, faster planes, and the ones, say 5 years ago?

Research and development seems to be very costly?

ENGINE R & D

Dr. HEILMEIER. Yes, sir; engine development is a very, very costly operation. It is costly because there is a great deal of empiricism associated with it, that is, cut and try. It is costly because the fabrication technology and the materials used in fabrication are very, very sophisticated.

I have a few other things that, if you gentlemen have the time, I would like to show you. I mentioned a little bit earlier that we are having a go at laser radars for space object identification. This is a model of a satellite. This is what the image of that satellite looks like using a microwave radar. Now, an expert can get a great deal of information from that picture but it does take an expert. The amount of information available is limited. This is a simulation that we have run, using a laser radar. You can see there is much more information, much higher resolution available to us.

In the next 2 to 3 years we hope to scale up that laser radar so that we can do full-scale imaging of satellites in orbit.

Senator HRUSKA. Do you check that out with satellites which are known as to mechanical operation?

Dr. HEILMEIER. Yes, sir.

Senator HRUSKA. That is your control, is it?

LASER TECHNOLOGY

Senator YOUNG. Laser is really the weapon of the future; isn't it?

Dr. HEILMEIER. [Deleted.] I think it is a very, very exciting technology [deleted.]

Senator YOUNG. Any country that could perfect it would have the same advantage that we had when we were the only atomic power, wouldn't they? Maybe not that great, but they would have considerable advantages.

Dr. HEILMEIER. There are a number of interesting speculations about the potential of high energy lasers. [Deleted.]

I don't know whether I can put this—fiber optics demonstration—together in a short period of time but I might give it a try.

Senator YOUNG. Much of that laser technology could be used in a conventional war whereas nuclear know-how couldn't; isn't that true?

Dr. HEILMEIER. That is certainly true.

This building is not going to help me very much in demonstrating this but what I wanted to show you is a little fiber optic link.

You know, light travels in a straight line. It can't see around corners except with fiber optics. This enables us to bend light in much the same way that electricity can flow through wired shapes. This is a collection of little glass fibers. The potential of this technology we feel is staggering.

Our particular focus in ARPA at the present time is to try to develop fiber optic components [deleted].

This contains a simple laser source. What I wanted to show you was the ability to pass light around corners and through loops so that we could demonstrate the ability to pass optical signals which are electronically modulated so that one could see the demonstration of light around corners and light serving the function conventionally served by electricity.

Senator YOUNG. Do they have application to radar?

Dr. HEILMEIER. Not a great deal except perhaps to locally pass signals between blacks boxes, for example, or between components of a radar system.

I have one other thing that might be of interest to you. You know, one of the oldest arts is the art of sandcasting metals. There is a problem in sandcasting and the problem is that, first of all, each casting serves only one mold. You must make a new sand mold for every casting. Second, the stuff that comes out of a sandcasting is kind of rough like this. So, it has to be machined. Each additional machining step costs money.

One of the things that ARPA is looking into is the possibility of making those molds not out of sand but out of other metals called super alloys. That should enable us to use the same mold over and over again as opposed to one mold for one part.

This is an example of a piece that came out of such a mold. Now, the significant thing to note here is how smooth this is as opposed to a sandcasting which would look like this. We are very interested in pursuing this because not only is it an automatic foundry process but it saves us dollars by not having to go through postcasting machining processes which cost a lot of dollars.

PREVIOUS EXPERIENCE OF DR. HEILMEIER

Senator HRUSKA. If you would not mind telling us, what is your previous experience in industry?

Dr. HEILMEIER. I have a kind of unusual background in that prior to coming to the Government I was employed by RCA Laboratories in Princeton, N.J. I headed up their solid and liquid state device research.

Some of you gentlemen may be familiar with the liquid crystal watches, the small digital watches; instead of the hand, they have digital readout. That was my invention. Prior to coming to the Government, I worked very extensively in that whole field.

Senator HRUSKA. That is Dick Tracy's world.

Dr. HEILMEIER. I think what I would like to convey to you gentlemen this morning is a sense of excitement. I am excited about my agency; I am excited about its potential to do great things for the Department of Defense. I think we have made impacts in the past and I think we are in a position to make further impacts in the future.

Senator HRUSKA. Your aspiration is to achieve a low profile and a low tolerance in bureaucracy. Whenever you find the successful key to that, will you please let us know about it? A lot of us would like to know. But, good luck to you in that regard. I can see how in your field it would have to exist to a great degree; otherwise, you would not function.

We encounter situations all the time where we try something new. We scarcely have the ink dry on the printed page before there are 1,400 ways proven that you cannot work it; you cannot do it. It is a problem; it is a frustration.

ANTISUBMARINE WARFARE

Dr. HEILMEIER. The antisubmarine warfare area in which we are very heavily involved right now is such an area. We went against the conventional knowledge. [Deleted.] The results there have been quite exciting [deleted].

Senator HRUSKA. If you were with another country instead of America, and you were confronted with the problems that are going to be encountered by the other country with Trident, would you have some difficulty?

Dr. HEILMEIER. Trident is a weapon system which is far, far ahead. That is, it is very, very difficult to counter the Trident because it is such a quiet submarine and because it operates in such wide geographic areas. That truly is a weapon system that will have a major impact. That will make life for the defense, very, very difficult.

Senator HRUSKA. The Soviets are troubled by it.

Dr. HEILMEIER. They sure are, and well they might be.

Senator YOUNG. The Members of Congress appreciate what you have had to say here about the great advantage of the Trident.

Senator HRUSKA. They ought to let Admiral Rickover take them by the hand and lead them around that mockup down there. I think they would come out enlightened citizens.

QUESTIONS SUBMITTED BY CHAIRMAN M'CLELLAN

Senator YOUNG. Chairman McClellan submitted some more questions you might answer for the record.

Dr. HEILMEIER. Thank you, sir.

[The questions and answers follow:]

ARPA Development

Chairman McClellan. From your statement am I to assume that a relatively small organization such as the Advanced Research Projects Agency has developed the first earth satellite, phased array radars, lasers, and several other major programs?

Dr. Heilmeier. Yes, ARPA is responsible for major developments such as these. Perhaps it would be helpful to give a brief description of our mode of operation. When our assignment to a project area has been made by the Director, Defense Research and Engineering, ARPA prepares an R&D technical and funding plan, makes its needs known to the performer community and reviews proposals for work in the area. DoD Agents, generally Service laboratories, provide contracting and administrative services in ARPA's behalf and frequently, on more mature projects, share with ARPA program managers the detailed technical direction of the contract efforts. ARPA, however, always provides the overall technical evaluation, policy, and management for its programs. We work as closely as possible with the Defense R&D community both to be aware of their problems and to facilitate the timely adoption of the results of ARPA programs.

Reduction in Technology Budgets

Chairman McClellan. Your budget request has increased 12% in the past year. Is there a corresponding reduction in the technology budgets of the individual Services?

Dr. Heilmeier. No. Actually the technology base increases by 13% for all Services combined; exclusive of ARPA ($1.186B to $1.342B). The technology base is the source of our technological initiative which is our most precious long term asset. It is the intention of the Secretary of Defense and the Director of Defense Research and Engineering to check the erosion which has occurred in the technology base program over the past several years due to inflation and to lay the groundwork for modest growth in the future.

Data Processing Software

Chairman McClellan. The individual Services have spent large sums for the improvement of data processing software over the past ten years. Since you ask for additional funds in this area, I assume that the Services have failed. Do you plan to transfer the Service funding in computer software to ARPA?

Dr. Heilmeier. The Services do spend large sums on software but not software R&D. During the past decade, the cost effectiveness of computer hardware has improved by a factor of approximately thirty. The improvement in hardware has had the effect of placing greater demands upon software technology—which has advanced, but not nearly at the rate required to meet the demands. At present, software is a critical area for DoD, costing more than $3 billion annually in direct expense and very much more than that in delay and disruption of weapon system developments. ARPA is the focus of a concerted DoD program to reduce the cost and increase the effectiveness of DoD software. The program will involve the Services as well as ARPA. The program will fundamentally improve software management, requirements analysis, costing, documentation, testing, evaluation, and maintenance as well as the activities called "programming," "coding," and "debugging." The program will involve and affect industry, the Service software shops, and the not-for-profits.

75mm Gun

Chairman McClellan. If ARPA is an agency for advanced technology, why do you work on a specific weapon such as the 75mm gun? Shouldn't that be an Army program?

Dr. Heilmeier. This is a speculative, high risk program involving a new approach in an area which has been fraught with failure in the past. We are developing advanced technology that may permit the Army to develop a 75mm gun which would be significantly smaller than the present 105mm tank guns yet have equivalent effectiveness. We hope to prove the principle of this advanced gun concept which embodies high muzzle velocity, slender rod penetrator, automatic firing out of battery, and low trunnion reaction force. We are working on both solid and liquid propellant versions whose concepts are based on theoritical estimates considered too speculative initially to justify an Army development program.

RESEARCH IN HUMAN RESOURCES

Chairman MCCLELLAN. Every agency budget I see asks for money to do research in human resources. Why cannot the Department consolidate all human resource work in one Defense agency or give it to the Department of Health, Education, and Welfare?

Dr. HEILMEIER. No other Defense Agency has a human resources research activity or budget, although each of the military services do in order to address their Service unique problems and shorter term requirements. The ARPA program, however, is directed at longer range and multiservice issues such as manpower, requirements research, biocybernetics, decision analysis, and crisis management. Also, within the field of training technology and computer aided instructions, ARPA plays a catalytic role by coordinating and joint funding a singly directed ARPA-triservice R&D program. As with other elements of the ARPA program, research and development results from this training technology effort are transferred to the military services and other user agencies on a timely basis.

Completely centralized management of all human resources research either by a Defense agency or by the Department of Health, Education, and Welfare would be unwise, however, as it would be unlikely to be appropriately responsive to service-specific requirements.

We believe that the present mix of efforts is properly responsive to the needs of the Department. You should note, however, that the scientific community is to some extent shared by DoD and HEW, so that technology developed in one area is available for utilization elsewhere. In practice, there does not appear to be a duplication of effort.

CONCLUDING REMARKS

Senator HRUSKA. Your presentation has been very interesting.

Senator YOUNG. It is some of the finest testimony I have ever heard.

Senator HRUSKA. If you have problems that you think we can help you with, let us know.

Dr. HEILMEIER. Thank you, sir.

SUBCOMMITTEE RECESS

Senator YOUNG. The subcommittee will then recess until tomorrow at 10 a.m. and meet in this same room with Defense Agencies.

[Whereupon, at 12:15 p.m., Monday, March 10, the subcommittee was recessed, to reconvene at 10 a.m., Tuesday, March 11.]

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1976

TUESDAY, MARCH 11, 1975

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

The subcommittee met at 10 a.m. in room 1223, Everett McKinley Dirksen Office Building, Hon. John L. McClellan (chairman) presiding.

Present: Senators McClellan, Young, and Inouye.

DEPARTMENT OF DEFENSE

DEFENSE AGENCIES

DEFENSE SUPPLY AGENCY

STATEMENT OF LT. GEN. WALLACE H. ROBINSON, JR., USMC, DIRECTOR, DEFENSE SUPPLY AGENCY

ACCOMPANIED BY:

REAR ADM. W. M. OLLER, USN, COMMANDER, DEFENSE FUEL SUPPLY CENTER
WILLIAM CASSELL, COMPTROLLER
RICHARD G. BRUNER, EXECUTIVE DIRECTOR, TECHNICAL AND LOGISTICS SERVICES

PREPARED STATEMENT

Chairman MCCLELLAN. The subcommittee will come to order.

We have four witnesses scheduled this morning. I believe the first is General Robinson. You are testifying in support of Defense Supply Agency; is that correct?

General ROBINSON. That is correct.

Chairman MCCLELLAN. You are the Chief of that Agency?

General ROBINSON. Yes, sir.

Chairman MCCLELLAN. Do you have a prepared statement?

General ROBINSON. Yes, sir; I do.

Chairman MCCLELLAN. Do you want to read it, or have us insert it in the record and have you talk about it?

General ROBINSON. All right, sir.

Chairman MCCLELLAN. It will be inserted in the record in full.

[The statement follows:]

Mr. Chairman and Members:

My statement highlights the missions, workloads and funds requested for the Defense Supply Agency (DSA).

NATURE AND SCOPE OF OPERATIONS

As a common service organization under the direct cognizance of the Secretary of Defense, DSA is responsible for providing responsive and economical logistics support in three principal areas.

First, we provide world-wide wholesale level supply support for a wide range of consumable materiel and repair parts to the Military Services, and upon request, to other Federal agencies including the Coast Guard, Federal Aviation Administration and Veterans Administration.

Second, we perform contract administration services for a major portion of the purchase actions executed by centralized buying organizations throughout the Defense Department and the National Aeronautics and Space Administration.

Third, we administer several Defense-wide logistics services programs, including:

-- Systems for Federal cataloging and providing technical item identification data necessary for Defense-wide logistics operations.

-- Maintenance, storage and reutilization of idle industrial plant equipment.

-- Scientific and technical documentation and information services in support of the Defense research and development community.

-- World-wide reporting, utilization and disposition of excess and surplus personal property.

The scope of these varied mission programs is indicated by the following ongoing annual workloads:

-- Management of about one-half of the 3.6 million supply items used by the Defense Department.

-- Procurement involving 2.4 million line item awards valued at more than $5.0 billion.

-- Processing of 17.7 million supply requisitions.

-- Processing of 17.7 million materiel receipt and issue transactions. In physical volume, this involves 1.7 million short tons.

-- Administration of 218,000 contracts. Their face value is $53 billion.

-- In addition, there are approximately 57,000 contracts for which we have partial responsibility, such as quality assurance surveillance, invoice payment, etc.

-- Payments to contractors involving 1.3 million invoices.

-- Maintenance of item identification data for 4.5 million cataloged items.

-- Management of a $1 billion inventory of industrial plant equipment.

-- Reutilization and disposal processing of property having an acquisition value of $7 billion.

-- Maintenance of scientific and technical information on over 1.1 million completed and ongoing research and development efforts.

WORKLOAD DEVELOPMENTS

Workloads imposed on DSA are based on the needs and actions of the Military Services and other agencies which we support. As a service organization, we do not control requests for support nor the workloads they generate.

DSA workloads have remained fairly high notwithstanding recent reductions in the size of the armed forces. This condition is attributable to at least three major reasons. First, the Services are delegating more contracts to us for administration. Second, there has been a change in the Services' buying habits in that contracts are for smaller quantities, thereby increas-

ing the total number of contracts. Third, there is a greater reliance on direct support from DSA to consuming levels.

Last year, we budgeted for a 2.4 percent decrease in workload. About six months later, when we appeared before this Committee in May 1974, we forecast that we had underestimated our FY 1975 workloads by 1.8 percent. Today, it appears likely that workloads will be as much as 5 percent above the budgeted level so that workloads are actually higher than they were in FY 1974. We will accomplish the high FY 1975 workloads through increased productivity, and with 716 fewer people than we had in FY 1974.

In FY 1976, we foresee no material change in overall DSA workloads. We expect to process this sizable workload with yet fewer employees because in addition to sustaining the high productivity rates being achieved this year, we have budgeted further productivity improvement for FY 1976.

FISCAL YEAR 1976 APPROPRIATION

The DSA request in the Operation and Maintenance, Defense Agencies appropriation for FY 1976 is for $820.9 million. This is a net increase of $32.1 million over the adjusted availability for FY 1975 resulting from specific increases of $37.9 million, offset by $5.8 million in decreases. The majority of increases, some $33.9 million, represent unavoidable pricing increases and appropriation transfer adjustments. These increases are:

-- $23.0 million for annualization of civilian pay increases, provision for ordinary within-grade step increases in the Federal pay system, increased payments to the Department of Labor under the Federal Employees' Compensation Act, and the cost of an additional day's pay and benefits for the civilian staff because of the extra work day occurring in FY 1976.

-- $10.9 million for mission transfers, principally from the Military Services and the National Aeronautics and Space Administration (NASA)

to DSA. Offsetting decreases have been made in the budget estimates of the Military Services and NASA.

-- $4.0 million is the sum of small amounts for several programs in which the level of effort is being increased to meet specific effectiveness objectives. We believe each case holds definite potential for good return of the investment involved. Briefly, these are:

- Increased level of real property maintenance to prevent further growth in the backlog of maintenance and repair projects, $2.2 million.

- Increased cost of Automatic Data Processing Equipment. The addition is primarily due to increased rental costs for faster and higher capacity components and for implementation of Data Base Integrated Management System; $.8 million.

- Expanded Cost Accounting Standards Program efforts as a result of a directed reduction in the dollar threshold requiring additional contractors to file Disclosure Statements. This is a result of decision by the Cost Accounting Standards Board; $.6 million.

- Increases in travel and a minor program change related to Contract Administration Services; $.4 million.

The $5.8 million in decreases for FY 1976 are:

-- $1.4 million for reduced telecommunications costs as a result of the Defense Communications Agency's planned reduction in the Automated Digital Network (AUTODIN).

-- $4.4 million for the reduced civilian personnel levels which includes a reduction of about 11 percent of DSA Headquarters strength.

FISCAL YEAR 197T APPROPRIATION

$211.4 million is requested for the three-month transition period ending 30 September 1976, prior to the start of FY 1977. This amount represents

the estimated cost of continuing operations at the levels proposed for FY 1976.

O&M EMPLOYMENT

Civilian employment programmed for the two-year period ending 30 June 1976 eliminates more than 2,700 spaces. This reduction is planned for achievement by significant improvement in productivity experienced to date and contemplated for the balance of the period. It is necessary that such improvements be attained because, with 85 percent of our appropriation devoted to pay of personnel, our capacity for internal reprogramming is limited. Maximum effort will be expended by management at all levels to assure attainment of our productivity goals. This reduction represents a salary savings of approximately $35 million.

MILITARY PERSONNEL

Military personnel authorizations from the Services to DSA will decrease by 72 from FY 1974 to FY 1976. This reduction is made possible by the continuing review of military personnel requirements on a position basis against governing Department of Defense criteria for assignment of military personnel. This reduction represents a salary savings of approximately $1.7 million.

PROCUREMENT

The FY 1976 Procurement appropriation request for DSA of $12.0 million is $2.0 million less than the FY 1975 program.

The request includes $5.7 million for four mechanization projects to further modernize warehouse operations at one depot and two supply centers. The productivity improvement permitted by this mechanization will amortize these projects in less than five years. Minimum requirements for replacement of vehicles, materials handling, warehouse, clothing factory and office equipments are included in the amount of $4.5 million. The equipments being

replaced are overage or involve excessive maintenance cost to keep them operating. The balance of $1.8 million is for ADP and communications equipment which will avoid annual rental cost of $1.6 million.

For FY 197T DSA requires $2.4 million in its Procurement appropriation to finance minimum essential requirements during the three-month transition period which follows FY 1976.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

DSA does not conduct research and development activities, but provides information services in support of the Defense research and development community through the Defense Documentation Center (DDC) and eight Information Analysis Centers (IACs). The FY 1976 Research, Development, Test and Evaluation request of $15.2 million includes $12.3 million for the DDC and $2.9 million for the IACs. The $12.3 million for DDC is an increase of $1 million over the FY 1975 program. Of this, $.7 million is required for computer peripheral equipment related to expansion of the Defense RDT&E On-Line System to support additional remote terminals, and the remainder associates with the approved pay increases. The capability to support remote access terminals is a major improvement in DDC services which permits users to search DDC data banks in minutes and view available information at their terminals. Application of the funds requested will provide DDC with the capability of handling 128 on-line terminals by the end of FY 1976.

The $2.9 million requested for the IACs represents an increase of $.2 million over FY 1975. This includes increased contractual costs required to maintain operations at their present level.

For FY 197T the RDT&E request of $3.7 million includes $3.0 million for DDC and $.7 million for IACs to cover estimated costs for the three-month transition period.

DEFENSE STOCK FUND

Mr. Chairman, that concludes the portion of my statement addressing DSA's operating appropriations. The total FY 1976 request is $848.1 million compared to FY 1975 which is $816.6 million. The reasons for the increase are as previously stated. I would now like to discuss the Defense Stock Fund.

The Defense Stock Fund is a working capital fund which finances the DSA inventories, such as clothing, subsistence, medical supplies, electronic supplies and bulk petroleum. As a wholesaler, we buy from commercial suppliers and sell to the Military Services and other authorized customers. The Defense Stock Fund is a revolving fund used to finance the supply pipeline between the manufacturers and the Military Service users.

The Stock Fund is designed to operate on a breakeven basis. To accomplish this objective, every item has a system-wide standard price that includes the procurement cost, transportation cost to the user and inventory losses. Because it operates on this basis, it is normally not necessary to request additional funds. This has been the case the last 13 years, except for FYs 1967 and 1968, during the intense Southeast Asia activity when it was necessary to build up inventories to support that operation. In those two years, Congress appropriated $107 and $118.4 million, respectively.

For FY 1975, DSA Stock Fund sales will be approximately $5.2 billion and procurements $5.2 billion. Bulk petroleum represents about one-half of these programs. The 31 December 1974 inventory was $3.5 billion. Most of the on-hand inventory turns over frequently, except for the inventories held for special purposes, such as mobilization reserves.

The DSA War Reserve Program is based on item requirements determined by the Military Services in accordance with guidance published annually by the Secretary of Defense.

DSA peacetime stocks and the results of Industrial Preparedness Planning are computed and applied as assets to the Military Services submitted war reserve requirements.

As a result of these computations, an acquisition objective is derived, i.e., those items which must be stocked as reserves to meet the initial Military Service war requirements in a mobilization build up, contingency, or war situation. These reserve requirements are approximately $1.958 billion, including bulk POL requirements. There are approximately $1.379 billion stocks on hand or on order that can be applied against the acquisition objective leaving a deficiency of $579 million.

In this budget we are requesting $100 million to procure materiel to reduce the deficiency by approximately 1/6th. This will materially improve the readiness posture of the Military Services.

Another inventory area for which we are requesting funds is bulk petroleum. Our FY 1976 Stock Fund budget includes the request of $150 million for a build-up of approximately 10 million barrels of bulk petroleum products. This additional inventory will be held against the contingency of an interruption in the supply of fuel such as was experienced in FY 1974. In order to maintain their readiness, the Military Services must continue peacetime training operations. In compliance with the overall national policy of energy conservation, the Services have already reduced their energy consumption to levels which cannot be further reduced by any substantial amount without adversely affecting force readiness. Therefore, should the supply of petroleum be interruped, we would have to assure sufficient supplies are available to permit them to continue in a state of trained readiness. Therefore, this additional 10 million barrels of inventory would in effect reduce the impacts of Military consumption on the rest of the national economy. In other words, the 10 million barrels which represent approximately three

weeks of Defense consumption would serve to free up an equal amount of barrels which could be used for non-Defense purposes in the event of an interruption of supply.

Mr. Chairman, the FY 1976 and FY 197T appropriation requests for DSA reflect continuing management attention to the basic goal of maximum operating efficiency and economy in the performance of our assigned tasks. I assure the Committee that the amounts requested represent minimum resourcing to provide adequate logistical support to the Military Services.

This concludes my prepared statement. I will be pleased to respond to your questions.

INTRODUCTION OF ASSOCIATES

Chairman McCLELLAN. You may proceed, General.

General ROBINSON. Mr. Chairman and Senator Young, I would like to introduce Mr. Cassell, my Comptroller, and Mr. Bruner, my Executive Director of Technical and Logistics Services.

MISSION OF DSA

I would like to highlight our mission, our workloads, and the funds requested.

Our mission in the Defense Supply Agency is to provide three types of support to the military services. First, providing wholesale support of supply items—these are consumable items as against repairable or end-items. We are talking about repair parts, clothing, food, et cetera.

Chairman McCLELLAN. Is this just for the Army?

General ROBINSON. For all the services. We manage approximately 50 percent or 1.8 million of the line items in the Defense Department supply system.

SUPPLY ITEMS MANAGED BY DSA

Chairman McCLELLAN. Give us a breakdown of supply items managed by DSA and those managed elsewhere.

General ROBINSON. As of December 31, 1974, there were 3,726,000 national stock numbers in the DOD supply system. DSA managed 1,840,000. The military services and other defense activities managed 1,818,000 and the General Services Administration managed 68,000.

Senator YOUNG. How and who determines that an item will be placed under DSA responsibility?

General ROBINSON. The military services, through their inventory control points, are responsible to code all items through an item management coding logic chart to determine if they are major end-items of equipment, repairables, security classified, unique in design to the military, or weapon essential. These items are retained for military service management. All other items are coded to DSA for management.

Senator YOUNG. Can a service unilaterally decide to keep an item under its cognizance?

General ROBINSON. Yes, sir, provided the item management coding logic chart indicates that the service should retain the item for management.

Second, sir, we administer contracts for all the military services as these contracts are delegated to us for administration. In contract administration, in addition to assuring compliance with contract terms we are in the quality-assurance business. We do the production surveillance functions. We pay invoices. We assist the procuring contracting officer to administer his contract to see that the manufacturer produces material as specified, in the quantities specified, and delivers at the time specified.

Third, sir, we perform several Defense-wide services, such as the administration of industrial plant equipment, property disposal, and the Federal cataloging program which we administer not only for Defense, which is the prime user, but also we maintain a list of all the Federal stock numbers that are used by the U.S Government.

In addition, we run the Defense Documentation Center which has a data bank containing reports of all research and development projects that are of Defense interest. These are mainly DOD funded, but there are some items of data in the Defense Documentation Center which would come from other agencies such as NASA, if they have Defense interests.

Sir, I have covered a little bit about the number of items we manage, 1.8 million approximately. In addition we make about 2.5 million procurement awards each year to contractors amounting to approximately $5 billion. We process about 18 million supply requisitions from all the military services.

We also, of course, have to process receipt-and-issue transactions for our depots and warehouses.

The contract administration workload is averaging about 218,000 contracts which we are administering in total. In addition we have approximately 57,000 that we manage partially as requested by the military services. We may provide pay invoice services only. Or we may give quality assurance services only.

CONTRACTS

Senator YOUNG. I am not quite clear on the contract—what types of contracts are those?

General ROBINSON. First we would be administering Defense Supply Agency contracts for expendable items such as repair parts, clothing, uniforms, material, and electronics items.

In addition, the military services delegate to us the contract administration responsibility for contracts that they award which could be for such things as engines. It could be parts of their major contracts. We do not administer all the major contracts such as for the F–15, or the F–14, but we administer such subcontracts as the services request us to.

We administer some service contracts such as the maintenance and overhaul of aircraft which the Air Force has delegated to us to administer. This is done under our Defense Contract Administration Service.

Senator YOUNG. Thank you.

General ROBINSON. The industrial plant equipment inventory that we manage amounts to about $1 billion worth of equipment mostly machine tools. These equipments are in storage and are held mainly for reserve purposes, but they are used when requested by the services on contracts.

We also run a school loan program which provides these tools when idle to schools for their use, and they would be available to us in case of national emergency.

Our property disposal program amounts to about $7 billion worth

PROPERTY DISPOSAL PROGRAM

of excess and surplus property which we have to receive from the services and process, store, and attempt to get reutilization on by making these items available to the military service in lieu of procurement of new items. We also segregate and sell scrap, and we administer sales of usable items.

Chairman MCCLELLAN. $7 billion worth of surplus material a year?

General ROBINSON. Yes, sir.

Chairman MCCLELLAN. Why do we generate so much surplus?

General ROBINSON. That is the acquisition value, of course, sir, and these items are——

Chairman MCCLELLAN. Why would we buy $7 billion worth of materials and supplies over what we need in a year?

General ROBINSON. That is not how much we generate a year. That is how much we processed last year.

Chairman MCCLELLAN. How much does it average a year?

Mr. BRUNER. It runs around $7 billion, but that is generally at acquisition value, Mr. Chairman. This equipment may be 20 or 25 years old.

Chairman MCCLELLAN. That is what it cost us.

Mr. BRUNER. Twenty-five years ago. And it has been almost used up.

Chairman MCCLELLAN. Don't misunderstand me. I'm trying to find out if this is primarily surplus properties, or if it is primarily obsolete property?

General ROBINSON. Most of this property is either obsolete or worn out in service. These would be the major items.

Chairman MCCLELLAN. Some of it, I guess, would be sold as junk.

General ROBINSON. Yes, sir, much of it is sold as junk.

Chairman MCCLELLAN. You are not talking then about serviceable items that you contract for in your supply operations that become surplus?

General ROBINSON. The majority of the material we receive is unserviceable when we receive it. Some of the smaller items such as repair parts, some of those may be surplus and be serviceable, but they would be in stock beyond the retention levels that are authorized, and many of our items, for example, are still residue from the Vietnam war.

Chairman MCCLELLAN. I recall last year we received testimony about great waste in the disposal of surplus property in Vietnam and other areas where serviceable goods had never even been opened. The original package was just dumped as junk. Was that under your command?

General ROBINSON. No, sir. We would have received items which had been thoroughly screened before they were turned over to us.

Chairman MCCLELLAN. What I am describing was an overseas operation.

General ROBINSON. This would include overseas.

Chairman MCCLELLAN. We had a lot of that last year.

Senator Young, do you recall hearing testimony on a great deal of first class, unused materiel being sold as junk. Perhaps it was a Government Operations hearing.

General ROBINSON. Well, sir, there are several screenings that happen in the life of this property before it is disposed of as junk. First, it is screened thoroughly before the Defense Supply Agency gets it. Second, after we get it, it is screened also. For example, in 1974 $1.1 billion worth was reutilized after we circularized all the qualified activities in the world, and we determined some of this material could be used. This material was returned for use both by the military service and by other Government agencies.

Chairman MCCLELLAN. Proceed.

Senator INOUYE. If I may at this point, Mr. Chairman. I took it upon myself to visit three surplus sales, one by the Army, and one

by the Navy, of goods which were considered unusable. They were considered unusable by the military, but apparently usable by the civilian sector because they all lined up trying to buy the stuff. The civilian sector must have found it of good quality. They were paying good money for it.

I must say that many of the goods there, everything from coffee mugs to bedsheets, were in pretty usable condition. And considering the economic conditions today, much as I would like to have the Defense use the very best of equipment and material, if the civilians can use an old coffee mug, I don't see why the military cannot continue to use the same.

I know I am nitpicking here, but this is an example.

AIRCRAFT STORAGE AT TUCSON, ARIZ.

Senator YOUNG. I believe the Air Force stores aircraft near Phoenix?

General ROBINSON. That would be at Tucson.

Senator YOUNG. Do you manage that facility?

General ROBINSON. Yes, sir. The first stage of that process is handled by the Air Force. These aircraft are brought down to Tucson, and the Air Force stores them and screens them. Some of them are in reserve. When the Air Force determines they do not need them any more, these aircraft go through a process of removing all usable parts and components, black boxes, instruments, and so forth. After the Air Force has stripped them down for all the material they want to put back into their inventory, these aircraft are turned over to the Defense Supply Agency Property Disposal Service, and then the aircraft are sold as scrap. Then we supervise the destruction of these aircraft as part of the sale agreement with the contractor.

Senator YOUNG. Those that I looked at had only been there about 3 years. Maybe you have a different policy now.

General ROBINSON. No; they could well have been because the Air Force could decide this year that they want to store these aircraft until they determine what they need from them, or whether they need the entire aircraft. They also screen usable aircraft, such as helicopters and when the services no longer have a use for them they can be made available to State and local governments.

At any rate, they could well be there for several years until a determination is made that they are no longer needed.

Senator YOUNG. I guess sometime they could find an engine or something usable.

General ROBINSON. Exactly, sir. Even the instruments themselves, and other components.

Chairman MCCLELLAN. I was mistaken when I said we discovered these things in the committee. It was in a subcommittee investigation that we uncovered a lot of problems in the disposal of surplus property abroad. That was an absolute fraud. Material and goods that had never been uncrated were rolled in with a bunch of other stuff and sold as junk. Have we gotten control of that situation now?

General ROBINSON. Yes, sir, we made a lot of progress with that situation.

Chairman MCCLELLAN. You know what I am talking about, then.

General ROBINSON. I know exactly. Part of the reasons for the decision that was made to establish the property disposal service as an in-

tegrated management function under the Defense Supply Agency resulted from your investigation, sir. As a matter of fact, as soon as the decision was made and the defense property disposal service was organized, your report was required reading for every senior member of that command, including every property disposal officer.

We are very diligent to assure through our Inspector and Auditor Generals and our regional commanders that everything possible is being done to prevent that type of thing from happening, and to try to eliminate it where it was already happening. I think we have made a great deal of progress.

Chairman McClellan. I can understand that in an organization as large as our military establishment, some things will go wrong occasionally, and we cannot have perfect administration. But in some areas the abuses were so flagrant, there was no excuse for the higher officials not detecting them and taking action. In my judgment it was absolutely gross neglect that it was not done earlier.

You may proceed.

General Robinson. Our workload in the Defense Supply Agency is imposed on us by the military services. In other words, we do not have any control over this workload. We respond to their requisitions. We respond to their request for service. We accept their surplus property when it is turned in. Therefore, as a service organization we do not create any of our own workload.

Our workloads have remained fairly high even though the Armed Forces have reduced. There are several reasons for this. First, all the services have seen fit to assign us more contracts for administration. I think this comes about for two reasons. No. 1, I think we are doing a good job in adminstering the service contracts. No. 2, I think more contracts are being made, but at a smaller dollar value per contract. This partially explains the increase in our contract administration work.

Second, there is a greater reliance on the Defense Supply Agency for support to the military forces at a more direct level. For example, 1 or 2 years ago we would get requisitions from depots in the U.S. Army. Today we are getting requisitions direct from the direct support units, and these depots are bypassed, and the inventories have been eliminated. But it results in DSA getting more requisitions to handle, so our workloads have stayed high even though the Armed Forces as a whole have reduced.

DOLLAR VALUE OF CONTRACTS

Chairman McClellan. How many contracts do you have for fiscal years 1974, 1975, and 1976 and what is the total dollar value of these same contracts?

General Robinson. During fiscal year 1974 we administered 208,000 contracts with a dollar value of $52 billion. For both fiscal year 1975 and fiscal year 1976 we have estimated 218,000 contracts with a dollar value of $53 billion. This does not include some 57,000 contracts for which we have partial responsibility.

Chairman McClellan. Hasn't the demobilization after the Vietnam war added to your workload?

General Robinson. That had something to do with increasing our property disposal activity.

Chairman McClellan. How does your personnel situation compare with last year's? What are you asking for?

General Robinson. Our personnel this year are reduced from last year, Mr. Chairman.

Chairman McClellan. Military spaces?

General Robinson. The military have reduced, yes, sir. We are reducing 72 spaces in the military between fiscal year 1974 and fiscal year 1976. Military spaces represent only about 2 percent of our workforce.

Chairman McClellan. What about your civilian personnel?

General Robinson. 1,444 spaces reduced over last year.

MILITARY AND CIVILIAN STRENGTHS FOR FISCAL YEAR 1974–76

Chairman McClellan. What are your military and civilian strengths for fiscal year 1974–76?

General Robinson. At the end of fiscal year 1974 we had 1,205 military personnel and 54,015 civilian employees. For fiscal year 1975 we estimate 1,133 military and 53,278 civilians. By end of fiscal year 1976 we will reduce to 1,086 military and 51,834 civilians.

Chairman McClellan. Explain why you need that many military personnel and why they cannot be civilians.

General Robinson. Military personnel are utilized by DSA only in selected management and specialized skill positions for successful accomplishment of the Agency's mission and also to conform to governing Defense Department policies. Each military position must meet one of the following specific criteria.

1. Require utilization of military training, judgment, and recent experience to assure that DSA programs are effectively directed toward military requirements and applications;

2. Provide DSA experienced personnel for key positions in the military services logistic systems to further optimum effectiveness of the total Defense logistics system;

3. Enhance the effectiveness of military members for assuming responsibilities incident to logistics operations in future combat-related assignments; or

4. Further the maintenance of existing skill levels and training in advanced logistics concepts and techniques in support of career development and the military logistician rotation base needed by the Defense Establishment.

DSA positions that do not meet this criteria are manned by civilians.

PURCHASE OF OIL PRODUCTS

Senator Young. You buy oil products for all the services?

General Robinson. Yes, we do.

Senator Young. How much a year does that amount to in petroleum products?

General Robinson. We buy about $2.7 billion worth a year, sir.

Chairman McClellan. $2.7 billion?

General Robinson. Yes, sir. That is what we expect to be buying this year.

Senator Young. Do you buy that on a bid basis?

General Robinson. No, sir. Prior to the embargo we were buying all of our fuel competitively, including buying in spot markets, and

we were getting very good prices doing it that way. However, with the onset of the embargo and the establishment of the Federal Energy Administration, allocations came into being. So we buy on a negotiated basis from those companies and from those refineries that are allocated to provide us fuel by the Federal Energy Administration.

Senator YOUNG. The different proposals in Congress would increase the price of petroleum products, diesel fuel, gasoline, all the way from 10 to 30 cents a gallon. If this would affect you, would you have to come back for a supplemental?

General ROBINSON. If this went into effect, we would indeed need more capital in our stock fund to procure it, and the services would need more O and M dollars to buy it from us.

Chairman MCCLELLAN. You say then you do not have competitive bidding in the procurement of petroleum for the services?

General ROBINSON. No, sir. Not at this time.

Chairman MCCLELLAN. If the allocation is made to a given company to supply the military, you are pretty much at their mercy for the price you have to pay, aren't you?

General ROBINSON. No, sir. We would prefer to go back to competitive bidding at the earliest possible date, and we are planning to do so as soon as we can. However, although the companies are directed to allocate fuel to us at a price not to exceed a ceiling, we negotiate with these companies, and after very lengthy negotiations bring this price down as far as possible.

We have recently completed a round of negotiations whereby we established what the market price should be, and overall this was considerably below what the first offers were. So as a result of these negotiations in the most recent buy, we reduced the price approximately $32 million below that which we would have paid——

Chairman MCCLELLAN. $32 million. What was the sale price?

General ROBINSON. Over half a billion, sir.

Chairman MCCLELLAN. $32 million over a half a billion. Let me ask you frankly: are you able now to protect yourself against excessive charges for petroleum under the present operation?

General ROBINSON. Yes, sir, I think we are.

Chairman MCCLELLAN. You don't think you are getting badgered by any companies?

General ROBINSON. No, sir. I do not. If we cannot get the price down into the market range we want, sir, we will not buy from that company and we will have to take other steps.

Chairman MCCLELLAN. Although you do not set it out to competitive bids, there is more than one company which can sell to you. Is that right?

General ROBINSON. Yes, sir. But, not more than one company from one location from one refinery. However, in a sense, by getting all the sales data which we have been insisting on getting from these companies, we are able to compare the sales they have made to other people with what they want to charge us.

In addition, there is very comprehensive data available in various bulletins as to what other people are paying for fuel throughout the country. And so in a sense we are comparing what their offer is with what other people are paying for fuel, and what we think it should cost.

Chairman McClellan. So you do feel that you are able to protect the Government?

General Robinson. Yes, sir, I do.

Chairman McClellan. And get reasonable, fair prices.

General Robinson. I do, sir, considering today's market place.

Senator Young. What are you paying for gasoline and jet engine fuel now?

COST OF REFINED PRODUCTS TO DSA

General Robinson. Yes, sir. I think it is about 32 cents a gallon, sir, for JP–4, which is a jet fuel that is used by the Air Force and which is the biggest part of our fuel dollar. I can supply the information for the record.

Chairman McClellan. Please do.

[The information follows:]

The table below lists prices the Defense Supply Agency is paying for refined products only. It represents the weighted refined product cost for military fuel for the period 1 January through 30 June 1975. This does not include the cost of transportation, handling losses, or services (storage) expenses. The Defense Supply Agency does not purchase or supply crude oil to any source.

COST OF REFINED PRODUCTS

Refined product	Military designation	Unit of issue	Refined product cost (only)
Jet fuel (Air Force)	JP4	Gallons	$0.30553
Aviation fuel (nonjet)	145	do	.35795
Motor gasoline	MG1	do	.34635
Jet fuel (Navy)	JP5	do	.31676
Diesel fuel (middle distillate)	DFM	do	.30115
Navy special (residual)	NSF	do	.27628

OFFSHORE AND DOMESTIC OIL PRICES

Senator Young. Is there a different price for oil purchased and used offshore as opposed to domestic oil? Please provide this information for the record.

General Robinson. Yes, sir, a different price is paid for offshore refined products as compared to domestic refined products. I will furnish comparative prices for the record.

[The information follows:]

COMPARISON OF OFFSHORE AND DOMESTIC WEIGHTED REFINED PRODUCT COST FOR MILITARY FUEL PERIOD: JANUARY 1 THROUGH JUNE 30 1975

[Cost of transportation, product losses, storage and services excluded]

Refined product	Military designation	Unit of issue	Refined product cost (only)	
			Domestic	Overseas
Jet fuel (Air Force)	JP4	Gallons	$0.30074	$0.32582
Aviation fuel (nonjet)	145	do	.35578	.57581
Motor gasoline	MG1	do	.30371	.35166
Jet fuel (Navy)	JP5	do	.30467	.35714
Diesel fuel (middle distillate)	DFM	do	.28235	.30873
Navy special (residual)	NSF	do	.27561	.27673

PURCHASE OF HIGH OCTANE FUELS

Senator Young. Are high octane fuels purchased mostly from foreign sources or domestic sources?

General Robinson. It depends on the product. I will provide our sources by product for the record.

[The information follows:]

PERCENTAGE REFINED PRODUCT PROCUREMENT FOR MILITARY FUEL (BY SOURCE) PERIOD: JANUARY 1 THROUGH JUNE 30, 1975

Refined product	Designation	Unit of issue	Refined product procurement percent	
			Domestic	Overseas
Jet fuel (Air Force)	JP4	Gallons	80.9	19.1
Aviation fuel [1] (nonjet)	145	do	99.0	1.0
Motor gasoline [1]	MG1	do	11.1	88.9
Jet fuel (Navy)	JP5	do	76.9	23.1
Diesel fuel (middle distillate)	DFM	do	28.7	71.3
Navy special (residual)	NSF	do	39.9	60.1

[1] Higher octane fuels.

Senator Young. You do not have to pay the Federal tax?

General Robinson. No, sir.

PAYMENT OF OIL IMPORT TAX BY DOD

Senator Young. Will the Defense Department be required to pay the oil import tax if enacted into law?

General Robinson. Yes. Presidential Proclamation No. 3279, as amended "Imports of Petroleum and Petroleum Products," states in section 1(c), "No such department, establishment, or agency shall be exempt from the fees . . ."

DECREASE IN WORKLOADS

Chairman McClellan. All right. You may proceed.

General Robinson. We had hoped our work load would decrease, sir. Last year we budgeted for a decrease. However, when we appeared before this committee in May of last year we said we had underestimated it by 1.8 percent. As it actually developed our work load last year turned out to be 5-percent higher than our original estimate. So we feel, however, now that our work loads—

Chairman McClellan. How was that met, by transferring funds?

General Robinson. No, sir. That was met by increased productivity among our people, by trying to improve methods, We have some backlogs of work, especially in some of our depot operations which we hope we can catch up with. Their work load is now leveling off, but increased mechanization, better use of the computer, better improvement——

Chairman McClellan. You said you underestimated the cost? You had to make that up?

General Robinson. No, sir. We underestimated the work load.

Chairman McClellan. Very well.

General Robinson. We see no change now in the work load for fiscal year 1976 and expect a level workload. We are asking, sir, for $820.9 million in O. & M., and this is a net increase of $32 million over fiscal year 1975.

Chairman McClellan. What part of that is attributable to inflation—increased salaries and so forth?

General ROBINSON. $23 million of the $32-million increase, sir, is for annualizing civilian pay increases and providing within grade step increases and for employee compensation benefits. So out of the $32 million, $23 million is attributable to that type of cost.

Chairman MCCLELLAN. What is the other $9 million?

General ROBINSON. About $10 million is attributable to mission transfers. Mainly this has been in the transfer of fuel terminals to DSA from the Air Force incident with our takeover of responsibility for inventory management of fuel.

Chairman MCCLELLAN. That represents the increased responsibilities that have been placed on you; is that right?

General ROBINSON. Yes, sir. And the Air Force had previously run these facilities by contract. Now we are going to finance these facilities which will be holding the fuel that we are responsible for.

Chairman MCCLELLAN. All right. Proceed.

General ROBINSON. In the transition appropriation, sir, we are not starting any new programs; we are merely extending the rate of requirement from fiscal year 1976.

PROCUREMENT

Our procurement request, Mr. Chairman, is for $12 million, which is $2 million less than our fiscal 1975 program, and essentially this is for replacing equipment that has reached the end of its useful life according to the criteria. This would be material handling equipment, fork lifts and the like.

We are asking, sir, for $15 million in the research and development appropriation to finance our Defense Documentation Center operation which is the function that I mentioned earlier wherein we store and respond to requests for technical data on research and development projects to the DOD community and other authorized users.

In addition, we award contracts for information analysis centers. Of the $15 million, we are asking for $2.9 million for that function. These centers provide in various specialized areas research and development information, technical data to the laboratories, and other authorized users of the military service at their request.

DEFENSE STOCK FUND

Finally, sir, we are asking for some Defense Stock Fund dollars. The Defense Stock Fund is the working capital fund which finances our procurement operations. This is a revolving fund which we use to procure material which we store or issue directly to customers. They pay us out of their operating appropriation, or O. & M. appropriation. This goes back into the Defense Stock Fund to permit us to replenish our stocks, and the stock fund is designed to operate on a break-even basis, which has usually been the case.

It is not necessary to request additional funds each year. It has been the case in every year except two that we have not had to request additional funds. However, in this particular year we will have to. I think there were 2 years, in 1967 and 1968, when the rapid buildup for Vietnam was taking place that we did have to request some additional money.

Chairman MCCLELLAN. What necessitates the present request for additional funds?

General ROBINSON. We have two reasons that we need to request it, sir. One is to buy war reserve material that we can stock as a part of the general war reserve. Our deficiency at the present time—this would be in such items as clothing, repair parts, electronic items, and the like—our total deficiency for satisfying the services general war reserve requirement is about $600 million.

In this appropriation we are asking for $100 million, one-sixth of that, sir and the reason we need the cash augmentation is that this material will not be sold. This material will be procured and put on the shelf and would be maintained for general mobilization reserve purposes. The requirements are generated by the military services. They are reviewed thoroughly. In many cases they are challenged, and they must be validated by the military services. We want to begin to correct the deficiency by financing one-sixth of it in fiscal year 1976.

Chairman MCCLELLAN. Will this material deteriorate?

General ROBINSON. No, sir. First of all we would put it in with our other stocks. We rotate this material with additional stocks on hand.

These dollars would also not be used to fund any materials which have a short shelf life. The procurement rules we establish would not permit us to buy any of that type material.

Generally speaking, it would be rotated with our other stocks.

Another portion of this request, sir, is to augment our reserve of petroleum by 10 million barrels. The purpose of this is to provide a protection against any supply interruption in the future—which could happen.

PETROLEUM RESERVES

Chairman MCCLELLAN. Ten million barrels. That doesn't seem to be much of a reserve. What is the current inventory of petroleum reserve?

General ROBINSON. Our reserve today is approximately [deleted] million barrels.

Chairman MCCLELLAN. You are going to increase that?

General ROBINSON. To increase that to [deleted] million as a protection against any kind of interruption in the supply of petroleum, which would permit our service to continue to operate [deleted] until we could make other arrangements to get the oil flowing again.

Chairman MCCLELLAN. At normal peacetime?

General ROBINSON. This would be at normal peacetime rates, yes, sir.

Chairman MCCLELLAN. During normal peacetime operations, how long would that reserve last if it was not supplemented?

General ROBINSON. That would be——

Chairman MCCLELLAN. How long would it last? You have just begun using it.

General ROBINSON. If I may, Mr. Chairman, the [deleted] million we have in reserve, our reserve now for war purpose only— so those rates would be at wartime consumption.

Chairman MCCLELLAN. You don't quite get my point. Suppose all sources were eliminated, and you had just this reserve of [deleted] million barrels. How long would it last for normal peacetime operations?

General ROBINSON. If we were permitted to use it for peacetime purposes?

Chairman MCCLELLAN. I don't know that you are. I am trying to get some perspective of what it amounts to.

General ROBINSON. We are using about [deleted] barrels a day at the present time.

Chairman MCCLELLAN. Then it would last about [deleted] days.

General ROBINSON. It would last about [deleted] days, sir.

Chairman MCCLELLAN. I would ask you again, do you regard that as an adequate reserve?

General ROBINSON. Yes, sir, we do for protection against interruption to supply. Also, [deleted] million as war reserve would be adequate as specified by the Joint Chiefs of Staff organization.

Chairman MCCLELLAN. If you had to go on a war footing, how long would it last?

General ROBINSON. It would last about [deleted] that time at wartime rates.

DENIAL OF INCREASES FOR PETROLEUM RESERVES

Chairman MCCLELLAN. What would be the impact of denying this increase for petroleum reserves?

General ROBINSON. We would not have any protection of our war reserves in the event of an interruption of supply. Also, it would defer by about [deleted] actions by the Department of Defense to obtain additional petroleum supplies from domestic sources. This means that [deleted] million more barrels of petroleum would be available for non-DOD domestic uses than would be the case if the request is denied.

Senator YOUNG. Do you get into the computer business, or does each service, or each agency deal directly with a computer firm?

General ROBINSON. Each service may for its own computers. I would only be dealing with the computer firms for the computers I need in the Defense Supply Agency. We do, however, run a program of trying to circulate to the services information as to available computers that the military services no longer need in order to try to get utilization out of these computers, but we have nothing to do with procuring computers for anyone other than ourselves.

Chairman MCCLELLAN. Proceed.

General ROBINSON. Mr. Chairman, this concludes my rundown of our requirements, and I will be pleased to respond to any further questions.

Chairman MCCLELLAN. Do either of you have further questions?

Senator INOUYE. No, sir.

QUESTIONS SUBMITTED BY SENATOR YOUNG

Senator YOUNG. I have only a few that I would submit for the record.

[The questions and answers follow:]

DEPOTS AND SUPPLY CENTERS

Senator YOUNG. How many depots and supply centers come under the cognizance of DSA?

General ROBINSON. The Defense Supply Agency operates 7 depots to receive, store, and issue materials and 6 supply centers to procure and manage inventory supplies of medical, clothing and subsistence, general, industrial, construction, electronics material, and fuel. The depots are located at Mechanicsburg, Pa., Memphis, Tenn., Ogden, Utah, Tracy, California, Columbus, Ohio, Dayton, Ohio, and Richmond, Virginia. Two supply centers are located at Philadelphia, Pa., one for medical, clothing and subsistence supplies and another for industrial

supplies. Three supply centers, including the depots, are located at Columbus, Ohio for construction supplies, at Dayton, Ohio for electronic supplies and at Richmond, Virginia for general supplies. The supply center for fuel is located at Cameron Station in Alexandria, Va.

DSA Maintenance of Facilities, Buildings and Equipments

Senator Young. How many facilities, buildings, and equipments does DSA have the responsibility for maintaining?

General Robinson. The Defense Supply Agency has real property maintenance responsibility for sixteen installations consisting of three depots, four supply centers, eight fuel support points, and an underground cave facility for industrial plant equipment. These sixteen installations include a total of 730 buildings with an approximate area of 38 million square feet, with normal utilities systems including heating, sewage treatment, water treatment and 165 miles of railroad and 150 miles of road. In addition, the eight fuel support points have bulk fuel storage capacity of approximately 6.0 million barrels, and 300 miles of pipeline. The total acreage for these sixteen installations is 4,945 acres. The remainder of DSA activities are located as tenants on installations of the military departments, or in leased space, or Federal Office Buildings managed by the General Services Administration.

Questions Submitted by Chairman McClellan

Chairman McClellan. I also have a few more. General, I think if you will respond to these few extras we'll insert them at this point in the record.

Thank you very much, gentlemen.

General Robinson. Thank you, sir.

[The questions and answers follow:]

Reserve Requirements in Stock Fund

Chairman McClellan. What were the reserve requirements in the stock fund for the past five years? What caused the increase this year? Provide a detailed explanation for the record.

[The information follows:]

DEFENSE STOCK FUND WAR RESERVE BUDGET ESTIMATES FISCAL YEAR 1972 THRU FISCAL YEAR 1976

[In millions of dollars]

	Fiscal year				
	1972	1973	1974	1975	1976
General mobilization reserve acquisition objective.	1,863.6	1,014.6	1,071.2	1,271.9	1,370.6
Preposition war reserve requirements	0	0	587.1	587.1	[1] 596.7
Total	1,863.6	1,014.6	1,658.3	1,859.0	[1] 1,967.3

[1] Bulk petroleum; not in the Defense stock fund prior to fiscal year 1974.

The significant increase in DSA FY 1976 War Reserve Budget is the result of including Prepositioned War Reserve Requirements for Bulk Petroleum in accordance with the responsibility assumed by the Defense Supply Agency on 1 July 1973 as the Integrated Materiel Manager for Bulk Petroleum. The increase in the General Mobilization Reserve Acquisition Objective is attributable to price increases for the items included in the DSA War Reserve Program.

Travel Increases

Chairman McClellan. With reference to your travel request, is the actual volume of travel to be performed increasing or merely the cost? If travel itself is increasing, explain the need.

General Robinson. There is a small increase of $220,000 in travel costs. This increase is for additional travel primarily related to new mission assignments to

the Defense Supply Agency, such as Worldwide Integrated Management of Subsistence.

PROPERTY MAINTENANCE PROGRAM

Chairman MCCLELLAN. What is the real property maintenance program for DSA in FY 1976, compared with the two previous fiscal years and what was the backlog of essential maintenance in those same years?

General ROBINSON. In FY 1974 the real property maintenance program was $15,348,000 and at the end of that year the backlog of maintenance and repair totaled $6,057,000. Our initial program for FY 1975 was for $10.7 million with an increased backlog to $10.8 million. The President's proposal for Rescission reduced the program to $9.7 million and increased the backlog to $11.8 million. For FY 1976 we have submitted a program for $11.9 million with a backlog of $10.6 million.

DATA BASE INTEGRATED MANAGEMENT SYSTEM

Chairman MCCLELLAN. For the record, explain the Data Base Integrated Management System, what it is, how it works, and what it replaces.

[The information follows:]

The objective of the Mechanization of Contract Administrative Services (MOCAS) Data Base Management System (DBMS) project (formerly the Data Base Integrated Management System (DBIMS)) is to:

1. Evolve from the current MOCAS ADP system which is a magnetic tape sequential system to an on-line system utilizing remote terminals for inputting, updating, retrieving and outputting data.

2. Provide an Integrated Data Base for furnishing Regional Functional Managers (users) with the accurate and timely data needed for effective performance of their mission.

3. Provide a viable MOCAS system for interfacing with Department of Defense systems, as required.

4. Develop a data system environment that will reduce the programming effort for responding to changes required to meet new or modified mission needs.

DBMS is a generic term in Automated Data Systems development. It refers to a "state-of-the-art" concept that views data as belonging to the entire system rather than to individual programs as it has in the past. A major advantage in the DBMS approach is that data can be accessed by many different keys rather than by a few specific keys. The result is a more responsive delivery of information to the user without a large amount of extraneous data attached. Another advantage of DBMS is that a great amount of redundance in data can be eliminated.

There are, however, ADP costs and procedural changes associated with a DBMS. For example, there is more systems ADP involved in keeping the cross-reference indices updated. The procedural changes amount to a complete revision of past methods of handling data by the Functional Manager. Because of these significant impacts and because the Data Base approach is relatively new, the Defense Supply Agency is evolving into the Data Base Environment in a series of carefully measured steps which include analysis, testing and installation in each of three evolutionary implementation phases. The DBMS will replace the present MOCAS tape sequential system.

The ultimate objective of the system is to provide operating efficiencies and reduce costs. We are confident that the DBMS approach offers great potential but, as indicated, we intend to proceed step by step and test the results as we go.

COST ACCOUNTING STANDARDS

Chairman MCCLELLAN. Provide measures associated with the Cost Accounting Standards workloads planned by Defense Supply Agency. What is the total number of contracts subject to Cost Accounting Standards. Explain what contractor profit centers are and how much they increase, in FY 76.

General ROBINSON. (*a*) Measures employed in workload planning were based on estimates of:

(1) The number of Disclosure Statements received from contractors subject to Cost Accounting Standards requirements and the reviews made as to their adequacy.

(2) The number of noncompliances found in contractors' policies and practices.
(3) The number of price adjustment proposals received and analyzed.
(4) The number of negotiations required to resolve noncompliances and price adjustments.
(5) The number of Armed Services Board of Contract Appeals (ASBCA) cases that will have to be defended.
(6) The number of reports required by the program.
(7) The number of Regions that had to be manned to implement the program.

(*b*) DCAS has approximately 200 CAS-covered contractors. However, because each contractor can have a different number of profit centers, there were 1,100 profit centers in FY 75. The number of CAS-covered contracts in each profit center at any point in time can vary, from one to dozens.

(*c*) A profit center is defined by the CAS Board as the smallest organizationally independent segment of a company which has been charged with profit and loss reponsibilities.

(*d*) It is expected that CAS-covered profit centers will increase by 2,430 to a total of 3,530 in FY 76 and that the number of CAS-covered contractors will increase to approximately 1,800.

Defense Communications Agency

STATEMENT OF LT. GEN. LEE M. PASCHALL, USAF, DIRECTOR, DEFENSE COMMUNICATIONS AGENCY

ACCOMPANIED BY:

J. E. TIMMINS, JR., COMPTROLLER
B. E. MORRISS, ASSISTANT DEPUTY DIRECTOR, NATIONAL MILITARY COMMAND SYSTEMS TECHNICAL SUPPORT
ESTIL HOVERSTEN, PRINCIPAL DEPUTY TO ASSOCIATE DIRECTOR, TECHNOLOGY
RAYMOND EAGAN, BUDGET OFFICER
C. HERBERT LUCERO, DEPUTY COUNSEL

PREPARED STATEMENT

Chairman McClellan. Our next witness is General Paschall for Defense Communications.

General Paschall, you are the Chief of the Defense Communications Agency?

General Paschall. That is correct.

Chairman McClellan. Do you have a prepared statement?

General Paschall. I have a prepared statement which we can insert in the record.

Chairman McClellan. Let it be inserted in the record, and you may highlight it.

[The statement follows:]

Mr. Chairman and Members of the Committee:

It is a pleasure to appear before you to present the budget request of the Defense Communications Agency (DCA) for FY 1976.

Budget Summary

The Defense Communications Agency request for FY 1976 is $114.1 million in three appropriations as shown on Chart 1. My statement will explain the highlights of the request which has been covered in detail in the justification material.

Operation and Maintenance

Operation and Maintenance funds in the amount of $77.4 million are requested to meet the operating costs of the DCA Headquarters, and field activities through which DCA carries out its operational responsibilities in support of the Defense Communications System (DCS) and the Worldwide Military Command and Control System (WWMCCS) including the National Military Command System (NMCS). For the transition period beginning July 1, 1976 and ending September 30, 1976, $19.3 million is requested.

Operating the DCA Headquarters requires $13 million with about $10 million for payroll costs. As a result of continued reductions in the number of Headquarters personnel, DCA has offset most of the price increases in other operating expenses to hold Headquarters funding at about the same level for the three fiscal years.

To provide for the operating expenses of the DCA field activities in the communications area, we are requesting $31.7 million which is an increase of $6 million over FY 1975. Approximately half of this increase results from an accounting transfer from the Research, Development, Test and Evaluation appropriation to Operation and Maintenance for an

organizational change. Most of the remainder of the increase is due to increases in the cost of communication leases, rent, utilities and other goods and services.

For operation of the National Military Command System Support Center, we are requesting $21.0 million which is an increase of $1.9 million over FY 1975. More than half of this increase will provide for the initiation of efforts to adapt the existing computers and software to improvements being made in the National Military Command System (NMCS), particularly with regard to the NMCS Information and Display System (NIDS) and the airborne command post. The remainder of the increase is pay for DCA people supporting the NMCS, and the increasing costs of leasing, maintenance, and other goods and services.

For support of the Joint Technical Support Activity (JTSA) which provides for centralized technical ADP support to the Joint Chiefs of Staff and the WWMCCS commands, we are requesting $10.9 million, which is an increase of $2.9 million over FY 1975. More than half of this increase is directly attributable to the need to develop and modify software in response to changes requested from the worldwide computer sites in order to meet the needs of the WWMCCS community. In FY 1976 we will implement more than twice as many approved system changes and improvements as we did in FY 1974 and FY 1975 combined. The rest of the increase will be applied to cost increases directly relatable to the growth in size and complexity of the system.

Procurement

The FY 1976 Procurement request is $6.9 million. The major portion, $4.8 million, is requested to procure equip-

ment in response to tasking by the Joint Chiefs of Staff to increase the capacity and capability of the WWMCCS Automatic Data Processing Systems supporting the JCS and the National Command Authorities.

About one-half of the $4.8 million request for WWMCCS is to procure automatic data processing equipment for the National Military Command System Support Center and the Alternate National Military Command Center. Over the past few years the number of ADP computer applications and the number of ADP users in the Office of the Joint Chiefs of Staff and Office of the Secretary of Defense have grown considerably. This growth is now overloading our ability to be responsive, both on a day-to-day operational basis and in times of crisis. The burden on existing hardware has reached a point which now requires action to expand the size and capabilities of the computers. The increasing number of on-line users is expected to increase by 50% over the next year and expansion to the hardware is vital to meet the responsiveness which an efficient and effective system should provide.

The second primary procurement in the WWMCCS area relates to the JCS requirement for the capability to rapidly access, integrate and display dynamic operational and intelligence data for crisis management. To satisfy this requirement, our request includes $1.9 million to procure processing and display hardware for a model system at the National Military Command Center.

The balance of the WWMCCS funds will be used to procure additional equipment for the computer system of the Joint Technical Support Activity (JTSA) to assure that it has the capability to emulate any WWMCCS ADP configuration. The objec-

tive is to insure the ability to duplicate any reported WWMCCS software incident which can then be studied and corrected. The centralization of this technical support at JTSA will enhance resolution of operational problems at the WWMCCS ADP sites.

The remainder of the DCA request is to procure items costing less than $500 thousand each to replace and modify obsolescent equipment used by DCA communications activities. DCA has no procurement request for the transition budget period.

Research, Development, Test and Evaluation

The RDT&E requirements for FY 1976 are $29.8 million and those for the transition period $7.9 million which is approximately equivalent to an additional fiscal quarter at the FY 1976 rate. Since we are not expecting any major project completions in FY 1976 and are not planning major new starts during the transition period, I will confine my remarks concerning cost comparisons to changes between FY 1975 and FY 1976 only.

Defense Communications System

The Defense Communications System (DCS) and the Defense Satellite Communications System (DSCS) provide the essential command and control communications used by the National Command Authorities (NCA) and Department of Defense (DoD) to control U.S. Forces worldwide. The RDT&E programs which support the DCS and DSCS have the end goal of correcting current deficiencies and providing a sound system engineering basis for the future evolution of these systems. Major deficiencies exist in the following areas: (1) the quality and quantity of secure voice service; (2) the reliability and security of European transmission facilities; (3) the capability to support interactive data communications for computer

communications; (4) the ability to monitor and rapidly control both the terrestrial and satellite communication systems; (5) the level of survivability. The RDT&E support requested will allow DCA to make progress in correcting each of these deficiencies. This support is contained in two program elements - DCS Research and Development and DCS Test and Evaluation.

Defense Communications System Research and Development

The FY 1976 requirement for the DCS R&D Program is $9.7 million. Although this is lower than FY 1975, it does represent some increase in technical effort due to the previously mentioned accounting transfer from the R&D to the O&M appropriation.

The DCS R&D Program is divided into four basic parts. The first part which accounts for about one-half of the DCS R&D Program supports major DCS telecommunication projects. These projects are aimed at reducing O&M costs as well as correcting the deficiencies previously noted. This R&D effort will delineate concepts and define techniques for use in: (1) an expanded and improved secure voice system; (2) an interactive data network to meet computer communication requirements; (3) a conversion to digital transmission as part of European transmission upgrade; (4) the initial implementation of a responsive control system for the DCS and DSCS to enhance their flexibility and availability; and (5) the development of engineering design criteria to ensure adequate DCS network survivability to fulfill its mission.

Another quarter of the DCS program consists of system oriented studies and associated technology developments which identify and provide insight on new projects needed to satisfy evolving longer range requirements.

This activity also supports the transition planning effort that guides the various telecommunication projects to ensure an orderly evolution toward the desired future DCS.

The third part of the DCS R&D program supports the Military Satellite Communications Systems Office in its responsibility to formulate and evolve an overall architecture for all military satellite communication systems. The FY 1976 request of $1.4 million will be used to undertake conceptual analysis and planning of a general purpose multi-frequency satellite capability to initiate integration and transition planning, and to assess various technology areas and earth terminal survivability approaches.

The remainder of the DCS R&D program is concerned with modification and improvement of the near-term system. The main activities are concerned with continuing efforts to solve interface problems and facilitate interoperability and compatibility of the DCA with the NATO integrated communication system and studies concerned with near-term improvements to the survivability of the DCS.

Defense Communications System Test and Evaluation

The FY 1976 requirement for the DCS Test and Evaluation (T&E) program is $3.9 million. The major T&E activity is the High Altitude Electromagnetic Pulse (HEMP) project. These funds support the effort necessary to obtain timely design data for correcting current DCS HEMP vulnerabilities and to prevent HEMP design deficiencies in developmental programs. Specific FY 1976 HEMP survivability activities include field test of an AUTOVON switch, assessment of secure voice equipment and satellite ground terminal vulnerability, and preparation of intersite cabling design practices. The remaining resources in this program element, $0.3 million, will be used for

testing and evaluating selected commercial equipment to determine its applicability and potential use in meeting DCS requirements. Funding responsibility for this newly assigned activity has been transferred to DCA from the military departments by OSD.

Command and Control Systems

DCA RDT&E responsibility for command and control systems is contained in three distinct program elements - National Military Command System - Wide Support, Minimum Essential Emergency Communications Network, and Worldwide Military Command and Control System - Joint Technical Support Activity.

National Military Command System - Wide Support

The National Military Command System (NMCS) is the priority component of the Worldwide Military Command and Control System (WWMCCS) designed to directly support the National Command Authorities (NCA). This RDT&E effort provides the architecture, system engineering and technical support necessary to insure that improvements to the NMCS are implemented in a logical time-phased sequence to meet the requirements of the NCA.

In FY 1976 $4.5 million is required for this RDT&E program, a slight decrease from FY 1975. Effort in this period will focus on the refinement of the preliminary NMCS architecture developed in FY 1975. A transition plan will also be initiated to guide the planning, programming, budgeting, engineering, integration and implementation of NMCS improvements required to realize the planned 1985 NMCS architecture. Engineering support will continue to insure adequate interface and interoperability of the airborne communications terminals with the rest of the NMCS. Improvements

to the Washington Area Secure High Speed Facsimile System (WASHFAX) required to meet general war and crisis management requirements will be identified. Planning to develop the methodology and analytic tools for performance evaluation in WWMCCS/NMCS exercise or operating environment will be conducted. Specific operational tests and design oriented experiments will be developed with the goal of relating the system evaluation and system engineering efforts and evaluating the potential of candidate WWMCCS/NMCS improvements.

Minimum Essential Emergency Communications Network

The Minimum Essential Emergency Communications Network (MEECN) is an evolving network of diverse, weapon systems oriented communications assets designed to transmit Emergency Action Messages to U.S. Forces deployed worldwide under all emergency defense conditions. This program provides the system engineering necessary to ensure an operationally and technically integrated and survivable MEECN.

The $4.9 million requested for this program in FY 1976 represents a small decrease from FY 1975. Exploration of the two-way survivable communications capability needed to implement new strategic options and major efforts in communications security analysis and planning will be continued. System performance sensitivity to increasing threats, including the effects of electromagnetic pulse will be investigated. Planning will be conducted for integration of new satellite communications capability and a compression and security device called the MEECN Message Processor. Performance and survivability assessments will be made of potential systems which could be integrated into MEECN. An extensive test and evaluation program will emphasize new very low frequency/low frequency systems. Development of a highly transportable

and flexible graphics capability in support of the National Command Authorities (NCA) will be conducted.

Worldwide Military Command and Control System - Joint Technical Support Activity

The Joint Technical Support Activity (JTSA) provides centralized technical support to the JCS, the Services, Defense Agencies and other activities that comprise the Worldwide Military Command and Control System (WWMCCS) standard Automatic Data Processing (ADP) community.

For FY 1976, $6.8 million are required, an increase of $3.2 over FY 1975. The major increase is in the Prototype WWMCCS Intercomputer Network (PWIN) project for which two-thirds of the JTSA RDT&E funds are programmed. These funds are required to expand PWIN from 3 to 6 nodes, add additional software capabilities, perform operational experiments, and investigate new hardware/software architectures which facilitate networking and security. The expansion will allow more realistic operationally oriented experiment to be performed.

The remaining funds are needed primarily to accelerate research on the critical problem of ADP security. Efforts on the multilevel security problem will include software security development to provide some near-term capability work in the requirements and threat assessment areas, the initiation of the development of a prototype security monitoring system, and security testing.

Mr. Chairman, this concludes my prepared remarks. We are ready to answer your questions.

CHART 1

SUMMARY OF DCA BUDGET

[In millions of dollars]

Appropriation	Fiscal year— 1974	1975	1976	Transition
Operation and maintenance	60.1	66.1	77.4	19.3
Procurement	1.4	3.6	6.9	0
Research, development, test, and evaluation	18.1	26.5	29.8	7.9
Total	79.6	96.2	114.1	27.2

INTRODUCTION OF ASSOCIATES

Chairman McCLELLAN. Do you want to introduce the gentlemen with you, for purposes of the record?

General PASCHALL. Mr. Timmins on my left, my comptroller. Dr. Hoversten, on my right; he manages my R. & D. program, and is my associate for technology. Mr. Morriss, on his right, who is with the command and control aspect of DCA. Mr. Lucero, deputy counsel, and Mr. Eagan, budget officer.

Chairman McCLELLAN. Very well. You may proceed.

MANAGEMENT OF DEFENSE COMMUNICATIONS SYSTEM

General PASCHALL. Defense Communications Agency, which I head, has two principal roles. The first of these is to manage the Defense Communications System, which is the worldwide long-distance communication system of the Department of Defense. It is operated and maintained by the three military services.

The Defense Communications System itself consists of about 750 defense communications stations located in about 68 countries around the world.

The second major role that we have, deals with supporting the command and control actions of the Washington area, including the Joint Chiefs of Staff. We currently have an activity known as the NMCS Technical Support Directorate which provides technical support to the National Military Command Center in the Pentagon, the alternate at Fort Ritchie, and the airborne command post based at Andrews.

We have other command and control functions as well. We operate the computer center in the basement of the Pentagon which supports the Joint Chiefs of Staff and the Secretary of Defense's Office.

We have another activity located in Reston which provides standard computer software for all of the worldwide military command and control system computers, 35 of them, located around the world.

Roughly half of my effort now is directly supportive of command and control, and the other half directly supports the management of the Defense Communications System.

The O. & M. appropriation request for the DCA this year has increased by $11.3 million over that estimated for fiscal 1975, for an increase of about 17 percent.

Of that $3.4 million is an accounting transfer. In other words, we are transferring certain funds from R. & D. to the O. & M. account.

The increase of $3.6 million are direct cost increases to doing business. People, facility rentals, and such as that.

The increase of $4 million in O. & M. represents expanded requirements, of which 80 percent are directly associated with the Agency's support of worldwide military command and control system, and is a reflection of the increased emphasis that the worldwide military command and control system is receiving by the Office of the Secretary of Defense.

The fiscal year 1976 procurement——

Senator YOUNG. Is your communications system entirely separate from the State Department and CIA and National Security Agency, tional Communications System.

General PASCHALL. They use part of our system. For example, the State Department's diplomatic telecommunication system uses our military communication satellite of the Defense Communications System to serve some embassies located in overseas areas. We supply some communications circuits to the National Security Agency. Other State Department activities also use our system, and all such systems are interconnected so that we can exchange communications among the State Department system as well as ours, all under the National Communications System wherein I wear another hat as a manager of the National Communications System.

Senator YOUNG. Are you reimbursed for such service?

General PASCHALL. Some part of our services are paid for by reimbursement, such as the State Department's use of Autovon or Autodin. Other parts are not reimbursed.

The President, in 1962, established the National Communications System. The National Communications System requires that the resources of all communications systems of the Federal Government are made available to others on an availability-of-assets basis.

Senator YOUNG. Do they use different codes—like the State Department, do they have their own code but use your system?

General PASCHALL. In the cryptographic codes I believe you mean.

Senator YOUNG. Yes.

General PASCHALL. Yes, sir. Though in the Autodin system, for example, the message is encrypted by the system itself. We use the same kind of equipment. For example, we all use the same type of cryptographic equipment but use different keying cards.

Chairman MCCLELLAN. You may proceed.

General PASCHALL. Our fiscal 1976 procurement request is $6.9 million, of which, again, about 70 percent is for new equipment required to support the worldwide military command and control system—principally computers and terminal devices for use in the National Military Command Center. The remaining 30 percent, about $2 million, is required to replace obsolete or wornout equipment used by all the other activities of the Defense Communications Agency.

Our fiscal 1976 R.D.T. & E. fund request is for $29.8 million, and $7.9 million for the transition period.

Again, in fiscal 1975 our funds are about equally split between support of the Defense Communications System and support of WWMCCS. In fiscal 1976 about 55 percent of our dollars are in support of WWMCCS and reflects the increasing emphasis on insuring positive control of the military forces by the National Command Authority.

There are no new starts of significance in the R.D.T. & E. request. However at the project level in the Defense Communications System, R.D.T. & E. effort there is a small—potentially significant—shift in efforts toward those efforts which seek to find ways in the relatively near term to reduce the operating costs of the Defense Communications System.

That is a very rapid summary of my budget request and my mission.

I will be happy to respond to any additional questions the committee has.

Chairman McClellan. What did you say about new programs?

General Paschall. There are no new starts of significance in the R.D.T. & E. program.

REDUCING OPERATION AND MAINTENANCE COSTS

Chairman McClellan. Your statement indicates that the research and development is aimed at reducing operation and maintenance cost. Describe some savings that past efforts in research and development have enabled you to make.

General Paschall. The focusing of R. & D. specifically on O. & M. costs is a recent endeavor. Specific examples, therefore, are not abundant. However, I can briefly describe two existing examples where significant savings in O. & M. were realized. A cost-and-worth study completed in July 1973 identified potential cost savings in leased-operations cost of CONUS Autovon. This study was accomplished through the development of a highly sophisticated state-of-the-art computer program employing over 50,000 lines of programing, and over 100,000 lines of data. Follow-on implementation and survivability studies validated a two-step implementation program for removing Autovon switches. In fiscal year 1975 four switches are being removed and in fiscal year 1976 an additional six switches are scheduled for removal. The savings to subscribers from these actions are estimated to grow from about $87,000 in fiscal year 1975 to nearly $4 million in fiscal year 1981. Increased savings per year are due to basic termination liabilities being paid off.

In the other example, from 1965 to the present time R. & D. resources were used to develop simulation models for detailed analyses of the Autovon and Autodin networks. The R. & D. work averaged an estimated $200,000 per year with estimated O. & M. cost savings to subscribers in reduced trunking and improved service estimated at $2 to $3 million per year. The simulation models were developed and used throughout the years when the switched networks were being developed and expanded; hence the R. & D. work was indispensable in limiting O. & M. costs as network size and use grew to present levels. During this period the models were used to obtain engineering data on which to base critical cutovers, routing changes, and network augmentation. These models not only continue to have application on a day-by-day basis to Autovon and Autodin as these networks continue to change but are applied to other networks as well.

PERSONNEL REDUCTIONS

Chairman McClellan. What about personnel? Is there any reduction in personnel?

General PASHALL. Yes; there has been. Within the headquarters we reduced about 72 people over the past 2 years. That is almost 10 percent in DCA headquarters alone.

Chairman MCCLELLAN. That is the military.

General PASCHALL. That is military and civilian. The military reduction was about 18, and civilian reduction was about 54.

Chairman MCCLELLAN. What is the total personnel?

General PASHALL. I have worldwide about 3,000 people.

Chairman MCCLELLAN. Is that all?

General PASCHALL. Yes, sir.

Chairman MCCLELLAN. You could not reduce it much further and maintain efficiency, could you?

General PASCHALL. We intend to reduce it further, yes, sir.

Chairman MCCLELLAN. How much?

General PASCHALL. We are taking about 20 percent of our people out of DCA activities in Europe. In fact, all of the DCA activities will be reduced except for two. One is the Joint Technical Support Activity, which is the one that develops standard computer software for all 35 WWMCCS computer centers around the world, and the other is the National Military Command System Support Center, which is the big computer center in the Pentagon basement which supports the Joint Chiefs of Staff and OSD.

Also I have disestablished, or we are in the process of disestablishing, one headquarters activity that we had in Colorado Springs, and saving about half of the people associated therewith. The other functions are being moved.

However, there will be some offsetting increases, I recently was assigned two new missions. One is to become the World-Wide Military Command and Control System Engineer, and I do not yet have a price tag on the number of people required to do that since the charter is not fully defined, and I have recently acquired a mission to manage terminal devices for the data—the Defense Communications System data—networks upon the recommendation of the General Accounting Office, and as agreed by the Secretary of Defense.

Chairman MCCLELLAN. Give us some explanation of this transfer to operation and maintenance.

General PASCHALL. I mentioned that we did transfer $3.4 million. When the Defense Communications Engineering Center was started it was established by the combination of two separate elements in DCA. One was called the System Engineering Facility, and the other was the Defense Communications Engineering Office. For purposes of economy, as well as more systematic engineering approach, the two activities were combined.

The old engineering office had been financed from the O. & M. appropriation. The newer System Engineering Facility had been financed from the R. & D. accounts. Thus we had a single organization accounting for the people's efforts from two appropriations; very difficult to administer.

Then we further consolidated within the engineering center, and at that point in time it was appropriate to transfer the funding to O. & M., which we propose to do this year.

Chairman MCCLELLAN. What is this display system that you referred to?

General PASCHALL. That is NIDS. The National Military Command System Information Display System will be located in the basement of the Pentagon with the National Military Command Center. Its purpose is to provide the emergency action officers in the National Military Command Center with display devices, and with teletype or typewriter-type terminal devices so they can access the information that resides in the computers. This enables them to ask the questions: What do I have, how much, how many, and where?

Probably the most important part of this, however, is the fact that he will also be able to ask the intelligence data base. Operational data and intelligence data has tended to be separated by the need to protect or compartment intelligence information. With this, this system will enable the emergency action officer who has need for both kinds of information to gain access to that information on a question answer basis.

Chairman MCCLELLAN. What do you mean by "a model system" for processing and displaying hardware?

General PASCHALL. It is not really a model. It is an ideal, if you will, kind of thing. It is sort of a choice of words, I suppose. That is the terminal devices, and the communication lines, and the little minicomputers that will switch those communication lines among the terminals.

COMPUTER REQUIREMENTS

Chairman MCCLELLAN. Provide a general statement that explains why there is such an increasing demand for online computer capability.

General PASCHALL. The increase in demand for online computer capability by the NMCS users is a reflection of improvements in the state-of-the-art of the computer industry as a whole. A display terminal provides a more effective man-machine interface than the more traditional batch methods. It gives faster response and more efficient usage of analyst's time. Recent technological developments which have increased the speed of hardware in general, and decreased costs per unit of processing capacity have made these terminal capabilities possible.

NMCS users are primarily analysts who must retrieve, aggregate, and present data in response to command requests. They are highly skilled in their field, and have, over the recent years, become aware of the fact that the use of terminals is not only effective, but contributes to both the accuracy and the timeliness of response. The terminal allows the user a range of options, whereby he can evaluate alternatives to varying situations. The terminal allows him to retrieve and aggregate information from a data base, display it, evaluate the output and then repeat the process if required. This ability to respond in what is often called "real time" is necessary in answering the kind of questions posed to the NMCS.

COMPUTER APPLICATIONS

Chairman MCCLELLAN. What types of computer applications have been increasing?

General PASCHALL. We have seen major increases in application to operations and force planning which involves the use of models, simu-

lations and other mathematical tools to determine optimal forces and strategies. As we refine the planning process, these tools become more useful, and consequently are used more often. The ability to access these models and data bases online permits more complete and thorough analyses to be conducted thus placing greater demand on the computing system. Status reporting on units and equipment to determine overall national military postures has also increased. As force sizes have decreased, it becomes more important to have accurate information on those available.

Computer applications to message processing and communication systems have also greatly increased in both capacity and speed in recent years. Much of this kind of application depends upon the computer for routing, switching, and error control, and it is currently an area of heavy activity.

Application of computer support to general war planning and exercises has also been very active. This is particularly true of display systems for both command centers and terminal operations.

Chairman McCLELLAN. Senator Young, do you have any questions?

SATELLITE COMMUNICATIONS SYSTEM

Senator YOUNG. Please briefly describe the past and present developments on your satellite communications system.

General PASCHALL. Yes, sir. We began about 10 years ago in the defense communications system with a system called the initial defense communications satellite program, IDCS, that launched 26 satellites. These satellites are in a near synchronous orbit and they drift around the world. They were launched in clusters of seven.

We bought a number of Earth stations which were deployed around the world, of very limited capacity; a few channels. The interim satellites began to die out over a period of years, but five are still operating today, and we use them for a very limited purpose.

About 3 years ago we launched the first of our second phase of programed satellites. We launched two. These are in synchronous orbit, which means they remain fixed with respect to the Earth. They do not drift. They are like the INTELSAT, commercial satellites. We launched two of these. One worked for a few months and failed. The other worked for a couple of months more and also failed.

We then launched replenishment satellites after our having made certain fixes based upon our assessment of what the problem was. The two we launched 1½ years ago are still operating. One is over the Atlantic. One is over the Pacific. There have been a few minor problems with the satellite over the Pacific. The Atlantic satellite, however, has continued to be a very solid performer.

The Army is procuring for the Department of Defense a number of additional Earth stations, and we have modified the Earth stations we had under the initial program to be used in the phase 2 program.

A good illustration of the importance of the satellite means of communication is [deleted] and also the arrangements we made with our allies. We had no way to communicate with [deleted]. And there would have been no other way to reestablish the communication other than drawing on two national assets as well as the availability of that satellite medium. It is very important to us.

Senator YOUNG. Do the British have many satellites?

General PASCHALL. No, sir. They have one Skynet satellite, which is up now. The United States launched it for them. They have their own Earth stations, and we have quid pro quo arrangements wherein we share, we get some of their use, part of the capacity of their Earth stations and can use some of their satellite power and vice versa. We do the same with the NATO satellite.

Senator YOUNG. What do you mean by Earth stations?

General PASCHALL. That is the ground radio station with the big antenna that looks up at the satellite.

SIZE AND ORGANIZATIONAL STRUCTURE OF DCA

Senator YOUNG. What is the size and organization of the Defense Communications Agency?

General PASCHALL. The fiscal year 1976 manpower authorization for the Defense Communications Agency is 3,311 (1,610 military and 1,701 civilian positions). The Agency includes a headquarters, with major staff elements (administration, comptroller, and personnel) and line directorates (plans and programs, operations, military satellite communications systems, technical support to the National Military Command System, and systems engineering). The field activities include:

(1) The White House Communications Agency, which provides direct communications support to the President of the United States and his immediate staff wherever they are located;

(2) the Defense Commercial Communications Office, which procures leased communications circuits, services, facilities and equipment for the Department of Defense, where authorized, and for other Government agencies as directed;

(3) the Defense Communications Engineering Center whose range of activities encompass future communications systems engineering, survivability, research and development, subsystem and project engineering, and standards and engineering support to the operating DCS to include quick response assistance to field activities with special problems;

(4) the DCA Operations Control Complex, which maintains continuous surveillance over the operating DCS within assigned geographical areas of the world (Western Hemisphere, Europe, and Pacific). The capstone of this group of activities is the DCA Operations Center, collocated with the headquarters.

(5) the DCA National Military Command System Support Center (NMCSSC) operates the computer facilities of the National Military Command Center and the Alternate National Military Command Center. It provides computer driven display and remote query capabilities and distribution systems as required, and furnishes direct-automatic data processing (ADP) support to the command centers of the NMCS and to certain offices of the Joint Staff and Secretary of Defense which utilize NMCS data bases and applications software. The NMCSSC also prepares analyses of attack hazards and vulnerabilities of forces and resources on a worldwide basis.

(6) The DCA joint technical support activity (JTSA) provides centralized technical support to the JCS, the services and defense agencies, the unified and specified commands, and other activities that comprise the WWMCCS standard ADP community. This technical support includes the planning, design, development, maintenance, test, and evaluation of WWMCCS system software and other JCS-assigned

standard software, as well as system configuration management support.

DCA MISSION

Senator YOUNG. What is the mission of DCA, and how are the service responsibilities determined to prevent duplication?

General PASCHALL. The mission of the Defense Communications Agency is to—

(*a*) Perform system engineering for the Defense Communications System (DCS) and insure that the DCS is planned, improved, operated, maintained, and managed effectively, efficiently, and economically to meet the long-haul, point-to-point, and switched network telecommunications requirements of the National Command Authorities (NCA), the DOD, and as authorized and directed, other governmental agencies.

(*b*) Provide system engineering and technical support to the national military command system (NMCS) and the minimum essential emergency communications network (MEECN). Provide other engineering and technical support to the worldwide military command and control system (WWMCCS), as assigned.

(*c*) Perform system architect functions for current and future military satellite communications (Milsatcom) systems.

(*d*) Provide analytical and automated data processing (ADP) support to the Joint Chiefs of Staff, the Secretary of Defense, and other DOD components as directed and authorized.

(*e*) Procure leased communications circuits, services, facilities, and equipment for the DOD, where authorized, and for other Government agencies as directed, by the Secretary of Defense. Initiate or process actions relating to regulatory and tariff matters, including rates for communications facilities leased by the DOD.

Responsibilities between the services and DCA are assigned in such a manner as to avoid duplication. Effective coordination further precludes duplication. The division of responsibilities between the different elements of the Department of Defense for WWMCCS and DCS activities is best illustrated by outlining "What Others Do" and "What DCA Does."

(a) Responsibilities for WWMCCS:

WHAT OTHERS DO	WHAT DCA DOES
1. JCS states NMCS technical support operational requirements.	1. (a) DCA provides NMCS system engineering. (b) DCA determines best means of meeting requirements, develops plans for accomplishing technical support requirements, and provides technical project management. (c) DCA field activity provides ADP operational support.
2. JCS manages MEECN, coordinates actions with MILDEPS/CINCs.	2. DCA provides MEECN system engineering.
3. JCS/WWMCCS elements state ADP technical support requirements.	3. DCA field activities develop software, provide ADP installation support and technical assistance to WWMCCS.

(b) Responsibilities for DCS:

WHAT OTHERS DO	WHAT DCA DOES
1. JCS, CINCs and MILDEPs state the requirements.	1. DCA determines best means of meeting requirements.
2. SECDEF approves DCA-developed plans.	2. DCA develops plans for system improvements and evolution.
3. MILDEPs accomplish detailed project engineering and implementation.	3. DCA performs overall system engineering.
4. MILDEPs budget, fund, man, and operate DCS facilities.	4. DCA establishes standards and evaluates system operation.
5. JCS sets priorities for system use.	5. DCA directs manner of use.

CHAIN OF COMMAND FOR DCA REPORTING

Senator YOUNG. Does the Director of DCA report to the Secretary of Defense or the Joint Chiefs of Staff?

General PASCHALL. The chain of command runs from the Secretary of Defense through the Joint Chiefs of Staff to the Director, DCA. However, guidance to the Director, DCA, may be furnished by the Secretary of Defense or by the Joint Chiefs of Staff by authority and direction of the Secretary of Defense.

Chairman MCCLELLAN. Thank you very much, sir.

QUESTIONS SUBMITTED BY CHAIRMAN M'CLELLAN

I have a few more questions, but I think I'll have you submit them for the record. Without objection, they will be inserted at this point in the record.

[The questions and answers follow:]

DCA-SYSTEMS ENGINEERING FACILITY

Chairman MCCLELLAN. Why has funding for the Defense Communications Agency-Systems Engineering Facility been transferred to this appropriation from the Research and Development appropriation?

General PASCHALL. During FY 1974, the DCA-Systems Engineering Facility (DCA–SEF) and the Defense Communications Engineering Office (DCEO) were combined into the Defense Communications Engineering Center. The DCA–SEF, an R&D funded engineering organization, concentrated on long range plans for the post 1985 era. The DCEO, an O&M funded activity, had as its primary mission, near-term engineering of the DCS. In an effort to streamline our engineering organization, we combined these two activities into the Defense Communications Engineering Center and for economical administration, we are funding the entire organization out of O&M which is the predominant account.

INCREASED COMMUNICATIONS SUPPORT

Chairman MCCLELLAN. Explain what increased communications support of the President will be provided by Defense Communications Agency in FY 1976.

General PASCHALL. The increase in communications support is primarily related to the increased activity which experience indicates we should expect during Presidential campaign years. Using fiscal year 1972 as a guide, a ten percent increase can be expected in fiscal year 1976 over 1975 to support the higher level of activity. In addition we are including for the first time a realistic estimate of requirements to support the National Security Advisor.

INCREASES DUE TO INFLATION

Chairman MCCLELLAN. Defense Communications Agency shows increases of about $1 million for "inflation from fall of 1973 to fall of 1974." In what categories of services/expense elements does the increase fall—identify.

General PASCHALL. The increase of $990 thousand is to catch up with previous year price increases. The following are the expense elements in which the increased costs are reflected:

	(Thousands)
Supplies and equipment (Our predominant cost in supplies is for paper and paper products. The costs in these areas have skyrocketed. For example, some types of computer paper have increased 400 percent. All other kinds of supplies and equipment have increased an average of 17 percent)	$598
Other purchased services (Increased cost per man-year of contractual effort)	335
Printing and reproduction (Higher cost of paper and increases in printer's salaries are being passed on to the user)	40
Transportation of things (Reflects higher cost of transportation because of air freight increases and rising cost of gasoline)	17
Total	990

DCA CONTRACTS

Chairman MCCLELLAN. With whom is the Defense Communications Agency contract for support of the Advanced Airborne Command Post, Nuclear Operations Monitoring System and the NMCS Information and Display System. Is the $1 million increase already negotiated, or estimated. What caused this increase?

General PASCHALL. The $1 million effort in support of the Advanced Airborne Command Post, Nuclear Operations Monitoring System and the NMCS Information and Display System is to meet new requirements and is not an increase in previously planned efforts DCA is responsible for ADP support to the NMCS. The AABNCP effort will be to begin the development of computer programs on the ground based NMCS computers to enable them to interact with the AABNCP being acquired by the USAF. The Nuclear Operations Monitoring System activity will make those changes in computer programs required to support changes in policy with respect to nuclear weapons employment. The NMCS Information and Display System (NIDS) is to improve the capability of the NMCC to review, file, retrieve, process, integrate, and display dynamic command and control and intelligence data. This is a new capability and the effort will provide a functional description, and software and hardware specifications. No contracts have been negotiated and while final determination of contractors has not taken place, portions of the effort will be done by Computer Sciences Corporation and System Development Corporation because the requirements call for extensions to computer programs previously produced by them.

JTSA CONTRACT COSTS

Chairman MCCLELLAN. Explain the $2.2 million increase in contract costs of the JTSA to support growth of the WWMCCS ADP community. Are these support/contract costs projected to continue increasing—if so at what rate during the next five years?

General PASCHALL. Standard commercial software does not meet unique military command and control requirements; therefore, a significant number of enhancements or improvements must be made to the commercial version to fulfill operational requirements. These changes necessitate contractual support. The volume of enhancements required is increasing coincident with increasing utilization of ADP by the WWMCCS community. This increased utilization contributes to the discovery of shortcomings of the commercial software and the need for additional contractual support to modify the software with minimum disruption to the users. Because of the growth in ADP use and support software and the anticipated requirements to test, evaluate, improve and modify, it is anticipated that contractual support requirements will increase significantly in FY 1977 (approximately 40%). However, for the ensuing four years, costs are projected to stablize at about the FY 1977 level.

QUESTIONS SUBMITTED BY SENATOR THURMOND

Chairman MCCLELLAN. Senator Thurmond was unable to attend today's hearing, but he has given me some questions for you. Will you please respond to those for the record?

[The questions and answers follow:]

Lease and Rent Cost Increases

Senator Thurmond. General Paschall, explain for the record the nature of the increases in lease and rent costs cited in your statement.

General Paschall. The increases in lease costs are for communications leases to finance local telephone and subscriber rate increases. Our rent increases are for reimbursement to GSA for building occupancy costs.

Computer Use

Senator Thurmond. General, could you comment on the justification for the higher rate of use of the ADP computers by the Joint Chiefs and others?

General Paschall. The increased rate of use of ADP equipment by the JCS is the result of their continuing recognition of the potential of the computer to assist in the analysis of rapidly developing operational situations. Many more functions are now being performed by means of computers today than ever before. These include more detailed considerations of alternative responses to crisis problems, operational planning, international negotiation support (Strategic Arms Limitation Talks (SALT), Mutual Balanced Force Reductions (MBFR)), and simulation of various tactical and strategic situations—all of which require significantly large amounts of computer time.

This greater utilization of computer support analysis has also required more extensive detail and volume of data to support these functions. Acquisition and manipulation of these supporting data have further amplified the computer demands.

Justification for Proposed Increase

Senator Thurmond. What is the justification for the proposed 50% increase in FY 1976?

General Paschall. The increase in terminal usage by the NMCS users is a reflection of improvements in the state-of-the-art of the computer industry as a whole. A display terminal provides a more effective man-machine interface than the more traditional batch methods. It gives faster response and more efficient usage of analyst's time. Recent technological developments which have increased the speed of hardware in general, and decreased costs per unit of processing capacity have made these terminal capabilities possible.

NMCS users are primarily analysts who must retrieve, aggregate, and present data in response to command requests. They are highly skilled in their fields, and have, over the recent years, become aware of the fact that the use of terminals is not only effective, but contributes to both the accuracy and the timeliness of response. The terminal allows the user a range of options, whereby he can evaluate alternatives to varying situations. The terminal allows him to retrieve and aggregate information from a data base, display it, evaluate the output and then repeat the process if required. This ability to respond in what is often called "real time" is necessary in answering the kind of questions posed to the NMCS.

The establishment of the WWMCCS Standard ADP Program recognized this need for on-line terminal response and along with the efficiencies of standardization was a primary factor in computer selection. As the system is now becoming operational following the extended conversion period such terminals are essential to provision of the responsive support for which the WWMCCS ADP systems was designed and procured.

Research and Development

Senator Thurmond. General, I note you are requesting $29 million for R&D. Are you developing and testing your own equipment, or is this for improvement of current equipment?

General Paschall. The bulk of DCA's R&D funds is used for conducting studies in support of our DCS, satellite communication and WWMCCS-related planning activities; performing system engineering for the NMCS, MEECN, and DCS (including the DSCS); developing a prototype intercomputer network in support of WWMCCS; and developing new software techniques. A small amount of our R&D funds, approximately $2.8 million, is used for developing and testing prototype hardware and testing commercial equipment. The development of equipment for the inventory is conducted by the Military Departments using their own funds. The above distinction also applies to improvement of current equipment

Payroll Costs

Senator Thurmond. Approximately how much of these funds are for payroll costs? How much for hardware? How much for paperwork?

General Paschall. None of the $29.8 million will be used by DCA for payroll costs. As noted earlier, R&D funds used for payroll costs at DCEC in FY 75 are being transferred to the O&M appropriation effective with FY 76. However, DCA tasks the Military Departments to perform R&D and furnishes funds to them for these efforts. The Military Departments use some of these funds for their payroll—approximately $2.5 million of the $9.8 million furnished. None of the DCA funds is used for operational hardware, but approximately $2.8 million is used for development and testing of protoype hardware and testing of commercial equipment. Approximately $26.7 million is used for studies, system engineering and development of new software techniques. None of these R&D funds is used for paperwork in the administrative sense.

Airborne Command Post Operation

Senator Thurmond. General, in what way does the NMCS relate to the Airborne Command Post operation?

General Paschall. The Airborne Command Post provides the NMCS with a more survivable and mobile emergency command capability to increase the probability that the NMCS will perform its mission. The National Emergency Airborne Command Post (NEACP) obtains needed information and reports from the ANMCC via radio and ground communications links. Similarly, command and appropriate coordination can be accommodated via the radio communications.

Defense Mapping Agency

STATEMENT OF VICE ADM. SHANNON D. CRAMER, JR., U.S. NAVY, DIRECTOR, DEFENSE MAPPING AGENCY

ACCOMPANIED BY:

CHARLES ANDREGG, DEPUTY DIRECTOR, MANAGEMENT AND TECHNOLOGY
WILLIAM T. RIORDAN, DEPUTY DIRECTOR, PROGRAMS, PRODUCTION AND OPERATIONS
M. M. MACOMBER, CHIEF OF ADVANCED TECHNOLOGY DIVISION
JOHN VAUGHN, COMPTROLLER
ALBERT RHODES, BUDGET OFFICER

INTRODUCTION OF ASSOCIATES

Chairman McClellan. Admiral Cramer, you represent the Defense Mapping Agency?

Admiral Cramer. That is right.

Chairman McClellan. You are the Director of the Agency?

Admiral Cramer. Yes, sir.

Chairman McClellan. You have with you today your associates. Will you identify them for the record, please?

Admiral Cramer. I have on my right, Mr. Rhodes, who is my budget officer; on my left is Mr. Riordan, who is the deputy for programs, production, and operations. And on my left is Dr. Macomber, chief of my R. & D. office.

Chairman McClellan. Do you have a prepared statement?

Admiral Cramer. Yes, sir. I would like to enter it into the record.

Chairman McClellan. It seems to be rather brief. If you will, I am going to let you read it. I want to follow it with you.

Admiral Cramer. Mr. Chairman, Senator Young, I appreciate the opportunity to appear before you today in support of the fiscal year 1976 budget request of DMA, the Defense Mapping Agency. Rather than present my prepared statement, I will, with your permission, highlight portions of it and explain major changes between fiscal years 1975 and 1976.

PREPARED STATEMENT

Chairman McClellan. Is the statement before me a brief summary of your full statement?

Admiral Cramer. You have both, sir.

Chairman McClellan. We will insert your full statement then and you can summarize it for us.

Admiral Cramer. Yes, sir.

[The statement follows:]

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE YOU TODAY IN SUPPORT OF THE FISCAL YEAR 1976 BUDGET REQUEST OF DMA, THE DEFENSE MAPPING AGENCY.

INTRODUCTION

BECAUSE DMA IS RELATIVELY NEW - WE WILL COMPLETE OUR THIRD YEAR OF OPERATIONS IN JULY - I WILL BRIEFLY REMIND YOU OF THE AGENCY'S COMPOSITION, PURPOSE AND OPERATIONS. I WILL TOUCH ON SOME OF THE THINGS WE HAVE ALREADY DONE AND SOME OF THE THINGS WE PLAN TO DO TO IMPROVE THE AGENCY AND ITS OPERATIONS. LASTLY, I WILL SUMMARIZE AND HIGHLIGHT OUR BUDGET REQUEST FOR FISCAL YEAR 1976.

COMPOSITION OF DMA

DMA CONSISTS OF SIX COMPONENTS. THREE ARE LARGE PRODUCTION CENTERS WHERE MOST OF THE MAPPING, CHARTING AND GEODETIC (MC&G) DATA REQUIRED BY OUR ARMED FORCES ARE COMPILED AND PRODUCED. THEY ARE THE TOPOGRAPHIC CENTER AND THE HYDROGRAPHIC CENTER, BOTH LOCATED ON THE OUTSKIRTS OF WASHINGTON, D.C.; AND THE AEROSPACE CENTER LOCATED IN ST. LOUIS, MISSOURI. THE DEFENSE MAPPING SCHOOL AT FORT BELVOIR, VIRGINIA TRAINS MILITARY PEOPLE IN THE VARIOUS MC&G SKILLS AND WE ALSO HAVE THE INTER AMERICAN GEODETIC SURVEY IN THE PANAMA CANAL ZONE WHICH OPERATES THE COOPERATIVE MAPPING AGREEMENTS WITH MOST LATIN AMERICAN COUNTRIES. OUR HEADQUARTERS STAFF OF LESS THAN 200 PEOPLE IS LOCATED IN A BUILDING ON THE GROUNDS OF THE NAVAL OBSERVATORY.

MAPPING, CHARTING AND GEODESY

A WORD ON WHAT WE MEAN BY MC&G, MAPPING, CHARTING AND GEODESY. MAPS ARE USED FOR LAND MANEUVERS AND OPERATIONS. CHARTS ARE USED FOR NAUTICAL AND AERIAL NAVIGATION AND OPERATIONS. GEODESY IS THE SCIENCE OF DETERMINING THE SIZE AND SHAPE OF THE EARTH, THE PRECISE POSITION OF POINTS ON ITS SURFACE, AND THE VARIATIONS IN THE PULL OF GRAVITY AT VARIOUS POINTS ON THE EARTH'S SURFACE. THE PRODUCTS PRODUCED BY DMA ARE NOT ONLY IN

SUPPORT OF DOD WEAPON SYSTEMS BUT ARE AN INTEGRAL PART THEREOF. THEY ARE CRUCIAL TO WEAPONS EFFECTIVENESS.

DMA MISSION

OUR JOB IS TO MEET MILITARY REQUIREMENTS THROUGH THE PRODUCTION OF MAPS, CHARTS AND TARGET COORDINATES FOR BOTH STRATEGIC AND TACTICAL USE, AND TO PRODUCE DATA BASES AND SPECIALIZED PRODUCTS TO SUPPORT ADVANCED WEAPONS SYSTEMS. WE ALSO ARE REQUIRED BY STATUTE TO SUPPORT THE MERCHANT MARINE WORLD WIDE, EXCEPT FOR UNITED STATES TERRITORIAL WATERS. IT IS NECESSARY THAT DMA DEVELOP THE PRODUCTION SUPPORT CAPABILITY AND PREPARE FOR ESSENTIAL DATA COLLECTION WELL IN ADVANCE OF THE OPERATIONAL DATES OF KEY WEAPON SYSTEMS UNDER DEVELOPMENT. OFTEN THIS MUST BE DONE PRIOR TO THE FINAL WEAPON SYSTEM ERROR BUDGET DETERMINATION. THE MAJOR MILITARY PRODUCTS AND SERVICES PROVIDED BY DMA ARE AS FOLLOWS:

A. POSITIONING OF TARGETS AND APPLICATION OF GRAVITY DATA IN SUPPORT OF OPERATIONAL STRATEGIC WEAPON SYSTEMS SUCH AS POLARIS, POSEIDON, MINUTEMAN AND PERSHING.

B. SATISFYING THE VERTICAL ACCURACY REQUIREMENTS FOR STRATEGIC AIRCRAFT LOW-LEVEL PENETRATION ROUTES.

C. SATISFYING REQUIREMENTS FOR POSITIONING AT GREATER ACCURACIES OVER LONGER RANGES FOR SUPPORT OF NEW TACTICAL AND STRATEGIC SYSTEMS.

D. PRODUCING AND UPDATING MAPS, CHARTS AND POSITIONAL DATA IN PRIORITY AREAS TO MEET MILITARY OPERATIONAL REQUIREMENTS AND TO INSURE SAFETY OF AERONAUTICAL AND NAUTICAL NAVIGATION.

E. MAINTAINING PREPAREDNESS TO RESPOND TO UNPREDICTABLE CHANGES IN PRIORITIES FOR PRODUCTION.

PRODUCTS

SIGNIFICANTLY, APPROXIMATELY FORTY-FIVE PERCENT OF OUR PRODUCTS ARE OTHER THAN THE CONVENTIONAL PRINTED MAPS AND CHARTS PEOPLE NORMALLY ASSOCIATE WITH MAPPING OPERATIONS. THIS INCLUDES FILM STRIPS FOR ADVANCED AIRCRAFT COCKPITS, TARGET POSITIONING, NAVIGATIONAL AND GRAVITY

DATA FOR OUR STRATEGIC MISSILE FORCE. THIS SITUATION STEMS FROM THE CHANGING COMPOSITION AND INCREASING TECHNOLOGICAL COMPLEXITY OF OUR AIRCRAFT, SUBMARINES, MISSILES, AND OTHER BATTLEFIELD SYSTEMS. ADEQUATE MC&G SUPPORT FOR THESE SYSTEMS REQUIRES CORRELATIVE INCREASES IN MC&G TECHNOLOGY, A HEAVY RELIANCE ON AUTOMATION AND AN INCREASING EMPHASIS ON ATTRACTING AND KEEPING PEOPLE SKILLED IN THE SCIENTIFIC DISCIPLINES.

MC&G REQUIREMENTS

OUR FIRST CONCERN AT DMA IS MEETING THE VALIDATED REQUIREMENTS OF THE ARMED FORCES WITHIN THE SPECIFIED TIME FRAMES. I AM EQUALLY CONCERNED WITH ACCOMPLISHING THIS TASK AS ECONOMICALLY AND EFFICIENTLY AS POSSIBLE. TO THIS END, DMA IS CONTINUING THE INITIATIVES SO WELL BEGUN BY MY PREDECESSOR, GENERAL HOWARD PENNEY. WE ARE, OF COURSE, LOOKING FOR NEW OPPORTUNITIES TO IMPROVE OPERATIONS AND EFFECT FURTHER ECONOMIES. ONE MEANS OF ACCOMPLISHING THESE OBJECTIVES IS TO LIMIT REQUIREMENTS TO ABSOLUTE MINIMUMS. WE DO THIS FIRST THROUGH THE REQUIREMENTS REVIEW PROCESS WHICH IS A JOINT EFFORT WITH THE MILITARY USERS REPRESENTED PRINCIPALLY BY THE UNIFIED AND SPECIFIED COMMANDS. ALL STATED REQUIREMENTS ARE SCRUTINIZED WITH A VIEW TOWARD ELIMINATING SOME OF THEM ENTIRELY, REDUCING THEIR SCOPE OR SATISFYING THEM BY ALTERNATIVE AND MORE ECONOMICAL MEANS.

PRODUCT MAINTENANCE

ABOUT TWO-THIRDS OF OUR TOTAL MC&G PRODUCTION EFFORT IS DIRECTED TOWARDS MAINTAINING THE ACCURACY AND CURRENCY OF OUR PRODUCTS. PRODUCT MAINTENANCE ENCOMPASSES THE ISSUANCE OF CORRECTION NOTICES TO USERS; AND THE REVISION, RECOMPILATION, REPRINTING AND DISTRIBUTION OF AN EXISTING DMA PRODUCT. FLIGHT SAFETY, SAFE NAVIGATION AT SEA AND TARGET ACCURACIES ARE MAJOR REASONS FOR PRODUCT MAINTENANCE. A VERY SIGNIFICANT REQUIREMENT IN THIS CATEGORY IS THE FLIGHT INFORMATION PROGRAM. FLIPS, AS WE CALL THEM, MUST BE MAINTAINED, THAT IS, UPDATED AS OFTEN AS EVERY 28 DAYS. FLIP

PRODUCTS ARE A COMPENDIUM OF GRAPHIC AND TEXTUAL MATERIALS REQUIRED FOR THE CONDUCT OF DEPARTURE, ENROUTE AND TERMINAL AIR NAVIGATION.

EVERY DOD AIRCRAFT MUST CARRY THESE PRODUCTS. TO AVOID DUPLICATION OF EFFORT, PRIMARY RESPONSIBILITY FOR MAINTENANCE OF FLIPS RESTS WITH THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION FOR DOMESTIC AREAS AND WITH DMA FOR OVERSEAS AREAS. HOWEVER, DMA IS RESPONSIBLE FOR PRINTING AND DISTRIBUTING DOMESTIC FLIPS TO ALL MILITARY USERS. OUR CONTINUING EFFORTS TO ACHIEVE ECONOMIES OF OPERATION HAVE INCLUDED REVIEWING THE MAINTENANCE CYCLE FOR THE VARIOUS FLIP PRODUCTS. ONE RESULT HAS BEEN OUR RECOMMENDATION TO THE INTERAGENCY AIR CARTOGRAPHIC COMMITTEE THAT THE DOMESTIC ENROUTE CHARTS AND SUPPLEMENTS BE CONVERTED FROM A 28-DAY TO A 56-DAY MAINTENANCE CYCLE. ANTICIPATING APPROVAL OF THIS PROPOSAL, WE HAVE REDUCED OUR BUDGET REQUEST FOR FISCAL YEAR 1976 BY $700 THOUSAND ASSOCIATED WITH THIS CHANGE.

ANOTHER REASON FOR MAINTENANCE IS RELATED TO THE IMPROVED CAPABILITIES OF OPERATIONAL WEAPON SYSTEMS AND TO THE PROJECTED MC&G REQUIREMENTS FOR WEAPON SYSTEMS UNDERGOING RESEARCH AND DEVELOPMENT. INCREASED SPEEDS, LONGER RANGES, BETTER PENETRATION CAPABILITIES AND MORE SOPHISTICATED GUIDANCE SYSTEMS DICTATE A CORRESPONDING IMPROVEMENT IN MC&G DATA TO SUPPORT THESE TECHNOLOGICAL ADVANCEMENTS. IMPROVED ACCURACIES FOR RADAR FIX POINTS, OFFSET AIMING POINTS, TARGET LOCATIONS AND LAUNCH POSITIONS MUST BE PROVIDED BY DMA IF MULTI-BILLION DOLLAR STRIKE SYSTEMS ARE TO OPERATE ACCORDING TO THEIR DESIGN SPECIFICATIONS. THIS SUPPORT IS MOST ECONOMICAL WHEN COMPARED TO THE IMPROVED EFFECTIVENESS IT PROVIDES AND THE COST SMALL IN COMPARISON WITH TOTAL WEAPON SYSTEMS COSTS.

RESOURCES

UPON ESTABLISHMENT, THE DMA MANAGEMENT TEAM FOUND THAT EXISTING RESOURCE LEVELS WERE INSUFFICIENT TO MEET THE VALID MC&G NEEDS OF THE ARMED SERVICES. IT ALSO WAS -- AND IS -- RECOGNIZED THAT MANPOWER AND FUNDING INCREASES SUFFICIENT TO SATISFY ALL VALIDATED REQUIREMENTS COULD NOT

REASONABLY BE EXPECTED. DMA'S PRIME OBJECTIVE, THEREFORE, HAS BEEN -- AND IS -- TO NARROW THAT GAP BETWEEN NEEDS AND RESOURCES BY MORE STRINGENT REVIEW OF REQUIREMENTS, REDUCING COSTS, AND BY INCREASING OUR PRODUCTIVITY. OUR R&D EFFORTS, FOR EXAMPLE, ARE ESSENTIAL TO THIS OBJECTIVE AND I BELIEVE WE ARE MAKING GOOD PROGRESS, IN ALL THREE AREAS. IN FACT, PRODUCTIVITY INCREASES HAVE BEEN BUILT INTO THE FISCAL YEAR 1975 AND FISCAL YEAR 1976 PROGRAMS SUFFICIENT TO MEET THE EFFECTIVENESS/ PRODUCTIVITY GOALS THAT DMA SET FOR ITSELF TO ACHIEVE A 10% PRODUCTIVITY INCREASE DURING FISCAL YEAR 1974-1976, AS COMPARED WITH FISCAL YEAR 1973, THE FIRST YEAR OF DMA OPERATIONS.

MANPOWER

ANY DISCUSSION OF DMA'S RESOURCES MUST FOCUS ON ITS PEOPLE -- OUR MOST VALUABLE AND MOST EXPENSIVE RESOURCE. PAYROLL COSTS ACCOUNT FOR ABOUT TWO-THIRDS OF OUR TOTAL BUDGET. THE DMA WORKFORCE IS EXTENSIVELY TRAINED AND MADE UP PREDOMINANTLY OF PROFESSIONAL, SCIENTIFIC AND TECHNICAL PEOPLE. ALMOST THIRTY PERCENT OF OUR PEOPLE HAVE COLLEGE DEGREES AND OVER TEN PERCENT OF THESE HAVE ADVANCED DEGREES. THIS REFLECTS THE TECHNOLOGICAL AND SCIENTIFIC DEMANDS OF MODERN MAPPING, CHARTING AND GEODESY.

WITH RESPECT TO SIZE, THE CURRENT FISCAL YEAR 1975 AND PROPOSED FISCAL YEAR 1976 AUTHORIZED STRENGTHS ARE 8,419. THIS IS DOWN BY 374 FROM FISCAL YEAR 1974 AND ALMOST 500 BELOW THE LEVEL INITIALLY AUTHORIZED FOR DMA. BY THE END OF FISCAL YEAR 1976, WE WILL HAVE CONVERTED 101 POSITIONS OR ABOUT 10 PERCENT OF OUR INITIAL MILITARY AUTHORIZATIONS FROM MILITARY TO CIVILIAN MANNING IN LINE WITH THE SECRETARY OF DEFENSE'S OBJECTIVE OF PUTTING MORE MILITARY PERSONNEL INTO THE COMBAT FORCES. IN ADDITION, ANOTHER 130 MILITARY POSITIONS HAVE BEEN ELIMINATED WITHOUT REPLACEMENT BY CIVILIANS. AS A RESULT OF THESE ACTIONS, ONLY NINE PERCENT OF OUR TOTAL POSITIONS ARE NOW MANNED BY MILITARY AS COMPARED TO ABOUT 11 PERCENT INITIALLY.

DMA BUDGET REQUEST

MR. CHAIRMAN, WITH YOUR PERMISSION, I WOULD NOW LIKE TO HIGHLIGHT, BY APPROPRIATION, DMA'S FISCAL YEAR 1976 BUDGET REQUEST.

OPERATION AND MAINTENANCE

FOR OPERATION AND MAINTENANCE IN FISCAL YEAR 1976, $189.1 MILLION IS REQUESTED. THIS IS AN INCREASE OF $13.4 MILLION OVER THE CURRENT FISCAL YEAR 1975 REQUEST OF $175.7. MOST OF THE INCREASE IS ATTRIBUTABLE TO STATUTORY SALARY INCREASES AND TO THE EFFECTS OF INFLATION ON THE COST OF GOODS AND SERVICES. THERE IS, HOWEVER, A NET INCREASE FOR PROGRAMS OF $4.0 MILLION, ABOUT TWO PERCENT. I WILL DISCUSS THIS IN DETAIL, MOMENTARILY, BUT FIRST LET ME EXPLAIN THOSE INCREASES WHICH ARE NOT OF A PROGRAM NATURE AND OVER WHICH WE HAVE LITTLE OR NO CONTROL.

FIRST, $1.0 MILLION IS ASSOCIATED WITH THE FULL YEAR EFFECT OF THE TRANSFER OF RESPONSIBILITY BETWEEN DMA AND THE AIR FORCE FOR CARTOGRAPHIC AERIAL PHOTOGRAPHY. THIS TRANSFER ENABLES THE AIR FORCE TO DELETE FOUR C130 AIRCRAFT FROM THE ACTIVE INVENTORY AT AN ANNUAL SAVINGS OF APPROXIMATELY $5.0 MILLION AND A NET SAVINGS TO THE GOVERNMENT OF $4.0 MILLION.

SECONDLY, OUR REQUEST INCLUDES AN INCREASE OF $5.6 MILLION TO COVER THE FULL-YEAR COST OF CIVILIAN PAY RAISES WHICH OCCURRED DURING FISCAL YEAR 1975; THE COSTS OF PERIODIC WITHIN-GRADE SALARY INCREASES ESTIMATED TO OCCUR DURING FISCAL YEAR 1976; AND THE COST OF AN EXTRA COMPENSABLE DAY IN FISCAL YEAR 1976.

THIRDLY, AN INCREASE OF $2.8 MILLION WILL BE REQUIRED IN FISCAL YEAR 1976 TO PROVIDE FOR THE FULL-YEAR EFFECT OF COMMODITY PRICE INCREASES WHICH OCCURRED DURING FISCAL YEAR 1975.

THE PREVIOUSLY CITED NET INCREASE FOR PROGRAMS OF $4.0 MILLION IS MADE UP OF INCREASES TOTALING $6.5 MILLION, PARTIALLY OFFSET BY $2.5 MILLION IN PROGRAM DECREASES. THE MAJOR INCREASES ARE FOR THE FOLLOWING:

1. $1.8 MILLION FOR A CLASSIFIED PROJECT WHICH I WILL BE GLAD TO DISCUSS OFF THE RECORD.

2. $700 THOUSAND FOR THE ACCELERATED PRODUCTION BY CONTRACT OF SENSOR SIMULATOR TRANSPARENCIES FOR USE IN AIRCRAFT FLIGHT SIMULATORS.

THESE TRANSPARENCIES SUPPORT AIR FORCE OPERATIONAL MISSION TRAINING REQUIREMENTS. THE AIR FORCE HAS PREVIOUSLY ADVISED YOU OF THE SIGNIFICANT SAVINGS IN FUNDS AND AIRCRAFT FUEL WHICH WILL ACCRUE THROUGH THE USE OF SIMULATORS.

3. $500 THOUSAND FOR CONTRACTUAL ASSISTANCE IN THE AUTOMATION OF THE AIR INFORMATION SYSTEM WHICH SUPPORTS THE FLIP AND OTHER AERONAUTICAL PROGRAMS. WHEN FULLY IMPLEMENTED IN FY 1978 THIS WILL RESULT IN A SAVINGS OVER THE FOLLOWING FIVE YEARS OF ALMOST $4 MILLION.

4. $300 THOUSAND FOR CONTRACTUAL ACCOMPLISHMENT OF NEARSHORE GRAVITY SURVEYS IN SUPPORT OF THE TRIDENT.

5. $300 THOUSAND FOR THE TRANSPORTATION COSTS INCIDENT TO THE RE-POSITIONING OF SOME STATIONS IN THE DOPPLER GEODETIC SATELLITE TRACKING SYSTEM NETWORK.

6. $700 THOUSAND FOR INCREASED FIELD SURVEY TEAM TRAVEL TO PROVIDE GEODETIC AND GRAVIMETRIC DATA IN SUPPORT OF TACTICAL AND STRATEGIC TARGET POSITIONING REQUIREMENTS, AND TEST RANGE SUPPORT OF NEW WEAPON SYSTEMS.

7. $800 THOUSAND FOR ESSENTIAL REAL PROPERTY MAINTENANCE AND REPAIR PROJECTS, INCLUDING $200 THOUSAND FOR A BOILER REPLACEMENT.

8. $500 THOUSAND FOR A CONTRACT TO ANALYZE REQUIREMENTS AND DEVELOP SOFTWARE TO PERMIT EXPLOITATION OF A NEW DATA DISSEMINATION SYSTEM.

9. $900 THOUSAND FOR THE SUM OF ALL OTHER PROGRAM INCREASES.

MAJOR OFFSETTING PROGRAM DECREASES ARE AS FOLLOWS:

1. $600 THOUSAND ASSOCIATED WITH A REDUCTION IN THE NUMBER OF CIVILIAN MAN-YEARS.

2. $700 THOUSAND BECAUSE OF THE CHANGE FROM A 28-DAY TO A 56-DAY CYCLE FOR ENROUTE FLIPS.

3. $300 THOUSAND DUE TO A REDUCTION IN THE AMOUNT OF SPACE RENTED FROM THE GENERAL SERVICES ADMINISTRATION.

4. $300 THOUSAND FOR A SERIES OF SMALL SCALE TOPOGRAPHIC MAPS PRODUCED IN FISCAL YEAR 1975 BY CONTRACT.

5. $200 THOUSAND FOR AUTOMATIC DATA PROCESSING SOFTWARE CONTRACTS IN SUPPORT OF SOME DMA-WIDE SYSTEMS.

6. $400 THOUSAND FOR THE SUM OF ALL OTHER PROGRAM DECREASES.

PROCUREMENT

FOR THE PROCUREMENT APPROPRIATION, WE ARE REQUESTING $6.1 MILLION IN FISCAL YEAR 1976, AN INCREASE OF $.9 MILLION ABOVE THE FY 1975 FUNDING LEVEL.

REQUESTED EQUIPMENT ACQUISITIONS WILL REPLACE UNECONOMICALLY REPAIRABLE OR WORN-OUT EQUIPMENT EITHER IN-KIND OR WITH IMPROVED EQUIPMENT RESULTING FROM PRIOR YEAR INVESTMENTS IN SPECIFIC RESEARCH AND DEVELOPMENT PROJECTS. PROGRAMMED ITEMS ARE ALSO INCLUDED TO AUGMENT ON-HAND EQUIPMENT TO IMPROVE WORK FLOW AND EFFICIENCY IN PRODUCTION PROCESSES.

OF THE TOTAL $6.1 MILLION REQUESTED FOR FISCAL YEAR 1976, $5.9 MILLION IS FOR MAPPING, CHARTING, AND GEODESY MISSION EQUIPMENT. THE REMAINING $.2 MILLION IS FOR MISSION RELATED AND BASE OPERATION AND MAINTENANCE EQUIPMENT. ELEVEN ITEMS OF EQUIPMENT WILL REQUIRE APPROXIMATELY 50 PERCENT OF OUR FISCAL YEAR 1976 BUDGET REQUEST. THE MOST SIGNIFICANT ITEM IS $1.5 MILLION FOR AN ANALYTICAL STEREOPLOTTER SYSTEM. THIS SYSTEM WILL BE USED FOR THE HIGH SPEED COLLECTION OF DIGITAL DATA. NEW WEAPON SYSTEMS AND FLIGHT SIMULATOR DIGITAL DATA REQUIREMENTS MUST BE MET THROUGH USE OF SUCH EQUIPMENT. ECONOMIES AND EFFICIENCY ACHIEVED THROUGH THE USE OF TECHNOLOGICALLY ADVANCED EQUIPMENT CONTRIBUTES TO THE ATTAINMENT OF OUR PRODUCTIVITY GOALS.

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

FOR RDT&E IN FISCAL YEAR 1976, WE ARE REQUESTING $14.9 MILLION, AN INCREASE OF $2.4 MILLION OVER THE CURRENT FISCAL YEAR 1975 AMOUNT OF $12.5 MILLION.

THE REQUEST IS DIRECTLY RELATED TO THE URGENCY TO MEET SPECIFIC WEAPON SYSTEMS NEEDS. AS I PREVIOUSLY MENTIONED, TO MEET THESE NEEDS DMA MUST COLLECT DATA AND PRODUCE PRODUCTS TAILORED TO THE WEAPON SYSTEMS. WE MUST FURNISH MORE ACCURATE TARGET POSITIONS TIED TO MORE ACCURATE LAUNCH POSITIONS AND NAVIGATION CHECK POINTS. FOR OUR LONG RANGE MISSILES, WE MUST REFINE OUR KNOWLEDGE OF THE EARTH'S GRAVITY FIELD. THE PRODUCTION TECHNIQUES REQUIRED TO SATISFY THESE REQUIREMENTS ARE VERY COMPLEX AND SOME OF THEM STILL REQUIRE AN EXTENSIVE AMOUNT OF MANUAL EFFORT. TO ACHIEVE THE CAPABILITY TO SATISFY THESE REQUIREMENTS, WE MUST DEVELOP NEW INSTRUMENTS AND COMPUTER PROCESSING TECHNIQUES WHICH WILL COLLECT, HANDLE, MANIPULATE AND PROVIDE THE NECESSARY DATA.

APPROXIMATELY $1.0 MILLION OF THE INCREASE OVER THE FISCAL YEAR 1975 PROGRAM IS ATTRIBUTABLE TO THE FULL-YEAR COST OF PRICE LEVEL INCREASES OCCURRING DURING FISCAL YEAR 1975. OF THE REMAINING $1.4 MILLION INCREASE, THE MAJOR PORTION IS RELATED TO OUR EFFORT TO DEVELOP A MORE RAPID AND ACCURATE GEODETIC AND GRAVITY COLLECTION SYSTEM USING EVOLUTIONARY TECHNIQUES. AN IMPROVED COLLECTION SYSTEM IS ESSENTIAL TO PROVIDING THE MORE ACCURATE LAUNCH AND TARGET POSITIONS DEMANDED BY THE TRIDENT AND ADVANCED ICBM WEAPON SYSTEMS.

SUMMARY

IN SUMMARY, THE DEFENSE MAPPING AGENCY EXISTS TO SUPPORT THE ARMED FORCES. WE DO THIS BY FURNISHING MAPPING, CHARTING AND GEODETIC PRODUCTS AND SERVICES WHICH ARE ESSENTIAL TO SAFE AND ACCURATE LAND, SEA AND AIR NAVIGATION; AND TO THE EFFECTIVENESS OF STRATEGIC AND TACTICAL WEAPON SYSTEMS. OUR OBJECTIVES ARE TO SATISFY VALIDATED REQUIREMENTS AND TO DO SO AS ECONOMICALLY AS POSSIBLE. THE FISCAL YEAR 1976 BUDGET REQUEST IS IN CONSONANCE WITH THESE OBJECTIVES AND, I BELIEVE, IS THE MINIMUM AMOUNT REQUIRED TO ACCOMPLISH THE MOST CRITICAL REQUIREMENTS IN A TIMELY AND ORDERLY MANNER.

THE DMA MISSION AND PRODUCTS

Admiral CRAMER. Our job is to meet military requirements through the production of maps, charts, and target coordinates for both strategic and tactical use, and to produce data bases and specialized products to support advanced weapons systems.

Because of the changing composition and increasing technological complexity of our aircraft, submarine, missile, and other battlefield systems, almost half of our products are other than the conventional printed maps and charts people normally associate with mapping operations.

These specialized products are more and more becoming an integral part of weapon systems. Usually we provide them in the form of film strips, display transparencies or digital data in a variety of formats. Support of these sophisticated weapons requires correlative increases in M.C. & G. technology to provide the precise latitude, longitude, and elevation data for the launch and target area positions; measurements of the pull of gravity along missile trajectories; and accurate elevation data for strategic aircraft low-level penetration routes.

DMA must develop the production support capability and prepare for essential data collection well in advance of the planned operational dates of key weapon systems under development. [Deleted.]

[Deleted.]

Admiral CRAMER. DMA's support of weapon systems is most economical when compared to the improved effectiveness it provides and the cost is small in comparison with the total cost of those systems.

M.C. & G. REQUIREMENTS

Our first concern at DMA is meeting the validated requirements of the Armed Forces within the specified time frames. I am equally concerned with accomplishing this task economically and with producing only what is necessary. We do this through the requirements review process which is a joint effort with the military users.

RESOURCES

The DMA work force reflects the technological and scientific demands of modern mapping, charting, and geodesy. Almost 30 percent of our people have college degrees, and over 10 percent of these have advanced degrees. We are getting essential priority tasks accomplished with fewer people than when the agency was established. In fact, for fiscal year 1976 we are requesting a total strength of 8,419, which is almost 500 less than initially authorized for DMA.

Chairman MCCLELLAN. How much less is this than last year's?

Admiral CRAMER. Over last year?

Chairman MCCLELLAN. This year.

Admiral CRAMER. From 1974 to 1976 we are 374 down.

Chairman MCCLELLAN. Does it impair the efficiency of your operations?

Admiral CRAMER. We have increased our productivity in the same time period. We had a goal of about 10 percent, Mr. Chairman, and we have been able to program in our 1975 and 1976 budget sufficient

productivity increase to meet the reductions that we are taking. We think we can meet our current requirements in support of weapon systems with our work force.

Chairman McClellan. Your requirements for additional maps and so forth increase each year?

Admiral Cramer. As new weapons systems develop with increased accuracy requirements in the out years we can foresee some additional requirements.

But we are practically stable at this time, sir.

Chairman McClellan. Very well. You may proceed.

TOTAL FUNDING REQUEST

Admiral Cramer. I will talk a little about our total funding request.

In total for O. & M., procurement and R.D.T. & E., we are requesting $210.1 million, which is an increase of $16.6 million over the current fiscal year 1975 amount of $193.5 million. $10.4 million of this $16.6 million increase is due to funding transfers, statutory pay increases and inflation which DMA cannot control. The remaining $6.2 million is for a net program increase which, of course, is made up of both increases and decreases. Our justification material contains the details of both increases and decreases, therefore, I propose to address now only the larger increases in each appropriation.

OPERATION AND MAINTENANCE

Program increases in the operation and maintenance appropriation totaling $6.5 million are partially offset by program decreases totaling $2.5 million for a net increase of $4 million.

The larger increases are $1.8 million for a classified project which I will be glad to discuss off the record. $700,000 for the accelerated production by contract of sensor simulator transparencies for use in aircraft flight simulators. The Air Force has previously advised you of the significant savings in funds and aircraft fuel which will accrue through the use of simulators. $500,000 for contractual assistance in the automation of the air information system which when fully implemented in fiscal year 1978 will result in a savings over the following 5 years of almost $4 million. $700,000 for increased field survey team travel to provide geodetic and gravimetric data in support of tactical and strategic target positioning requirements, and test range support of new weapon systems.

Chairman McClellan. Before we proceed to the next subject of procurement, would you briefly tell us what this classified project is.

[Discussion off the record.]

Chairman McClellan. Proceed with procurement.

PROCUREMENT

Admiral Cramer. For the procurement appropriation, we are requesting $6.1 million in fiscal year 1976, an increase of $900,000 above the fiscal year 1975 funding level. The most significant item is $1.5

million for an analytical stereoplotter system which will be used for the high speed collection of digital data [deleted].

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

For. R.D.T. & E. in fiscal year 1976, we are requesting $14.9 million, an increase of $2.4 million over the current fiscal year 1975 amount of $12.5 million.

Approximately $1 million of the increase is attributable to the full-year cost of price level increases occurring during fiscal year 1975. Of the remaining $1.4 million program increase, the major portion is related to our effort to develop a more rapid and accurate geodetic and gravity collection system using evolutionary [deleted] techniques. An improved collection system is essential to providing the more accurate launch and target positions demanded by the Trident and advanced ICBM weapon systems.

SUMMARY

In summary, the Defense Mapping Agency exists to support the Armed Forces. We do this by furnishing mapping, charting, and geodetic products and services which are essential to safe and accurate land, sea and air navigation; and to the effectiveness of strategic and tactical weapon systems. Our objectives are to satisfy validated requirements and to do so as economically as possible. The fiscal year 1976 budget request is in consonance with these objectives and, I believe, is the minimum amount required to accomplish the most critical requirements in a timely and orderly manner.

Mr. Chairman, that concludes my remarks. I, or one of my support witnesses, will be glad to respond to your questions.

COST OF MATERIALS

Chairman McClellan. Has the cost for material risen in the mapping services?

Admiral Cramer. Yes, sir. Map paper, processing plates, plastics, ink and other materials have increased.

Chairman McClellan. All of it has increased?

Admiral Cramer. Yes, sir.

Chairman McClellan. Is this increase reflected in the request for fiscal year 1976?

Admiral Cramer. Yes, sir. We have allowed about $2.8 million for the full year.

Chairman McClellan. $2.8 million will be the additional cost for materials?

Mr. Rhodes. Yes, sir. That would be for those costs we already know about. We have not anticipated any future cost increases.

Chairman McClellan. But that much you can determine as of now?

Mr. Rhodes. Yes, sir.

Chairman McClellan. Gentlemen, I would like to give you my remaining questions and let you respond to them for the record.

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QUESTIONS SUBMITTED BY CHAIRMAN MCCLELLAN

[The questions and answers follow:]

DEFENSE MAPPING SCHOOL

Chairman MCCLELLAN. Describe the mission of the Defense Mapping School in Fort Belvoir, and explain what this school accomplishes that isn't done in other Defense schools.

Admiral CRAMER. The mission of the Defense Mapping School is to plan, prepare and conduct resident and non-resident courses of instruction for DoD military and civilians and foreign military personnel in the general field of military mapping, charting and geodesy and related subjects; and assist the Services in the development of MC&G related doctrine, organization, training materials, literature and equipment. The Defense Mapping School is the only DoD school which provides technical training in mapping, charting and geodesy.

COOPERATIVE MAPPING AGREEMENTS

Chairman MCCLELLAN. What types of cooperative mapping agreements do we have with Latin American countries? Do these countries derive any benefits? Do we? Is there any kind of cooperative funding arrangement for the products?

Admiral CRAMER. Mr. Chairman, cooperative mapping agreements provide assistance to cooperating nations in the form of aerial photography, organizational and technical advice, assignment of surveying and mapping experts as needed, training, production of some maps and charts, and in the loan of surveying and mapping equipment.

Cooperating nations benefit through the development of increased mapping capability and capacity and in the data and maps produced which help in meeting their national needs for economic development and security. The U.S. benefits through the acquisition of the resulting maps and surveys which help in meeting DoD requirements at greatly reduced costs. This is a very effective means of satisfying a portion of the U.S. MC&G requirements. There is no cooperative funding, but programing flexibility permits tailoring DMA support to most effectively contribute to both U.S. and cooperating nations interests.

FLIGHT INFORMATION PROGRAM

Chairman MCCLELLAN. Explain how the 28 day or 56 day requirement for FLIP charts is derived. Has any consideration been given to using other, longer intervals?

Admiral CRAMER. The publication cycle for FLIP charts is basically derived from the statistical experience of the frequency and significance of changes that occur to national air navigation aids, airway and route data and similar facilities upon which various U.S. and foreign national airway systems are based. By international treaty, the U.S., both civil and military aviation, is committed to the minimum standards contained in the Treaty of the International Civil Aviation Organization, ICAO, of the United Nations. The U.S. and all other membernations of the ICAO have agreed to a standardized system for instituting planned changes to national airway systems.

This system, upon which FLIP product cycles are predicated, is known as the Aeronautical Information Regulation and Control, the AIRAC, system. It provides for changes to navigation aids and the like to be accomplished at intervals of 28 days or multiples thereof; that is, 28, 56, 84 or 112 days. FLIPs, which are the graphical and textual depiction of the intricate details of these national airway systems, are therefore produced on cycles commensurate with the statistical history and significance of airway changes for a particular geographical area of the world. Various FLIP products are produced on cycles ranging from 28 days to 56 days for operational cockpit products. These are Instrument Approach Procedures, Instrument Departures and Enroute Charts and Supplements. Preflight planning documents are produced on cycles varying from 56 days to annually depending upon the perishability of the information contained within the documents. Significant changes in FLIP cycles have been instituted since early

1973. Many products which were formerly on 28 day cycles have been extended, at the initiative of DMA, to 56 day or 84 day cycles. All geographical areas with the exception of certain products in the European Theater have been extended at least to 56 days and certain products beyond. A continuing program evaluates every flight information product on the basis of changes currently experienced to determine the optimum cycle.

National Ocean Survey

Chairman McClellan. Compare the relative effort of the National Oceanic and Atmospheric Administration and the Mapping Agency in preparing FLIPs for U.S. and overseas. Is the productivity of that agency comparable, better or worse than the Mapping Agency's? Why does DMA print FLIPs to military users? Are the FLIPs provided by NOAA for DMA printing the same as those NOAA provides other users?

Admiral Cramer. Mr. Chairman, the National Ocean Survey, NOS, of the National Oceanic and Atmospheric Administration, NOAA, produces civil flight information covering the conterminous United States, Alaska and Hawaii. They also produce air traffic control charts used by FAA in the planning and control of long range flights over the Pacific and Atlantic Oceans. The DMA produces FLIPs covering the entire free flying areas of the world. The productivity of NOS versus DMA is difficult to compare directly since different methods of production are utilized. NOS produces virtually all of its flight information publications in-house utilizing air information specialists, cartographers, negative engravers and printing skills. DMA on the other hand relies very heavily on commercial contract for the negative maintenance, printing and distribution of FLIPs.

The analytical phases of maintaining foreign aeronautical information is accomplished in-house by aeronautical information specialists. Since standard, quality controlled cartographic and printing processes are employed by both agencies, or their contractors, the relative productivity of the two agencies is certainly comparable. To satisfy the operational requirements of military aviation within the U.S., DMA uses NOS provided reproduction materials together with DMA produced military flight information pertaining to military air facilities not included on the civil products to publish the quantities of FLIPS required for DoD. This procedure insures there is no duplication of effort between producers of flight information products.

Productivity

Chairman McClellan. Explain how the 10% increase in productivity is measured and compare output in FY 1974, FY 1975, and FY 1976.

Admiral Cramer. DMA has a productivity measurement system which indicates trends in the efficiency of resource utilization by comparing the ratio of product output to resource input from year to year. In its simplest application, the system compares the number of direct labor man-hours required to produce a given type of product, such as a map or chart, against the production standard that existed for that product in the base year, that is, fiscal year 1973. For example, if the base year standard for production of a Joint Operations Graphic is 1,750 man-hours and subsequent technological/organizational improvements permit the product to be produced with an expenditure of 1,675 man-hours, there is a productivity improvement of 4.5 percent. For a comprehensive measure of productivity trends covering all areas of production, the DMA productivity index is based on a ratio of total product outputs to the total operating funds inputs of the three DMA Production Centers. This comprehensive productivity index rewards efforts to reduce overhead for reapplication of the freed resources to production, as well as efforts to increase efficiency in the production processes.

The 1973 base fiscal year ratio of output to input has an index value of 100. The productivity results computed at the end of fiscal year 1974 showed a 5.1 percent increase in productivity over the base year, or a productivity index of 105.1. Preliminary indications are that a further increase of about five percent will be achieved in fiscal year 1975. A further increase of approximately two percent is built into the fiscal year 1976 program. If these gains are realized, DMA will have achieved a cumulative productivity increase of twelve percent during the fiscal year period of 1974 to 1976 as compared to its first year of operations, fiscal year 1973.

Military Personnel Requirements

Chairman McClellan. What proportion of the staff must be military? Describe the positions that absolutely require military personnel. Are further civilianizations planned beyond FY 1976?

Admiral Cramer. Chairman McClellan, we have not established a proportion of the staff which must be military since each military position is evaluated individually against certain criteria to determine the need for military as opposed to civilan incumbency. Generally, those positions which require military personnel exist in our units overseas, the Geodetic Survey Squadron (GSS) in Wyoming, the Cartographic Technical Squadron in California, the Defense Mapping School at Fort Belvoir and to a lesser degree on the staff at the Headquarters and in our production components. The positions in the GSS are mainly geodetic and surveyor specialists who perform surveys primarily in support of strategic weapon systems.

The positions in our school are mostly instructors who have had recent field experience which is invaluable to the military personnel of the Services, who they are teaching. The military positions on the staffs are essential to evaluate and establish priorities on military MC&G requirements. The military knowledge and experience of these personnel is also required to work with the Joint Chiefs of Staff and the military user to understand military requirements, weapons systems, strategy and operations.

As a result of various manpower reviews, by end Fiscal Year 1976 we will have converted 101 positions from military to civilian manning and 130 military positions have been eliminated without replacement by civilians. These actions are in line with the Secretary of Defense's objective of putting more military personnel into combat positions. Subsequent to Fiscal Year 1976 we plan to civilianize an additional 38 military positions.

Aircraft Simulator Transparencies

Chairman McClellan. Why is DMA producing simulator transparencies for use in aircraft flight simulators? Are all flight simulators of all three services using DMA products? Explain who uses them and who does not.

Admiral Cramer. Mr. Chairman, DMA produces transparencies used in radar landmass simulators to create a realistic radar scope presentation of the geographic areas as they would appear if overflown. The transparencies contain radar reflectivity and terrain elevation information essential to training air crews in radar navigation and bombing.

Aircraft simulator transparencies are used by the Air Force, Navy and Marines for integrated operational mission planning as well as for CONUS training; emphasis is being given to increased use of simulators to conserve energy. This has also resulted in multi-million dollar savings for the DoD. Department of Army currently does not employ radar landmass simulators for air crew training. The avionics and the employment of Army aircraft differ significantly from the sophisticated Air Force, Navy and Marine weapon systems that employ radar landmass simulators in training.

Mapping Not Assigned to DMA

Chairman McClellan. Describe the specific plans, programs and policies for mapping, charting and geodesy that are not assigned to the Defense Mapping Agency.

Admiral Cramer. When the Defense Mapping Agency (DMA) was established on 1 January 1972, certain mapping, charting and geodesy (MC&G) functions were retained in the Services. They were: RDT&E service laboratories, data collection, Army Topographic and Troop units, Marine Topographic Platoons, and MC&G elements of Air Force Reconnaissance Technical units. By authority of DoD Directive 5105.40, dated 1 January 1972, the Director, DMA serves as program manager and coordinator of all DoD MC&G resources and activities. This includes review of the execution of all DoD plans, programs and policies for MC&G functions not assigned to DMA. He tasks DoD Components directly to accomplish MC&G RDT&E and data collection requirements as established by DMA. The Army and Marine Topographic units are combat support units serving the commands to which they are assigned by providing products and services supplementary to the basic MC&G support provided by DMA. The MC&G activi-

ties of the Air Force units provide MC&G production support to DMA to the extent that the MC&G effort does not diminish their technical reconnaissance mission functions in support of local commanders.

RDT&E programs in Advanced Development and Engineering Development are funded by DMA and carried out by the service laboratories or commercial contractors. Defense Research Science and Exploratory Research programs are carried out by the Services in keeping with the general objectives and requirements of the MC&G program. Emphasis is currently being placed on six objective areas in the Advanced Development and Engineering Development programs. They are: exploitation of new source materials; automation of cartographic functions; development of MC&G data banks and data bases; development of MC&G products in formats responsive to stated specific needs of users; development in all aspects of MC&G space, air, land and sea collection to meet requirements of new and improved weapon systems; and development of systems and techniques to provide more detailed and accurate geodetic and gravimetric data over larger areas of the earth in support of emerging weapon systems.

Data collection programs include the hydrographic coastal and deep ocean surveys and magnetic surveys carried out in support of MC&G programs by the U.S. Navy; supplemental cartographic aerial photography capability within organic reconnaissance units of the U.S. Air Force; and imagery collection systems which are part of national collection programs. The hydrographic and magnetic survey programs of the Navy are solely responsive to the tasking of the DMA; the data collected supports the Fleet Ballistic Missile program, Navy surface and subsurface navigation, and all the nautical charts and marine navigation data for use of all vessels of the United States and of navigators generally. The supplemental aerial cartographic photographic capability of the U.S. Air Force is tasked by DMA only on those occasions where other collection capabilities, such as commercial contractors or other nation capabilities, are unable to respond to specific needs. In such instances, there frequently is a common need for the same photographic materials to meet intelligence as well as MC&G requirements. Where only MC&G needs are to be supported, reimbursement may be required by the U.S. Air Force if the tasking does not coincide with Air Force operational or training programs. Imagery collection, as a part of national programs, forms a major part of the necessary data input for preparing virtually all MC&G products and services. Requirements expressed by DMA are integrated into the total collection capability with due consideration given to the unique technical and area requirements expressed by the Director, DMA as necessary to provide the MC&G support to military operation forces.

The Director, DMA provides Service MC&G activities with technical advice, training, source materials, standard product specifications, and with specific MC&G projects to ensure that any capability excess to command requirements is gainfully employed. Supplies and excess equipment are provided where necessary. These combat service support units are encouraged to seek assistance from DMA in accomplishing their MC&G tasks.

Defense Special Security System

Chairman McClellan. What is the Defense Special Security System, funded by the Defense Mapping Agency?

Admiral Cramer. The Defense Special Security System (DSSS) is the organization through which the Department of Defense accomplishes its responsibilities for the security, use, and dissemination of compartmented intelligence. The DSSS was the outgrowth of a consolidation in 1964 of the separate Defense Intelligence Agency and Military Department Special Security Officer (SSO) systems. DMA supports and funds the DSSS elements which directly support DMA management and production activities. These consist of nine facilities, located at the three DMA production centers; the four DMA Topographic Center field offices; the DMA Aerospace Center Cartographic Technical Squadron, and the DMA Headquarters.

Mobile Training Teams

Chairman McClellan. Explain what Mobile Training Teams are (Defense Mapping Agency) and how many of them were used in FY 74, FY 75 and planned for FY 76.

Admiral Cramer. Mobile Training Teams (MTT) are made up of a variable number of instructors (normally no more than four) from the Defense Mapping

School of the Defense Mapping Agency. These instructors travel to active, reserve, and National Guard units to present mapping, charting and geodesy (MC&G) training. Major MTT effort is in support of Army Reserve and National Guard units with training generally lasting two days and presented on weekends. The teams are an effective, economical and rapid means of providing training to large numbers of individuals who otherwise would have to travel to the Defense Mapping School at Fort Belvoir. The number of teams used in FY 74, FY 75 and planned for FY 76 are:

Fiscal year 1974	66
Fiscal year 1975	67
Fiscal year 1976	94

SATELLITE MAPPING

Chairman McCLELLAN. Senator Young.

Senator YOUNG. What part of your mapping is done by satellites?

Admiral CRAMER. I would like to go off the record on this.

[Discussion off the record.]

QUESTIONS SUBMITTED BY SENATOR YOUNG

Senator YOUNG. If it is agreeable with you, Mr. Chairman, I would like to have my remaining questions put in the record.

Chairman McCLELLAN. Certainly. Without objection, they will be entered in the record at this point.

[The questions and answers follow:]

NUMBERS OF MILITARY AND CIVILIAN PERSONNEL

Senator YOUNG. How many Defense Mapping Agency personnel are military and how many are civilians?

Admiral CRAMER. Senator, we have a total of 8,419 people authorized for fiscal year 1975. 819 are military and 7,600 are civilian. Under the continuing Civilianization Program, we expect to convert an additional 31 military positions to civilian manning during fiscal year 1976 and by the end of that fiscal year we will have 788 military people and 7,631 civilians.

BUYING FROM COMMERCIAL SOURCES

Senator YOUNG. What types of maps, charts and target coordinates are produced by DMA as opposed to buying similar items from commercial sources?

Admiral CRAMER. Most of the maps, charts and target coordinates produced by DMA are designed for specific military purposes, frequently are integral to a DoD weapon system and usually are not available from commercial sources. However, whenever a commercial product does exist, DMA attempts to obtain it rather than produce a separate product.

Typical examples of commercial products which are often used by DoD are National Geographic maps, wall map products by reputable commercial concerns, commercial road maps of operational areas, oil company road maps as an interim product where a map designed specifically for the military operation does not exist, and commercial city maps or tourist maps where these products will satisfy the military need. In addition to distributing commercial products in lieu of a military product, DMA leans heavily on commercial map and chart makers for source data used in the production of military products. I should point out also that DMA has a statutory responsibility to support mariners in general and that we make all our unclassified nautical charts and publications available for sale to the public.

STORAGE OF MAPS

Senator YOUNG. Does the Agency produce large quantities of maps for storage? If so, what is the expected shelf life of stored maps?

Admiral CRAMER. Sir, DMA prints and holds the necessary quantities of maps in two depots in the United States, down from four depots when the Agency was organized. Quantities for operational use are a function of the expected rate of use over the probable useful life of the map or chart. Quantities of maps for war or contingency reserve are sufficient for initial supply to military forces expected to be committed for particular purposes. DMA relies on a rapid production capability rather than storage to resupply forces in extended military operations.

The expected shelf life varies over a wide range. For each of its products, DMA has established a time span of from 2 to 16 years for which the product is expected to retain its currency for its intended use. In general, maps of rapidly growing cities and charts basic to navigation safety contain highly perishable information. Maps of agricultural areas are less perishable, and small scale maps of lightly populated areas are very long lived. With reasonable care, shelf life is not limited by physical characteristics of paper and ink.

MAPS PRODUCED FOR OTHERS

Senator YOUNG. Does the agency produce maps for other U.S. agencies or foreign countries?

Admiral CRAMER. Yes, sir. DMA has three categories of agreements under which we provide, and in turn, receive maps from foreign countries. First are bilateral agreements under which DMA exchanges stocks of maps we produce for stocks of maps covering the foreign nation. The best example is NATO where DMA gets maps of the NATO countries in exchange for DMA produced maps of areas such as Eastern Europe, Africa and the Middle East. Second are cooperative programs under which DMA and a foreign nation cooperate in producing maps of the foreign nation's territory, each sharing the results of the program. Third are joint production programs where we divide the work to be done and share the results by the exchange of products produced. Typical is a joint program with the United Kingdom for the production of maps/charts at scale 1:250,000 where the resources of neither nation are adequate to produce the necessary coverage within the time required. Each of these arrangements permits DMA to stretch its mapping resources since we generally exchange products which we produce to meet U.S. needs in certain areas for foreign produced products of other areas where we have requirements. DMA produces products for other U.S. agencies only when another agency would have to establish a capability to produce and a unique capability is already in existence at DMA. Examples are NASA and CIA.

DEFENSE NUCLEAR AGENCY

STATEMENT OF LT. GEN. WARREN D. JOHNSON, USAF, DIRECTOR, DEFENSE NUCLEAR AGENCY

ACCOMPANIED BY:

MAJ. GEN. WILLIAM E. SHEDD III, USA, DEPUTY DIRECTOR, OPERATIONS AND ADMINISTRATION

PETER H. HAAS, DEPUTY DIRECTOR, SCIENCE AND TECHNOLOGY

MARVIN C. ATKINS, SCIENTIFIC ASSISTANT TO THE DEPUTY DIRECTOR, SCIENCE AND TECHNOLOGY

PAUL H. CAREW, COMPTROLLER

ALBERT L. STELL, CHIEF, SCIENTIFIC INFORMATION OFFICE

INTRODUCTION OF ASSOCIATES

Chairman MCCLELLAN. General Johnson, you are the Director of the Defense Nuclear Agency?

General JOHNSON. That is correct, sir.

Chairman MCCLELLAN. You have with you some associates this morning. You may identify them for the record.

General JOHNSON. I do indeed. To my right is Major General Shedd, my Deputy Director for Operations and Administration. To his right is Mr. Paul Carew, my Comptroller. To my left is Mr. Peter Haas, my Deputy Director for Science and Technology. And to his left is Dr. Marvin C. Atkins, the Scientific Assistant to Mr. Haas. They are identified by nametags in front of them to help you.

BIOGRAPHY AND PREPARED STATEMENT

Chairman MCCLELLAN. Very well, sir.

You have a long statement that may be inserted in the record in full, and you may proceed to highlight it.

[The biography and statement follow:]

BIOGRAPHY OF LT. GEN. WARREN D. JOHNSON, USAF

General Johnson was born on September 2, 1922, in Blackwell, Oklahoma. He graduated from high school in Oklahoma City and attended Oklahoma City University before enlisting as a Private in the Army of the United States in April 1942. Upon graduation from officer candidate school in November 1942, he was commissioned a Second Lieutenant and assigned to the 9th Armored Division, Fort Riley, Kansas.

In November 1943, he began flying school at Jackson, Tennessee, and completed advanced training and B–17 transition training in 1944. After tours as aide-de-camp to the commanding generals at Barksdale, Brooks and Biggs Fields, he was sent to Tokyo, Japan, where he served from December 1946 until June 1949 as a personnel officer in the Pacific Air Command and the Far East Air Forces.

Next assigned as a B–36 crewmember with the 98th Bombardment Squadron, Carswell AFB, Texas, he began his long association with the Strategic Air Command (SAC). From December 1950 to August 1954, he served as a personnel officer at SAC Headquarters, Offutt AFB, Nebraska. At Little Rock AFB, from May 1955 to July 1959, he served as a B–47 aircraft commander; Chief of Plans and Director of Operations, 70th Strategic Reconnaissance Wing; and Director of Operations, 825th Air Division.

In July 1959, he assumed command of the 340th Bombardment Squadron, Blytheville AFB, Arkansas, and in June 1960 became Deputy Commander for Operations, 97th Bombardment Wing. General Johnson next was assigned as Chief of Transportation, HQ, 16th Air Force, Torrejon AFB, Spain, from August 1961 to January 1962 when he became Commander of the SAC base at Sidi Slimane, Morocco. He returned to the U.S. in August 1963 and became Deputy Director for Personnel, HQ, 8th Air Force. In 1966, he became Vice-Commander and then Commander of the 380th Strategic Aerospace Wing, SAC.

General Johnson assumed command of the 57th Air Division in July 1967 with responsibility for four SAC wings. In August 1968, he became Director of Personnel Resources and Distribution, USAF Military Personnel Center, Randolph AFB, Texas. After his promotion to Brigadier General in August 1969, he assumed the dual assignment of Commander, U.S. Forces, Azores, and Commander, 1605th Air Base Wing, Lajes Field, Azores.

In June 1971, General Johnson became Deputy Chief of Staff, Personnel, HQ, SAC and later Chief of Staff. He joined DNA 1 May 1973 as Deputy Director, Operations and Administration. Upon promotion to Lieutenant General on 1 October 1973, he was appointed the Director. General Johnson also serves as a member of the Aerospace Safety Advisory Panel to the National Aeronautics and Space Administration.

His decorations include the Distinguished Service Medal, the Legion of Merit with two oak leaf clusters, the Joint Service Commendation Medal, the Air Force Commendation Medal with oak leaf cluster, and the Portuguese Meritorious Medal.

Married to the former Frances Louise Clemens of Jackson, Tennessee, he is the father of two daughters, Patricia Suzanne and Lindabeth.

Statement of Lt. Gen. Warren D. Johnson

Mr. Chairman and Members of the Committee: I appreciate the opportunity to present the Defense Nuclear Agency's (DNA) program and budget for fiscal year 1976 and for the transition period, FY 197T. During my testimony I would like to review the agency's mission, last year's stated objectives and the results achieved, our future objectives and requirements, and the funding required to accomplish these objectives and requirements.

Principal Missions

To review briefly, our principal missions are fivefold:

1. To conduct the Department of Defense (DOD) nuclear weapons effects research and test program.
2. To advise and assist on nuclear weapon matters throughout the DOD.
3. To manage the nuclear weapons stockpile.
4. To develop and maintain a national nuclear test readiness program.
5. To conduct nuclear weapons technical inspections of Service units.

Weapons Effects Research and Testing

The majority of DNA effort and funding is associated with weapons effects research and testing. Approximately 82 percent of our funding is devoted to this mission. In our research program, the initial purpose is to predict the environments created by nuclear detonations. We provide methods for assessing the effects of these environments on weapons systems and on command, control and communication systems. Some methods are in the form of calculations while others involve complex laboratory experiments; underground nuclear tests; nonnuclear air, surface, and subsurface tests; or the use of large machines that simulate certain nuclear effects. These sophisticated research techniques are utilized to enhance technology, techniques, and capabilities which would other-

wise be unavailable due to the prohibition against atmospheric testing. In addition to studying the effects of blast overpressure and heat phenomenology, our efforts also address the less familiar effects such as electromagnetic pulse (EMP), communications blackout, acoustic blackout under the sea, and water-wave propagation. In all of these areas, dedicated research is essential to prevent asymmetries in weapon system capabilities between this country and the Soviet Union. In his report to Congress, the Secretary of Defense emphasized the importance of precluding the development of such asymmetries.

Nuclear Weapons Matters

In performing our second major function, DNA becomes involved in virtually every matter concerning nuclear weapons effects and employment throughout the DOD. Examples of these are as follows:

1. DNA assists the Joint Chiefs of Staff (JCS) in the formulation of nuclear weapon development guidance.
2. DNA plays a major role in disseminating information on nuclear weapon technology and developments. Our primary users are the major commands, the military departments, the Office of the Secretary of Defense (OSD), the JCS, and the Energy Research and Development Administration (ERDA), formerly the Atomic Energy Commission.
3. DNA is studying and developing systems to deter, detect, delay, and deny attempts to violate security of the nuclear weapons stockpile—an area of growing concern to our national security.
4. DNA has recently become heavily involved in assisting the services, the JCS, the OSD, and the theater commanders in planning the employment of nuclear weapons. Our advice in this planning effort is designed to insure our forces obtain desired results. This frequently involves tailored outputs and lower yields which are to be delivered with greater accuracy to minimize collateral effects.
5. In coordination with other DOD organizations, we have recently undertaken detailed analyses of the effectiveness and survivability of our tactical forces in a nuclear war. These analyses are conducted using different assumptions concerning the hardware and doctrines of our forces and those of potential enemies. An important aspect is the study of tradeoffs between nuclear and conventional weapons to assure attainment of desired objectives with minimal collateral damage and risk of escalation. By providing expanded knowledge of nuclear weapons effects, we contribute materially to the development of additional nuclear options. I believe this raises the so-called "nuclear threshold," since it gives our country a much better capability of varying its response. That increased capability should certainly enhance the credibility of our deterrent forces.

Nuclear Weapons Stockpile

Our mission in the centralized management of the national nuclear weapons stockpile and the associated reporting system is worldwide in scope and spans the lifetime of a weapon from completion of production by ERDA until retirement. The reporting system insures that the complete status and location of the DOD nuclear weapons are known at all times.

National Nuclear Test Readiness Program

The maintenance of a capability to resume nuclear weapons testing in the atmosphere is another of our assigned missions. Under the terms of this safeguard to the 1963 Limited Test Ban Treaty, DOD and ERDA share responsibility for development and maintenance of a national nuclear test readiness program.

Nuclear Weapons Technical Inspections

Finally, DNA conducts nuclear weapons technical inspections of Service units which have responsibility for assembling, maintaining, or storing nuclear weapons. This agency, in coordination with the military departments, currently inspects 20 to 25 percent of the nuclear-capable units each year. The results provide the OSD and the JCS with an independent assessment regarding the safety and security of nuclear weapons and the proficiency of personnel having custody of them.

Last Year's Objectives and Plans

With this broad overview of our mission in mind, let me discuss some of the more important objectives or plans that I presented to you last year and briefly apprise you of their current status. Please bear in mind that we did not expect to complete all of these goals in the past year. We have had many achievements and some disappointments, but on balance it has been a very successful year.

We planned to evaluate [deleted] by means of underground tests. We executed a [deleted] in June 1974 and will execute a [deleted] this month. A [deleted] is planned for October 1975 with a second [deleted] in May 1976. Unfortunately, we must use more than one underground test to determine responses to different types of possible antiballistic missiles. Our understanding has been improved in the past few years, thereby enabling us to obtain the necessary answers with fewer tests.

[Deleted.] We monitored the French nuclear tests in the Pacific last summer. [Deleted.] Please understand that we were in full compliance with the Limited Test Ban Treaty which prohibits any cooperation with any nation conducting tests in the atmosphere. We were [deleted] observing the tests from international waters in the South Pacific. Since the French have announced they will conduct future tests underground, this may well have been the last opportunity [deleted].

As planned, we developed the capability to use [deleted].

Still another objective was to determine the effects of underwater explosions on modern antisubmarine warfare equipment. We have determined the general mechanisms of equipment upset and are presently evaluating the impact of these mechanisms on specific equipment.

Reentry Vehicle Materials

We planned to define the survivability of advanced reentry vehicle materials in penetrating the water and ice environments produced by nuclear detonations. We have been successful in using novel and inexpensive flight test techniques and in testing hardened material concepts. Both of these innovations have been adopted by the Air Force for further use. We are now evaluating a flight test method we believe will further enhance results and reduce costs.

Casino

Another plan called for the establishment of a new simulation facility (CASINO) to provide an electronics testing capability which is now restricted to underground tests. This facility is now in final assembly and is expected to be fully operational this summer.

Communications Systems

Assessment of the utility of satellite and AUTOVON communications systems in nuclear war was also planned. We have completed electromagnetic pulse testing of AUTOVON facilities at Polk City, Fla., and Delta, Utah; and at another type of communications facility in Fort Huachuca, Ariz. During the coming year, we will test additional types of facilities.

Analyses of data obtained from these tests are applied to similar facilities, thereby eliminating the need for duplicative efforts. In fiscal year 1976 we will apply these analyses to Pacific area communities, and start necessary field testing there in fiscal year 197T. Our intensive program on satellite communications just started a year ago. Thus far, our efforts have been limited to theoretical applications with field work in the planning stages. I expect to have some initial results next year, but the entire program will last for several years.

Deep-Buried Facilities

Another plan was to establish the technology for ultrahard, deep-buried facilities which could be built at reasonable cost. In order to satisfy this goal, we conducted numerous tests. For instance, we conducted an underground experiment in this technical area in June 1974 as an adjunct to one of our major underground tests. The novel techniques employed were totally successful. This project gave us data which, as recently as 2 years ago, we did not think could ever be obtained without atmospheric testing. We have two additional types of new ex-

periments which will provide further classes of data applying to this overall goal. One is scheduled for this month and the other for next May. In addition, a new type of laboratory simulation of weapons effects on ultrahard deep-buried facilities has proved very useful in small scale, and next year we will scale it up.

We planned to provide technology for the hardening of missile systems with minimum penalties on cost and performance. We indicated that we would emphasize full use of modern electronics in hardened form. In the past year we have demonstrated the capability to produce hardened components of very advanced solid-state technology but in a rather simple degree of circuit integration. Next year we expect to demonstrate hardening of much more complex electronic devices. In another area of missile hardening, the testing of a new concept of dust- and ice-resistant reentry vehicle nose tips looks promising. This may lead to better and less expensive nose tips for both nuclear and non-nuclear environments. Since the latter problems have been critical to most reentry developments in recent years, the importance of this effort is obvious.

National Nuclear Test Readiness Program

We planned to update the national nuclear test readiness program. This program supports our capability to resume atmospheric testing in the event of Soviet abrogation of the Limited Test Ban Treaty. The sense of security which has grown during 12 years of compliance with the treaty has made it inevitable that funding for readiness would be reduced in favor of programs which appeared more urgent. This has made it [deleted]. We have studied this problem extensively from the technical side in the past year and have found it most difficult to resolve. In fact, we are presently cooperating with JCS, OSD, and ERDA in a comprehensive study to determine what the future of the program should be. Findings of this study with appropriate recommendations are to be forwarded to the President.

It may be possible to make reductions in future years depending on decisions arising from the study. However, it should be emphasized that both Army and Air Force functions also depend on DNA support at Johnston Island, our primary readiness facility. One example is the storage of Army RED HAT munitions. [Deleted.] only one-third of our RDT&E readiness budget could be saved. The remaining two-thirds would continue to be required to support data collection and research efforts which have application beyond that of pure readiness. Although I am talking about RDT&E funding at this point, it is also appropriate to mention the O&M costs associated with readiness. They are manifested largely in maintaining Johnston Island. The O&M budget for both operational and support responsibilities on the island is $11.3M for FY 76. [Deleted.] The remainder would be needed to sustain non-readiness activities on the island.

I would like to discuss an additional objective which we set last year. I realize there is a tendency to talk only about successes, but this one concerns a failure:

We planned to try out, in prototype form, an innovative concept which offered the possibility of further large cost savings in underground tests. The concept was incorporated in a test executed in October 1974 with unsuccessful results. [Deleted.] As a result [deleted] the tunnel did not seal well. Had there been test articles in place, they would have been destroyed.

I should emphasize there was no escape of radioactivity to the outside. We are continuing to investigate this failure until we understand the causes. The findings will benefit the remainder of the program. However, we have no further plans for this innovation at this time.

I have reported on what we considered were some of our major near-term goals a year ago. As expected, most of these goals have not been fully satisfied in one year and continued efforts will be a large part of our FY 76 and FY 7T programs.

Tactical Nuclear Warfare

I would now like to turn your attention to some additional major goals which have crystallized since I last reported to you. As I mentioned earlier there is intensive activity within the DOD to rethink our positions on tactical nuclear warfare and to develop options in both hardware and employment plans to improve the deterrent effect of our weapons. Figure #1 has been used by Mr. Donald R. Cotter, Assistant to the Secretary of Defense for Atomic Energy, in discussing the desirable characteristics of nuclear forces.

FIGURE 1. DESIRABLE CHARACTERISTICS OF NUCLEAR FORCES

High survivability and penetration capability.

Warning, surveillance and attack assessment capability to support decision-making during and after nuclear attacks.

Adequate command, control, and communications to ensure responsiveness of nuclear forces.

Clear capability to selectively execute an extensive range of attacks in response to potential threats for actions by an enemy.

Conformity with the provisions of arms control agreements.

While he was not talking specifically about our Agency, the information he presented clearly shows why we are close to the center of the action on the first four items. The last item on the chart does not directly involve the technical work of our agency. High survivability and penetration capability depend upon adequate knowledge of weapon effects and the ability to harden everything from command posts to aircraft electronics. Surveillance and attack assessment capabilities require survivable systems and the ability to predict the effects nuclear explosions will have on our own forces. Based on the knowledge we gained during atmospheric testing and on our research efforts of the last ten years, we know that communications will be difficult and uncertain in a nuclear environment. This is due to the fact that nuclear detonations can affect both communications equipment and the atmosphere through which radio signals must propagate. We need additional knowledge to assure the capability for hardening against these effects.

Selective employment of a range of attack options requires additional understanding of weapons. Specifically, we need better estimates of effects of low-yield weapons. We have found that low-yield weapons do not scale directly with those of higher yields.

For all these reasons, we have in FY 75 greatly augmented our Tactical Systems Vulnerability and Hardening project. In FY 76 we will initiate another new project in Command, Control, and Communications with primary emphasis on theater communications. The aggressive pursuit of these new tactical and communications projects is one of our major near-term goals.

OTHER NEW GOALS

Some other new and important near-term goals can be listed briefly:

To support the MX program through extensive high explosive field testing of basing concepts, related analytical work, and application of the hardened reentry vehicle work.

[Deleted.]

To explore the new concept of the shallow-earth penetrator. This weapon would be of low-yield and detonated a few feet below the ground so as to produce a large blast environment but much reduced initial radiation.

To define a high-confidence concept for equipment to simulate the phenomenon known as systems-generated electromagnetic pulse. [Deleted.]

To consolidate, into a form suitable for systems predictions, selected data obtained in the last few years [deleted].

At this time I would like to invite your attention to Table #1 which summarizes our request for funds. Considering inflation, our request corresponds closely with last year's appropriation.

TABLE 1.—FISCAL YEAR 1976 AND FISCAL YEAR 197T BUDGET REQUESTS

[In thousands of dollars]

	Fiscal year—			
	1974	1975	1976	197T
R.D.T. & E.	116,949	119,600	130,606	32,904
Operation and maintenance	19,491	22,034	24,548	6,183
Procurement	178	273	3,310	0
Total	136,618	141,907	158,464	39,087

I will now cover each of the three appropriation areas in turn to provide additional detail.

Table #2 shows a breakdown of our RDT&E budget request. The two program elements are subdivided into the project areas indicated. These funding categories are self explanatory, but I would like to elaborate on a couple of significant aspects of the table.

TABLE 2.—DEFENSE NUCLEAR AGENCY R.D.T. & E. PROGRAM
[Millions of dollars]

	Fiscal year—			
	1974	1975	1976	197T
Nuclear weapons effects development (NWED)	54.2	58.0	67.2	18.0
Aerospace systems vulnerability and hardening	10.1	7.9	10.6	2.4
Command, control, and communications (C^3)			3.8	1.6
Effects assessment and data dissemination	4.1	8.3	7.8	2.1
Electromagnetic pulse (EMP) effects	3.5	3.4	4.0	.9
High altitude phenomenology and applications	8.0	6.8	7.0	1.8
Laboratory radiation simulator development	4.0	7.2	7.8	2.5
Biomedical effects research	3.7	3.6	3.8	1.0
Tactical systems vulnerability and hardening	2.2	6.6	9.3	2.6
Radiation physics research and applications	5.1	2.4		
Strategic structures vulnerability and hardening	6.3	5.7	7.4	1.6
Transient radiation effects on electronics (TREE)	7.2	6.1	5.7	1.5
Nuclear weapons effects test (NWET)	62.7	61.6	63.4	14.9
Underground nuclear tests	20.8	33.1	37.7	8.1
Tests in other environments	12.8	4.5	3.1	.8
Nonnuclear tests	29.1	24.0	22.6	6.0
(Effects simulation with high explosives)	(6.1)	(4.0)	(7.7)	(2.3)
(Effects simulation with machines)	(15.3)	(12.1)	(8.2)	(2.0)
(High altitude effects disturbances)	(7.7)	(7.9)	(6.7)	(1.7)
Total DNA R.D.T. & E.	116.9	119.6	130.6	32.9

Nuclear Weapons Effects Funding

First, I would like to point out the reason for some of the fluctuations you see. The Aerospace Systems area was abnormally low in FY 1975 because we transferred money into the Non-Nuclear Testing area. This was done in order to acquire data for the Aerospace Systems project which could only be obtained through large-scale non-nuclear field tests. In FY 1976 we will return these funds to the Aerospace area to accomplish work which was deferred, and provide for renewed emphasis on aircraft vulnerability problems. The new communications project and the greatly increased activity in tactical systems are readily seen. We have completed the major portion of the work that the Radiation Physics project was created to perform. The project will be canceled in FY 1976. The remaining effort, principally on fallout, will be accomplished under Tactical Systems. The Strategic Structures project will be augmented substantially because of MX work. The High Explosive Simulation effort under Non-Nuclear Tests will be increased because of MX and tactical warfare simulation tests. The $4.7 million increase in Underground Nuclear Tests will not take care of inflation in this area and our actual rate of work in man-years will be lower. The Tests in Other Environments budget was unusually large in 1974 and 1975 because it paid for our monitoring of foreign tests. Considering the public statements by the French that they do not plan to do more atmospheric tests, we have not planned for further monitoring.

DNA—ERDA

Secondly, we provide a number of test facilities for common use by all the Services. The most significant of these, and the largest single item in our budget, involves underground nuclear effects tests. DNA works closely with ERDA in the underground testing program and the division of research responsibility is very clear. ERDA conducts research to support their weapon development program and we perform nuclear effects tests. The ERDA laboratories conduct ex-

periments during our tests to determine effects on hardware they are developing.

At this point, I would like to discuss our O&M Program and invite your attention to Table #3:

TABLE 3.—DEFENSE NUCLEAR AGENCY O. & M. PROGRAM

[In thousands of dollars]

	Fiscal year			
	1974	1975	1976	197T
Direct:				
Nuclear weapons operations	19,061	21,564	24,102	6,071
Counterintelligence and investigative activities	15	22		
Nuclear weapons operations, communications	381	435	433	109
Public affairs	34	13	13	3
Subtotal	19,491	22,034	24,548	6,183
Reimbursable	76	120	145	37
Total O & M	19,567	22,154	24,693	6,220

This program is designed to insure adequate manpower and facilities to support the major tasks already mentioned. As indicated, the overwhelming bulk of our requirements fall under Nuclear Weapons Operations—our personnel and facilities overhead. Our facilities are at four principal locations: The agency headquarters in Washington, D.C.; an operational command headquarters in Albuquerque, New Mexico; the readiness-to-test facility at Johnston Island in the Pacific; and Enewetak Atoll, where we are charged with clean-up of radioactive residue from early testing. A fifth facility, which is in Bethesda, Maryland, houses the Armed Forces Radiobiology Research Institute (AFRRI) and is supported by RDT&E funds.

I should like to point out initially that there will be an approximate $2.5 million increase in FY 76 as compared to the present fiscal year. There was a similar increase in FY 75 over FY 74. These increases have been primarily a result of cost growths for fuel, supplies, and equipment as well as rising transportation costs for material shipped to Enewetak Atoll and Johnston Island. Pay raises for Civil Service personnel in the agency and for contractual employees at Johnston Island have accounted for some of the increase. Also, commencing in FY 1975, we began paying rent to GSA on our headquarters building at the rate of $438 thousand for the first year with an increase to $593 thousand for FY 76.

Manpower

In the area of manpower utilization, we have been successful in reducing total DNA authorizations from the FY 75 Presidential Budget submission of 1,427, to a proposed FY 76 authorized end-strength of 1,209. This is a reduction of approximately 15.3 percent. Upon completion of the radiological cleanup of Enewetak Atoll, 37 additional authorizations will be returned to the Services. This will reduce the Agency baseline to 1,172, representing a cumulative manpower reduction of 17.9 percent. Included in these reductions is the elimination of 24 middle and upper management positions (GS–14/0–5 and above). We have continued the trend toward a reduced average civilian GS grade level as an integral part of our overall personnel management program. Finally, our program calls for civilianization of an additional 37 military positions by FY 78. These conversions will be tailored to the normal rotation cycle of military incumbents and are independent of the authorizations to be deleted upon completion of the Enewetak Atoll project.

Table No. 4 summarizes our total procurement budget request for FY 76 with two prior years for comparison.

TABLE 4.—DEFENSE NUCLEAR AGENCY PROCUREMENT PROGRAM

[In thousands of dollars]

	Fiscal year		
	1974	1975	1976
Direct:			
Vehicles	25	164	153
Other capital equipment	153	109	3,157
Subtotal, direct	178	273	3,310
Reimbursable	4,580	9,019	7,333
Total DNA budget request	4,758	9,292	10,643

DATA PROCESSING EQUIPMENT

As you see, our direct program for FY 76 is $3,310,000 up $3,037,000 from FY 75. This significant increase results from the planned procurement in FY 76 of a Worldwide Military Command and Control System (WWMCCS) computer at a cost of $2,896,000. This computer is necessary to replace existing equipment which will exceed its economic life during calendar year 1976. The data processing operational requirement to replace this equipment has been validated by JCS. Upon receipt of the WWMCCS computer we will be in a better position to perform our command and control mission as a component within the WWMCCS community and, further, to take advantage of the numerous benefits offered by the system. These benefits include reduced hardware costs, common training and logistics support, and common software support. Delaying procurement beyond FY 76 could result in equipment failures with subsequent negative impact on effective data processing operations and, most importantly, on DNA's command and control mission in nuclear weapons stockpile reporting.

Mr. Chairman, this completes my prepared statement. I have given you an overview of our charter, discussed our progress on goals presented last year, described future programs, and provided the rationale underlying our appropriations request.

I will be pleased to answer any questions you may have.

SUMMARY STATEMENT

Chairman MCCLELLAN. Do you have a summary statement?

General JOHNSON. I can summarize it, yes, sir.

I would like to spend 3 or 4 minutes summarizing that, if I may.

Chairman MCCLELLAN. You may read it.

General JOHNSON. I certainly appreciate the opportunity to present our program and budget for fiscal year 1976 and for the transition period, fiscal year 197T. During my testimony I would like to review the Agency's mission, last year's stated objectives and the results achieved, our future objectives and requirements, and the funding required to accomplish these objectives and requirements.

PRINCIPAL MISSIONS

To review briefly, our principal missions are fivefold:

1. To conduct the Department of Defense nuclear weapons effects research and test program.

2. To advise and assist on nuclear weapons matters throughout the DOD.

3. To manage the nuclear weapons stockpile.

4. To develop and maintain a national nuclear test readiness program.

5. To conduct nuclear weapons technical inspections of service units.

WEAPONS EFFECT RESEARCH AND TESTING

Approximately 82 percent of our funding is devoted to weapon effects research and testing. In our research program, the initial purpose is to predict the environments created by nuclear detonations. We then provide methods for assessing the effects of these environments on weapons systems and on command, control, and communication systems. Some methods are in the form of calculations while others involve complex laboratory experiments; underground nuclear tests; nonnuclear air, surface, and subsurface tests; and the use of large machines that simulate certain nuclear effects. This research is essential to assure we have the knowledge of nuclear weapons effects to prevent asymmetries in weapons systems capabilities between this country and the Soviet Union. In his report to Congress, the Secretary of Defense emphasized the importance of precluding the development of such asymmetries.

LAST YEAR'S OBJECTIVES AND PLANS

With this broad overview of our mission in mind, let me discuss some of the more important objectives or plans that I presented to you last year and briefly apprise you of their current status. Please bear in mind that we did not expect to complete all of these goals in the past year.

We planned to evaluate [deleted] by means of underground tests. We executed one of the required [deleted] tests in June 1974 and will execute another this month. The final tests are planned for October 1975 and May 1976.

[Deleted.] We monitored the French nuclear tests in the Pacific last summer. [Deleted] while remaining in full compliance with the Limited Test Ban Treaty.

CASINO

Another plan called for the establishment of a new simulation facility (Casino) to provide an electronics testing capability which, until now, we could only do in costly underground tests. This facility is now in final assembly and is expected to be fully operational this summer.

COMMUNICATIONS SYSTEMS

Assessments of the utility of satellite and AUTOVON communications systems in nuclear war was also planned. We have completed electromagnetic pulse testing of AUTOVON facilities at several locations and, during the coming year, we will test additional types of facilities. In fiscal year 1976 we will apply these analyses to Pacific area communications and start necessary field testing there in fiscal year 197T.

HARDENING OF MISSILE SYSTEMS

We planned to provide technology for the hardening of missile systems with minimum penalties on cost and performance. In the past year we have demonstrated the capability to produce hardened components of very advanced solid-state technology but in a rather simple degree of circuit integration. Next year we expect to demonstrate hardening of much more complex electronic devices. In another area of missile hardening, the testing of a new concept of dust and ice-resistant reentry vehicle nose tips looks promising. This may lead to better and less expensive nose tips for both nuclear and nonnuclear environments.

NATIONAL NUCLEAR TEST READINESS PROGRAM

We planned to update the national nuclear test readiness program. The sense of security which has grown during 12 years of compliance with the Limited Test Ban Treaty has made it inevitable that funding for readiness would be reduced in favor of programs which appeared more urgent. This has made it [deleted]. We are presently cooperating with JCS, OSD, and the Energy Research and Development Administration (ERDA) in a comprehensive study to determine what the future of the program should be. Findings of this study with appropriate recommendations are to be forwarded to the President. It may be possible to make reductions in future years depending on decisions arising from the study. However, it should be emphasized that both Army and Air Force functions also depend on DNA support at Johnston Island, our primary readiness facility. One example is the storage of Army RED HAT munitions. Approximately half of our O. & M. budget for readiness is required to sustain nonreadiness activities on the island.

PROTOTYPE FORM

Now, I realize there is a tendency to talk only about successes, but I must mention a disappointing failure.

We planned to try out, in prototype form, an innovative concept which offered the possibility of further large cost savings in underground tests. The concept was incorporated in a test executed in October 1974 with unsuccessful results. [Deleted.]

As a result [deleted], the tunnel did not seal well. Had there been test articles in place, they would have been destroyed.

I should emphasize there was no escape of radioactivity to the outside. We have no further plans for the innovation at this time.

I have reported on what we considered were some of our major near-term goals a year ago. As expected, most of these goals have not been fully satisfied in 1 year and continued efforts will be a large part of our fiscal year 1976 and fiscal year 197T programs.

TACTICAL NUCLEAR WARFARE

I would now like to discuss some additional major goals which have crystallized since I last reported to you. As I mentioned earlier, there

is intensive activity within the DOD to rethink our positions on tactical nuclear warfare and to develop options in both hardware and employment plans to improve the deterrent effect of our weapons.

Figure No. 1 has been used by Mr. Donald R. Cotter, Assistant to the Secretary of Defense for Atomic Energy, in discussing the desirable characteristics of nuclear forces.

[The information follows:]

FIGURE NO. 1. DESIRABLE CHARACTERISTICS OF NUCLEAR FORCES

High survivability and penetration capability.
Warning, surveillance and attack assessment capability to support decision-making during and after nuclear attacks.
Adequate command, control, and communications to ensure responsiveness of nuclear forces.
Clear capability to selectively execute an extensive range of attacks in response to potential threats for actions by an enemy.
Conformity with the provisions of arms control agreements.

General JOHNSON. While he was not talking specifically about our agency, the information he presented clearly shows why we are close to the center of the action on the first four items. High survivability and penetration capability depend upon adequate knowledge of weapon effects and the ability to harden everything from command posts to aircraft electronics. Surveillance and attack assessment capabilities require survivable systems and the ability to predict the effects nuclear explosions will have on our own forces.

Based on the knowledge we gained during atmospheric testing and on our research efforts of the last 10 years, we know that communications will be difficult and uncertain in a nuclear environment. This is due to the fact that nuclear detonations can affect both communications equipment and the atmosphere through which radio signals must propagate. We must do more weapons effects research in this area.

Selective employment of a range of attack options requires additional understanding of weapons—both to assure destruction of desired targets and, equally important, to avoid collateral damage to our own forces and to our allies. Specifically, we need better estimates of effects of low-yield weapons.

For all these reasons, we have in fiscal year 1975 greatly augmented our tactical systems vulnerability and hardening project. In fiscal year 1976, we will initiate another new project in command, control, and communications with primary emphasis on theater communications. The aggressive pursuit of these new tactical and communications projects is one of our major near-term goals.

OTHER NEW GOALS

Some other new and important near-term goals can be listed briefly:

To support the MX program through extensive high explosive field testing of basing concepts, related analytical work, and applications of the hardened reentry vehicle work.

[Deleted.]

General JOHNSON. To explore effects expected in the new concept of the shallow earth penetrator. This weapon would be of low-yield and detonated a few feet below the ground so as to produce a large blast environment but much reduced initial radiation.

To define a high-confidence concept for equipment to simulate the phenomenon known as systems-generated electromagnetic pulse. [Deleted.]

FISCAL YEARS 1976 AND 197T BUDGET REQUESTS

At this time I would like to invite your attention to table No. 1 which summarizes our request for funds. Considering inflation, our request corresponds closely with last year's appropriation.

[Table No. 1 follows:]

TABLE 1.—FISCAL YEARS 1976 AND 197T BUDGET REQUESTS

[In thousands of dollars]

	Fiscal year—			
	1974	1975	1976	197T
R.D.T. & E	116,949	119,600	130,606	32,904
Operation and maintenance	19,491	22,034	24,548	6,183
Procurement	178	273	3,310	0
Total	136,618	141,907	158,464	39,087

R.D.T. & E. BUDGET REQUESTS

General JOHNSON. I will cover each of the three appropriation areas in turn to provide additional detail.

Table No. 2 shows a breakdown of our R.D.T. & E. budget requests. The two program elements are subdivided into the project areas indicated. The increased emphasis on tactical systems and command, control, and communications is easily seen. Other program changes are relatively minor and are explained in my statement for the record.

[Table No. 2 follows:]

TABLE 2.—DEFENSE NUCLEAR AGENCY, R.D.T. & E. PROGRAM

[In millions of dollars]

	Fiscal year—			
	1974	1975	1976	197T
Nuclear weapons effects development (NWED)	54.2	58.0	67.2	18.0
Aerospace systems vulnerability and hardening	10.1	7.9	10.6	2.4
Command, control, and communications (C³)			3.8	1.6
Effects assessment and data dissemination	4.1	8.3	7.8	2.1
Electromagnetic pulse (EMP) effects	3.5	3.4	4.0	.9
High altitude phenomenology and applications	8.0	6.8	7.0	1.8
Laboratory radiation simulator development	4.0	7.2	7.8	2.5
Biomedical effects research	3.7	3.6	3.8	1.0
Tactical systems vulnerability and hardening	2.2	6.6	9.3	2.6
Radiation physics research and applications	5.1	2.4		
Strategic structures vulnerability and hardening	6.3	5.7	7.4	1.6
Transient radiation effects on electronics (TREE)	7.2	6.1	5.7	1.5
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Tests in other environments	12.8	4.5	3.1	.8
Nonnuclear tests	29.1	24.0	22.6	6.0
Effects simulation with high explosives	(6.1)	(4.0)	(7.7)	(2.3)
Effects simulation with machines	(15.3)	(12.1)	(8.2)	(2.0)
High altitude effects disturbances	(7.7)	(7.9)	(6.7)	(1.7)
Total DNA R.D.T. & E	116.9	119.6	130.6	32.9

R.D.T. & E. PROGRAM

General JOHNSON. With regard to nuclear weapon effects tests, I should point out that we provide a number of test facilities for common use by all the services.

The most significant of these, and the largest single item in our budget, involves underground nuclear effects tests. DNA works closely with ERDA in the underground testing program and the division of research responsibility is very clear. ERDA conducts research to support their weapon development program and we perform nuclear effects tests. Indeed, the ERDA laboratories conduct experiments during our tests to determine effects on hardware they are developing.

I invite your attention to table No. 3 concerning our O. & M. program.

[Table No. 3 follows:]

TABLE 3.—DEFENSE NUCLEAR AGENCY—O. & M. PROGRAM

[In thousands of dollars]

	Fiscal year—			
	1974	1975	1976	197T
Direct:				
Nuclear weapons operations	19,061	21,564	24,102	6,071
Counterintelligence and investigative activities	15	22		
Nuclear weapons operations, communications	381	435	433	109
Public affairs	34	13	13	3
Total	19,491	22,034	24,548	6,183
Reimbursable	76	120	145	37
Total O & M	19,567	22,154	24,693	6,220

O. & M. PROGRAM

General JOHNSON. Our facilities are at four principal locations: the agency headquarters in Washington, D.C.; an operational command headquarters in Albuquerque, N. Mex.; the readiness-to-test facility at Johnston Island in the Pacific; and Enewetak Atoll, where we are charged with clean-up of radioactive residue.

I should point out initially that there will be an approximate $2.5 million increase in fiscal year 1976 as compared to the present fiscal year.

There was a similar increase in fiscal year 1975 over fiscal year 1974. These increases have been primarily a result of inflation. Pay raises for civil service personnel in the agency and for contractual employees at Johnston Island have accounted for some of the increase. Also, commencing in fiscal year 1975, we began paying rent to GSA on our headquarters building at the rate of $438,000 for the first year with an increase to $593,000 for fiscal year 1976.

MANPOWER

In the area of manpower utilization, we have reduced total DNA authorizations from the fiscal year 1975 Presidential budget submission of 1,427 to a proposed fiscal year 1976 authorized end-strength of

1,209. This is a reduction of approximately 15.3 percent. We have continued the trend toward a reduced average civilian GS grade level as an integral part of our overall personnel management program.

Finally, our program calls for civilianization of an additional 37 military positions by fiscal year 1978.

Chairman McCLELLAN. You have been reducing personnel. Now you say you are going to start increasing?

General JOHNSON. No, sir, we are going to civilianize some of the military spaces; 37 of those spaces that are now military will be made civilian.

Chairman McCLELLAN. Doesn't that increase the costs you are going to pay the military?

General JOHNSON. No, sir, those military spaces will be done away with.

Chairman McCLELLAN. In other words, they will not be retained in the military?

General JOHNSON. That is correct, sir.

Chairman McCLELLAN. Go ahead. I understand.

General JOHNSON. Our table 4 summarizes our total procurement budget request for fiscal year 1976 with 2 prior years for comparison.

[Table 4 follows:]

TABLE 4.—DEFENSE NUCLEAR AGENCY—PROCUREMENT PROGRAM

[In thousands of dollars]

	Fiscal year—		
	1974	1975	1976
Direct:			
Vehicles	25	164	153
Other capital equipment	153	109	3,157
Subtotal, direct	178	273	3,310
Reimbursable	4,580	9,019	7,333
Total DNA budget request	4,758	9,292	10,643

PROCUREMENT PROGRAM

General JOHNSON. The significant increase in our direct program for fiscal year 1976 results from the planned procurement in fiscal year 1976 of a worldwide military command and control system (WWMCCS) computer at a cost of $2,896,000. This computer is necessary to replace existing equipment which will exceed its economic life during calendar year 1976. The data processing operational requirement to replace this equipment has been validated by JCS in support of DNA's command and control mission.

Mr. Chairman. this completes my prepared statement. I have submitted a slightly more detailed statement for the record. I will be pleased to answer any questions you may have.

Chairman McCLELLAN. Thank you, sir.

Senator Young.

Senator YOUNG. Two or three questions: Do you buy or lease your computers?

General JOHNSON. We buy the computers.

Senator YOUNG. On a bid basis?

General JOHNSON. Yes, sir, the WWMCCS computer has already been bid and this is a part of the WWMCCS buy.

Senator YOUNG. On page 6 you mention in another area, missile hardening, the testing of another concept of ice resistant reentry vehicles now looks promising. Do you have a problem with the reentry nose vehicle?

General JOHNSON. Yes, sir, the reentry vehicle comes into the atmosphere at a high rate of speed. When that impacts either dust that might have been raised from a previous detonation or the hydrometers or water content of the clouds that are raised by a nuclear detonation or even extensive storm clouds—this impinges on that nose tip and erodes the nose tip so that it could, if it eroded too much, lose its aerodynamic characteristics and not hit the target.

Therefore, we must assure that any nose tip we have can resist that erosion.

Our programs are involved in determining what the extent of that erosion is. We have done this by firing some of these nose tips into some extensive storm systems which lets that nose tip impact against some of the water content of that storm system and we measure that erosion so we know exactly what amount of erosion takes place and which materials are most resistant to that erosion.

Senator YOUNG. That means with respect to our Minuteman III, some of them under certain conditions are not as accurate as they might be; is that right?

General JOHNSON. The technology has been applied to the Minuteman III system and the most resistant material we have has been applied to the Minuteman system. We do not know how much erosion takes place for sure, yet. That is one of the things we are looking at. I think we can say we believe those Minuteman systems are sufficiently prepared to resist that erosion, that they retain their accuracy.

Senator YOUNG. They will be more accurate with——

General JOHNSON. As long as the erosion is not excessive, they will not lose their accuracy.

Senator YOUNG. This erosion takes place in flakes?

General JOHNSON. Yes, sir. I think we can illustrate that.

Senator YOUNG. This is the first time I have heard of that.

General JOHNSON. Mr. Haas, will you explain that?

Mr. HAAS. I will leave it to Dr. Atkins.

Dr. ATKINS. I have here two models of tungsten nose tips which were flown during the past year. These are castings made from the original parts which were flown into rainstorms over the ocean. These are both tungsten, very heavy, hard metal which is more resistant than any of the nose tip materials which are on production missiles at this time.

I have these two just to show how improved materials can help solve the problem and particularly how quickly one can respond when you have to. The tip on the right here is what you might call a conventional form of tungsten which split during the reentry process. You can see some erosion having taken place at the point and then the tungsten material just split.

The other piece was flown several months later and is an improved tungsten material which is much more resistant to the heating—that

is, much more resistant to cracking from the heat load. So it looks like this is one of the things, one of the approaches which will help solve the problems which do exist.

Senator YOUNG. If you solve it, you will have more accuracy?

Dr. ATKINS. Yes, sir.

Chairman MCCLELLAN. Anything further?

Senator YOUNG. No, sir.

QUESTIONS SUBMITTED BY CHAIRMAN MCCLELLAN

Chairman MCCLELLAN. I do have some questions to be answered for the record.

NUCLEAR WEAPONS TECHNICAL INSPECTIONS

Chairman MCCLELLAN. How many nuclear weapons inspections of service units are conducted each year, and what percent of nuclear-capable and other equipped units does this represent?

General JOHNSON. Data provided to the Defense Nuclear Agency by the Services for the last half of Fiscal Year 1974 shows that a total of approximately 750 inspections are conducted each year by the Services and the Defense Nuclear Agency.

Approximately 150 nuclear-capable units are inspected by the Defense Nuclear Agency each year. Actually, in Fiscal Year 1974, the agency inspected 143 nuclear-capable units. By JCS direction, the agency is required to inspect 20 to 25 percent each year. Our figures show that, for Calendar Year 1974: 23 percent of Army units; 21 percent of Navy units; and 22 percent of Air Force units were inspected.

Chairman MCCLELLAN. What have been the results of the technical inspections to date? Can you categorize the results regarding the safety, security and proficiency of these units.

General JOHNSON. In general Defense Nuclear Agency inspections show that units are capable of performing their mission satisfactorily. The inspections are tough and are conducted to insure that personnel are qualified to handle nuclear weapons in a safe and secure environment. If a unit is rated unsatisfactory because of a failure to demonstrate technical familiarity with the weapon or if defects are noted in the safety and security, the unit is reinspected as soon as possible following corrective action. In fiscal year 1974 security and personnel reliability program deficiencies accounted for approximately 50 percent of the unsatisfactory ratings followed by 20 percent for weapon operations and 9 percent for safety. The following are some typical deficiencies which cause unsatisfactory ratings:

Security: Intrusion Detection Alarm systems inoperative; not tamperproof; junction boxes not locked/secured; and required security checks/patrols were not done at prescribed times.

Personnel Reliability Program: Failure to properly administer personnel and medical aspects of the program.

Weapon Operations: Omission of major steps in prescribed procedures and technicians unfamiliar with established technical procedures.

Safety: Failure to load test handling equipment within specified limits; damaged equipment not removed from service or inspected for future serviceability; and failure to adhere to prescribed procedures for weapon loading and tiedown during movement.

ACOUSTIC BLACKOUT UNDER THE SEA

Chairman MCCLELLAN. What happens during acoustic blackout under the sea, and why is it of concern to the Department?

General JOHNSON. An underwater explosion in the kiloton range propagates an acoustic wave (sound wave) that may travel thousands of miles in a large ocean basin. As this energy propagates throughout the basin, reflections occur from the bottom, surface, seamounts and continental shelves that create a reverberant acoustic field that may persist for hours in large basins (such as the Eastern

Pacific and Western Atlantic and for lesser periods in smaller basins (such as the Norwegian Sea). This explosion induced acoustic disturbance is of high intensity (far above undersea background noise) and covers a broad band of frequencies, including those at which our anti-submarine warfare (ASW) sensor systems operate. [Deleted.]

SECURITY OF NUCLEAR WEAPONS

Chairman MCCLELLAN. Discuss the kinds of efforts being done to preserve the security of the nuclear weapons stockpile. How much is being spent on this in Fiscal Years 1975 and 1976, and how many manyears are involved?

General JOHNSON. The Department of Defense has been acutely aware of the potential danger to the security of our nuclear weapons stockpile. During the past several years, additional measures have been taken to cope with the new threat of violent overt actions that might occur. Major improvements have been instituted which enhance the procedures affecting the storage, control, custody, and accountability of nuclear weapons. Physical security improvements such as hardened facilities, better lighting, guard towers, and sophisticated electronic devices have been added. Guard force personnel have been reinforced and have been provided with additional firepower. To accomplish these improvements, $51.2 million has been approved for DoD expenditure during Fiscal Years 1973 through 1975, with $29.6 million having been approved for Fiscal Year 1975 alone.

The intelligence community has initiated continuing efforts to provide information concerning the perceived capabilities and intentions of terrorists and other adversary groups. The nuclear weapons storage sites, quick reaction alert facilities, and transportation means were evaluated for vulnerabilities. Studies concerning the vulnerabilities of the sites have been completed, and the information used to strengthen the security of each site. Those sites that were determined to be of marginal operational effectiveness have been closed.

DNA and the Services conduct nuclear weapon technical inspections which include looking at the security of installations and nuclear capable units. In the course of a year, DNA will look at approximately 150 units and the Services at approximately 600 units.

DNA has initiated a program, in conjunction with the Services and other governmental agencies, to develop new physical security equipment and evaluate new concepts. This program has resulted in design of facilities that improve security at minimal cost. DNA has sponsored a series of tests of barriers and fencing materials to document their resistance to penetration and to determine the most effective design. A standard design has been adapted to upgrade and improve fencing. This program also identified various aspects of the attack phenomena so that sensors may be properly designed or applied.

Also, DNA has initiated a program to evaluate the behavioral deterrent values of security designs and concepts. We are sponsoring the development of a family of forced entry deterrent systems that should provide 20 to 40 minutes delay time for less than $2,000 per structure. As the viability of each system is proven, additional effort will be devoted. DNA personnel have worked closely with Energy Research and Development Administration personnel in research and development of denial, disable, and destruct systems. In Fiscal Year 1975, DNA will spend $652,000 and, in Fiscal Year 1976, $365,000 to preserve the security of nuclear weapons. DNA and our contractors will expend 25 manyears in 1975 and 20 manyears in 1976 on the nuclear weapons security program.

CASINO

Chairman MCCLELLAN. Describe the new simulation facility, including its mission and total cost. Also explain what it can do that is not now available.

General JOHNSON. Casino is a radiation simulation facility which will provide "hot" or high-temperature X-rays to test survivablity of inertial guidance subsystems, integrated circuit boards, and computer sub-modules. Until this year, there has been no way to expose components of these types to hot X-rays [deleted]. Casino will actually be better than nuclear testing for many projects since guidance components, for example, are unrealistically disturbed by the severe ground shock which exists in underground tests but not in the real military environment.

The total cost of Casino has been $11.6 million, almost all of which has been spent. Of this $3.2 million was spent on laboratory research to find out how to build such a simulator and to develop the final concept, and $8.2 million has been spent on the facility itself since the decision to build. Of this $8.2 million, $2.2 million was Military Construction, and the major fraction of the equipment was procured on a $4.0 million fixed price contract.

Deep-Buried Facilities

Chairman McClellan. Describe your effort on establishing the technology for ultrahard deep-buried facilities at low cost. What kinds of facilities and at what cost? Compare them with existing underground facilities and their hardness.

General Johnson. Our technology program on response of deep-buried structures is not directed toward support of an approved system, but is an exploratory development program to provide the United States with options for such facilities. Types of installations to which this technology can be applied include command posts, communications installations, and survivable missile storage facilities. Only five years ago, when comparisons were made of underground and surface concepts for SANGUINE, it was envisioned that an underground facility of this type would have to be 10,000 feet deep to provide the required hardness. More recently it has been recognized, as a result of DNA work in the Strategic Structures project, that in appropriate geologies a depth of 3,000 to 6,000 feet is probably adequate. No definitive cost studies have been performed, but it is generally recognized that very large cost savings, perhaps representing the difference between feasibility and infeasibility, will result from these shallower depths. Not only will there be lower excavation costs, but with shallower burial depths the problems of communications, life support, and entrance and exit components become much less severe.

The best way to compare hardness of future underground facilities with existing installations is to point out that design hardness levels currently range from [deleted] per square inch blast overpressure. With the missile accuracies expected in the 1980's, these hardness levels may not be adequate for certain very critical targets. The deep-buried concepts now being studied could withstand a direct hit from any conceivable weapon and would be, in effect, infinitely hard.

Johnston Island Activities

Chairman McClellan. What types of non-readiness activities take place at Johnston Island? If the readiness-to-test program were discontinued, what other missions would have to be performed there and at what cost?

General Johnson. The major non-readiness activities currently supported at Johnston Atoll (JA) by the Defense Nuclear Agency (DNA) are as follows:

Activity	Unit	Number of personnel (approximate)
Red Hat chemical munitions storage	267th Chemical Company (U.S. Army Support Command, Hawaii).	90
Thor missile	Detachment 1, 10th Aerospace Defense Squadron (U.S. Air Force Aerospace Defense Command).	35
Herbicide Orange storage	Civilian contractor	3
Satellite photography	Detachment 2, 18th Surveillance Squadron (U.S. Air Force Aerospace Defense Command).	20
Communications	Detachment 1, 1957th Communications Group (Air Force Communications Service).	50
Weather/environment	National Oceanic and Atmospheric Administration Station	5
Loran station	U.S. Coast Guard Station	21

If the readiness-to-test program is discontinued, the Army Red Hat chemical storage activity will be the primary continuing mission on JA, and can be expected to remain indefinitely. The satellite photography, communications, weather/environment, and Loran Station activities may also continue indefinitely. Some reductions in the Communications Detachment will be possible, since it provides support now for both general base communications and

readiness communications requirements. The Thor missile launch and Herbicide Orange storage activities are expected to be phased out. Thor missile support is required for the Army Ballistic Missile Test Target Program launches currently programmed for completion in fiscal year 1977. The Herbicide Orange storage mission will cease with the programmed disposition of existing stocks in late 1975.

A decision upon the level of base support required for remaining activities depends on three presently unresolved issues:

1. The level of maintenance of the facilities at JA currently associated with readiness.
2. The introduction of any new special storage or operational activities on JA.
3. The level of maintenance and operation required for the airfield on JA.

Because of the several unknown factors mentioned, I can only estimate that the cost to support remaining activities at JA will be approximately [deleted]. This savings would not be achieved immediately because of offsetting termination costs, but would only be possible following a phase down period of about one year. This is based upon our latest estimates and does not consider future increases caused by inflation.

Transition Budget

Chairman McClellan. What new programs are requested in the transition budget?

General Johnson. Sir, no new programs are requested in the transition budget.

Data Processing Equipment

Chairman McClellan. Why does the Defense Nuclear Agency have to procure a computer for $2.9 million? What can this new computer do that the equipment it is replacing is unable to do?

General Johnson. Mr. Chairman, this computer is required to properly perform our Command and Control mission as a member of the Worldwide Military Command and Control System (WWMCCS) community. The DNA operational requirement for a WWMCCS system in support of our mission was validated by the Joint Chiefs of Staff in December 1974. Also, the present equipment is rapidly reaching the end of its realistic economic life where excessive downtime and maintenance and repair costs virtually dictate replacement through a Fiscal Year 1976 buy.

Mr. Chairman, the principal enhancement offered by the new computer is the compatibility and interoperability with components of the WWMCCS community; that is not possible with the present equipment. The WWMCCS system will permit joint technical support, common software support, common training, and logistical support. It will also permit standardization of equipment, system and selected application software, as well as development of communications support for internetting within the WWMCCS community.

Johnston & Enewetak Atolls Contracts

Chairman McClellan. Explain the contracts in use at Johnston and Enewetak Atolls and the reasons for increases budgeted in FY 76 for these contracts.

General Johnson. *Johnston Atoll.*—Johnston Atoll (JA) is maintained by the Defense Nuclear Agency (DNA) as the readiness-to-test facility in the Pacific and as a storage site for Air Force herbicides and Army chemical munitions pending their disposal. The operation and maintenance functions at JA are performed by Holmes and Narver, Inc., Pacific Test Division, a contractor operating on a cost-plus-fixed-fee contract. The contractor operates the mess halls, laundry, dispensary, cold storage plant, power generation and distillation equipment, motor pool, and marine fleet. Services provided include: maintenance of real property and non-installed equipment, safety, security, fire protection, pest control, janitorial, refuge and garbage collection, warehousing, transportation of material, and base administration. The FY 1976 increase of $1,410,000 over the $9,890,000 budgeted in FY 1975 is primarily attributable to cost growth as shown below:

Labor (Provides for a 7.5 percent pay raise for 309.2 man-years of contractual effort.)	$515,000
Subsistence (Subsistence costs increased from $4.08 per day in fiscal year 1975 to $4.90 in fiscal year 1976.)	126,000
Material (Annualization of price increases for supplies and equipment.)	473,000
Transportation (Rate increase.)	119,000

The balance of $177,000 is required for high priority maintenance of real property projects.

Enewetak.—The Defense Nuclear Agency has been designated by the Department of Defense as Program Manager for the cleanup of radiological debris from Enewetak Atoll resulting from U.S. Government use of this atoll for nuclear weapon testing and development from 1948 to 1958. This responsibility includes maintaining Enewetak in a caretaker status pending the start of cleanup operations. This function is funded from the operation and maintenance appropriation pending authorization and appropriation of Military Construction funds for the actual cleanup.

The current housekeeping support is provided by the Management and Technical Services Corporation (MATSCO), a subsidiary of General Electric Corporation. Effective May 1, 1975, DNA has extended this contract for an additional year. Support provided by MATSCO includes operation of the mess hall and utility equipment as well as maintenance of facilities and equipment. The current contract calls for 21 man-years of effort in FY 76.

The increase of $132,000 from $447,000 budgeted in FY 1975 to $579,000 in FY 1976 is principally related to inflation. Examples of cost growth include:

Labor (Provides for a 8 percent pay increase for 21 man-years of contractual effort.)	$34,000
Supplies and equipment (Annualization of price increase for supplies and equipment.)	25,000
Transportation (Rate increase.)	20,000

The balance of $53,000 will support 1.5 additional man-years of labor and materials for some urgently needed maintenance projects.

Assistant Secretary of Defense

Contingencies

JUSTIFICATION

Chairman McClellan. Mr. Fred Wacker, Deputy Assistant Secretary of Defense has a statement concerning fiscal year 1976 contingencies to be included in the record. The data from the justification relating to contingencies will be included in the record.

PREPARED STATEMENT AND QUESTIONS AND ANSWERS

Without objection, Mr. Wacker's statement, as well as questions and answers relating to his testimony, will also be inserted at this point.

[The statement and questions and answers follow:]

Mr. Chairman and members of the committee, I appreciate the opportunity to meet with the Committee, and to discuss our request for funds under the Contingencies, Defense Appropriation for FY 1976.

For fiscal year 1976, we have estimated our requirements at $5 million under the Contingencies, Defense Appropriation and for the period July 1, 1976 through September 30, 1976, $1,250,000 to provide for the orderly transition to the new fiscal year which will begin on October 1, 1976.

These contingency funds are required to provide the Secretary of Defense with resources needed to cover unforeseeable emergencies and extraordinary expenses of a confidential military nature. These types of expenses cannot be programmed or definitized with any reasonable degree of accuracy. It is for this reason that they are budgeted for under a contingency account rather than under a regular Defense appropriation. Under the Contingencies, Defense Appropriation, to the extent the funds are not required in a particular fiscal year, all unobligated balances revert to the Treasury.

It is our objective to hold the use of the funds made available under this appropriation to a minimum level. We have been successful in recent years in minimizing the obligations incurred, enabling us to return a considerable portion to the Treasury. Experience over a longer period, however, has demonstrated the need for providing contingency funds which the Secretary of Defense can use to discreetly and expeditiously finance emergency and extraordinary requirements as the need arises.

CONTINGENCIES, DEFENSE

For emergency and extraordinary expenses arising in the Department of Defense, to be expended on the approval or authority of the Secretary of Defense and payments may be made on his certificate of necessity for confidential military purposes; $5,000,000.

For "Contingencies, Defense" for the period July 1, 1976 through September 30, 1976, $1,250,000. (Department of Defense Appropriation Act, 1975.)

DEPARTMENT OF DEFENSE JUSTIFICATION OF ESTIMATES, FISCAL YEAR 1976

Appropriation title: Contingencies, Defense
Change in language: None required.
Reason for change: None.

CONTINGENCIES, DEFENSE

PROGRAM AND FINANCING (IN THOUSANDS OF DOLLARS)

	1974 actual	1975 estimate	1976 estimate	Transition
Program by activities: Emergency and extraordinary expenses (obligations) (object class 91.0)	2,000	2,500	5,000	1,250
Financing: Unobligated balance lapsing	3,000			
Budget authority (appropriation)	5,000	2,500	5,000	1,250
Relation of obligations to outlays:				
Obligations incurred, net	2,000	2,500	5,000	1,250
Obligated balance, start of year	3,262	5,071	1,857	3,187
Obligated balance, end of year	−5,071	−1,857	−3,187	−1,767
Outlays	191	5,714	3,670	2,670

DEPARTMENT OF DEFENSE, JUSTIFICATION OF ESTIMATES, FISCAL YEAR 1976—CONTINGENCIES, DEFENSE

INTRODUCTORY STATEMENT

[In thousands of dollars]

	Fiscal year—			
	1974 actual	1975 estimate	1976 estimate	197T estimate
Appropriation estimate	5,000	2,500	5,000	1,250
Unobligated balance of appropriation	3,000			
Total direct obligations	2,000	2,500	5,000	1,250

This appropriation provides the Secretary of Defense with funds to meet emergencies and extraordinary expenses arising in connection with the national security and for such other purposes as he deems proper.

JUSTIFICATION OF ESTIMATE

The funds in this appropriation are required by the Secretary of Defense to finance unforeseeable emergency and extraordinary expenses for confidential military purposes. The Secretary of Defense or the Deputy Secretary of Defense personally review each project proposed for financing by this appropriation. If the funds are not required as of June 30, the unobligated balance automatically reverts to the U.S. Treasury.

Because of the very purpose of an appropriation of this nature, there is no program underlying the estimate. Funds are requested to finance unforeseeable emergency and extraordinary expenses for confidential military purposes should the need arise.

The Secretary of Defense personally reviews each project proposed for financing by this appropriation. His approval of the use of this appropriation to finance a specific project must be by a written memorandum specifying the maxi-

mum amount of obligations that may be incurred for the purposes stated. Thus, the use of these funds is limited to only those specific projects which, in the Secretary's judgment, should be financed by this appropriation.

While it is always hoped that no part of the fund will be used, past experience shows that conditions do arise which cannot be either determined or predicted in advance. Funds which are not obligated revert to the Treasury at the end of the fiscal year.

This completes my prepared statement. I will attempt to answer any questions you may have concerning the fiscal year 1976 and transition budget request.

Questions Submitted by Chairman McClellan

APPROPRIATION HISTORY

Chairman McClellan. How much has been requested by the Defense Department for contingencies for the past ten years, how much has been appropriated, and how much has been returned to the Treasury?

Mr. Wacker. Speaking first in cumulative totals for the past ten years, we requested $110,000,000 and $90,000,000 was appropriated. Of the amount appropriated, we were able to return $59,599,853 to the Treasury. I have here a table which details the above totals by fiscal year.

Fiscal year	Budget request	Appropriation	Returned to Treasury
1965	$15,000,000	$15,000,000	$7,990,057
1966	15,000,000	15,000,000	14,444,304
1967	15,000,000	15,000,000	14,903,899
1968	15,000,000	10,000,000	540,542
1969	15,000,000	10,000,000	8,678,138
1970	10,000,000	5,000,000	24,450
1971	10,000,000	5,000,000	4,702,713
1972	5,000,000	5,000,000	3,830,000
1973	5,000,000	5,000,000	1,485,750
1974	5,000,000	5,000,000	3,000,000

For fiscal year 1975, we requested $5,000,000 and $2,500,000 was appropriated. To date, we haven't had to utilize any of these funds.

Legislative Proposals

Chairman McClellan. Would you outline any legislative proposals concerning this appropriation that have been proposed this year by the Department.

Mr. Wacker. Yes sir. As you know, funds for confidential military purposes have been specifically provided under the Contingencies, Defense appropriation in annual appropriation acts for many years. Section 702 of the proposed bill to authorize appropriations for fiscal year 1976 would, among other things, provide explicit authorization for such appropriations. It would provide permanent legislative authority to the Secretary of Defense to use funds, within the limits of appropriations made for the purpose, for emergency and extraordinary expenses, which includes confidential military purposes.

Chairman McClellan. Is there anything else you desire to add to what you have stated?

Mr. Wacker. No sir; I don't believe there is.

Chairman McClellan. Thank you very much, Mr. Wacker.

Mr. Wacker. Thank you, Mr. Chairman.

Special Foreign Currency

JUSTIFICATION

Chairman McClellan. I also have Mr. Wacker's statement on special foreign currency. Before inserting Mr. Wacker's statement, I would like to include material from the justification regarding this program.

[The justification follows:]

Department of Defense Special Foreign Currency Program

For payment in foreign currencies which the Treasury Department determines to be excess to the normal requirements of the United States for expenses of carrying out programs of the Department of Defense, as authorized by law ($2,900,000) *$2,668,000*, to remain available for obligation until September 30, (1976) 1977: provided, That this appropriation shall be available, in addition to other appropriations to such Department, for payments in the foregoing currencies.

For "Special Foreign Currency Program" for the period July 1, 1976, through September 30, 1976, $37,000 to remain available for obligation until September 30, 1977. (Department of Defense Appropriation Act, 1975; additional authorizing legislation to be proposed.)

SPECIAL FOREIGN CURRENCY PROGRAM, PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for foreign currency undertakings programed			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
1. Operation and maintenance		210		808	100	60
3. Research	2,560	2,570	2,488	2,000	5,140	2,960
4. Construction		120	180	607	60	126
Total	2,560	2,900	2,668	3,415	5,300	3,146
Financing:						
Unobligated balance available, start of year:						
For completion of prior year budget plans				−8,616	−3,900	−1,500
Available to finance new budget plans		−955			−955	
Reprograming from or to prior year budget plans	−3,361					
Unobligated balance available, end of year:						
For completion of prior year budget plans				3,900	1,500	1,022
Available to finance subsequent year budget plans	955			955		
Unobligated balance lapsing: Unobligated balance lapsing, budget plan	2,946			2,946		
Budget authority (appropriation)	2,600	1,945	2,668	2,600	1,945	2,668
Budget authority:						
Appropriation	2,600	2,900	2,668	2,600	2,900	2,668
Recision of unobligated balance now pending		−955			−955	
Relation of obligations to outlays:						
Obligations incurred, net				3,415	5,300	3,146
Obligated balance, start of year				8,518	8,122	10,422
Obligated balance, end of year				−8,122	−10,422	−8,768
Adjustments in expired accounts				84		
Outlays				3,895	3,000	4,800

OBJECT CLASSIFICATION (IN THOUSANDS OF DOLLARS)

	1974 actual	1975 estimate	1976 estimate
Personnel benefits: Civilian	40	40	30
Other services	2,768	5,200	2,990
Lands and structures	607	60	126
Total obligations	3,415	5,300	3,146

SPECIAL FOREIGN CURRENCY PROGRAM—PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for foreign currency undertakings programed			Obligations		
	1974 actual	1975 estimate	1976 estimate	1974 actual	1975 estimate	1976 estimate
Program by activities:						
1. Operation and maintenance				808		
3. Research				857		
4. Construction				607		
Total				2,272		
Financing:						
Unobligated balance available, start of year: for completion of prior year budget plans				−5,218		
Reprograming from or to prior year budget plans	−2,946					
Unobligated balance lapsing: Budget plan	2,946			2,946		
Budget authority (appropriation)						
1973 FISCAL YEAR						
Total				1,143	1,340	
Financing:						
Unobligated balance available, start of year:						
For completion of prior year budget plans				−3,398	−1,340	
Available to finance new budget plans		−915			−915	
Reprograming from or to prior year budget plans	−915					
Unobligated balance available, end of year:						
For completion of prior year budget plans				1,340		
Available to finance subsequent year budget plans	915			915		
Budget authority (appropriation)		−915			−915	
1974 FISCAL YEAR						
Total	2,560				2,560	
Financing:						
Unobligated balance available, start of year:						
For completion of prior year budget plans					−2,560	
Available to finance new budget plans		−40			−40	
Unobligated balance available, end of year:						
For completion of prior year budget plans				2,560		
Available to finance subsequent year budget plans	40			40		
Budget authority (appropriation)	2,600	−40		2,600	−40	
Budget authority:						
Appropriation	2,600			2,600		
Recision of unobligated balance now pending		−40			−40	
1975 FISCAL YEAR						
Program by activities:						
1. Operation and maintenance		210			100	60
3. Research		2,570			1,240	660
4. Construction		120			60	36
Total		2,900			1,400	756
Financing:						
Unobligated balance available, start of year: For completion of prior year budget plans						−1,500
Unobligated balance available, end of year: For completion of prior year budget plans					1,500	744
Budget authority (appropriation)		2,900			2,900	
1976 FISCAL YEAR						
Program by activities:						
3. Research			2,488			2,300
4. Construction			180			90
Total			2,668			2,390
Financing:						
Unobligated balance available, end of year: For completion of prior year budget plans						278
Budget authority (appropriation)			2,668			2,668

SPECIAL FOREIGN CURRENCY PROGRAM, PROGRAM AND FINANCING

[In thousands of dollars]

	Budget plan (amounts for foreign currency undertakings programed)—Transition	Obligations—Transition
Program by activities:		
1. Operation and maintenance		30
3. Research	37	744
4. Construction		30
Total	37	804
Financing:		
Unobligated balance available, start of year: For completion of prior year budget plans		−1,022
Unobligated balance available, end of year: For completion of prior year budget plans		255
Budget authority (appropriation)	37	37
Budget authority: Appropriation	37	37
Relation of obligations to outlays:		
Obligations incurred, net		804
Obligated balance, start of year		8,768
Obligated balance, end of year		−8,572
Outlays		1,000

SPECIAL FOREIGN CURRENCY PROGRAM, OBJECT CLASSIFICATION

[In thousands of dollars]

	Transition
Personnel benefits: Civilian	10
Other services	764
Lands and structures	30
Total obligations	804

SUMMARY OF UNDERTAKINGS IN FISCAL YEAR 1976 PROGRAM

[In thousands of dollars and thousands of foreign currency units [1]]

	India		Egypt		Total (dollars)
	Dollars	Rupees	Dollars	Pounds	
Research:					
Navy research program:					
Malnutrition and disease			280	156	28
Environmental factors—Kidneystone disease			112	62	11
Infectious disease of Africa			1,260	700	1,26
Effects of flatfish secrections on sharks			351	195	35
Indigenous personnel payrolls			130	72	13
Environmental stress and behavior	138	1,108			13
Neurophysiology	125	1,004			12
Environmental stress and achievement	92	739			9
Total research	355	2,851	2,133	1,185	2,488
Construction: Total DIA construction program			180	100	180
Total fiscal year 1976 program	355	2,851	2,313	1,285	2,668

[1] Foreign currency units are computed on basis of "Treasury Reporting Rates of Exchange" as of Dec. 31, 1974.

RESEARCH

Navy research program (Egypt pounds)

Malnutrition and disease $280,000

Poor or strained physical conditions and dietary deficiencies predispose man and service personnel to infectious diseases. The biochemical factors producing this predisposition are not yet known. It is the purpose of this research to elucidate some of the relationships between deficiencies in the dietary factors, including iron, vitamins, proteins and others, and the incidence of diseases common to Egypt and surrounding areas.

Environmental factors—kidney stone diseases 112,000

The incidence of kidney stones is notably high in particular regions of Africa and Southeast Asia. Although progress is being made in better understanding this disease, the causative agent or factors of this disease are not completely understood or known. If bacteria or climatic conditions are found to be the causative factors, then appropriate steps can be taken to protect service personnel assigned to these areas. If the cause lies with the local diet or customs, then this disease does not pose a problem to our personnel. This research is aimed at further elucidation of the etiological agent or factors causing the disease.

Infectious diseases of Africa 1,260,000

This project is part of a continuing effort to determine the infectious and parasitic diseases endemic to Egypt and neighboring African countries, determine the causative agent, geographic distribution, animals that serve as reservoirs of these diseases, mode of disease transmission and disease vectors. This information is necessary before effective disease control measures, vaccines or therapeutic drugs can be developed to protect our service personnel against infection or to provide adequate treatment if they do become infected. An intensive research program on control of Schistosomiasis is in progress between the Ministry of Health (Egypt), the Office of Naval Research and Naval Medical Research Unit No. 3 (Cairo).

Effects of flatfish secretions on sharks 351,000

No effective shark repellant exists to date and sharks are a serious threat to service personnel in tropical and warm temperature waters. Recently the Red Sea flatfish has been shown to produce a secretion which appears to act extremely rapidly and effectively as a shark repellant. The physiological and biochemical mode of action of this secretion on sharks must now be determined before it will be possible to synthesize the active component on a large scale. Since these flatfish are found only in the Red Sea, the scientists in Egypt are uniquely situated geographically to conduct this research.

Indigenous personnel payrolls 130,000

This undertaking permits all indigenous personnel in Egypt to be paid from the Special Foreign Currency Program.

Navy research program (India rupees)

Environmental stress and behavior 138,000

Strongly adverse environmental conditions can dampen the aggressive attitude of service personnel, thereby reducing the combat effectiveness of the individuals involved and the chance of success in combat missions. The objectives of this research are to determine the neurophysiological and biochemical correlates of aggressive behavior as it is modified by external stresses such as cold, heat and hypoxia. This information could be a value in providing guidelines as to the biomedical factors in maintaining a high level of combat effectiveness in the presence of adverse environmental conditions.

Neurophysiology ---------- 125,000

Cold stress in operational conditions of the Navy occurs frequently. A considerable portion of this cold stress could be alleviated if some method of rapid cold acclimation could be developed. One possible route in this direction is based on some novel ideas to be tested by the proposed investigator to modify the physiological and/or biochemical pathways involved in acclimatization.

Environmental stress and achievement ---------- 92,000

Environmental stress under suitable conditions can function as a stimulant to achievement while under other conditions it can function as a detriment to achievement. Personnel who are marginal achievers can be far more severely penalized in an adverse environment than overachievers. This project is aimed at developing screening techniques whereby the impact of a particular environmental condition on underachievers as well as overachievers could be assessed in advance of exposure.

Total research ---------- 2,488,000

CONSTRUCTION

DIA family housing ---------- $180,000

This undertaking is for the acquisition or construction of three permanent housing units for Defense Attaché staff personnel in Egypt. U.S. Government ownership of these family housing units will assure that adequate quarters will be available to personnel upon their arrival, thus eliminating or significantly reducing payments for temporary allowances.

Total construction ---------- 180,000

ANALYSIS OF UNOBLIGATED BALANCES, FISCAL YEAR 1976 PROGRAM—SUMMARY BY CATEGORY

Category	Estimated unobligated: Dollars (thousands)	Estimated unobligated: Percent of total unobligated
Normal lag, pending State Department clearance and contract negotiation	278	10

Obligation of funds approved for substantial portion of the undertakings under the Special Foreign Currency Program does not normally occur until the year following the appropriation. This lag results from the time required to obtain State Department clearance to proceed with these undertakings and negotiate contracts under the conditions specified for this program.

SUMMARY OF UNDERTAKINGS IN FISCAL YEAR 197T PROGRAM

[In thousands of dollars and thousands of foreign currency units [1]]

	Egypt: Dollars	Egypt: Pounds	Total dollars
Research:			
Navy research program indigenous:			
Personnel payrolls	37	21	37
Total fiscal year 197T program	37	21	37

RESEARCH

Navy research program (Egypt pounds)

Indigenous personnel payrolls ---------- $37,000

This undertaking is proposed to permit all indigenous personnel in Egypt to be paid from the Special Foreign Currency Program.

ANALYSIS OF UNOBLIGATED BALANCES, FISCAL YEAR 197T PROGRAM—SUMMARY BY CATEGORY

Category	Estimated unobligated	
	Dollars (thousands)	Percent of total unobligated
Normal lag, pending State Department clearance and contract negotiation	0	0

Obligation of funds approved for a substantial portion of the undertakings under the Special Foreign Currency Program does not normally occur until the year following the appropriation. This lag results from the time required to obtain State Department clearance to proceed with these undertakings and negotiate contracts under the conditions specified for this program.

SUMMARY OF UNDERTAKINGS IN FISCAL YEAR 1977 PROGRAM

[In thousands of dollars and thousands of foreign currency units [1]]

	India		Egypt		Total dollars
	Dollars	Rupees	Dollars	Pounds	
Research:					
Navy research program:					
Endemic disease of Africa			1,260	701	1,260
Indigenous personnel payrolls			150	83	150
Social insurance program			150	83	150
International health R. & D			1,100	611	1,100
Infectious and parasitic diseases	515	4,136			515
High pressure environmental	175	1,405			175
Environmental stress effects on vision	75	602			75
Environmental stress biochemical adaption	125	1,004			125
Cardiopulmonary stress	115	923			115
Total, research	1,005	8,070	2,660	1,478	3,665
Total program					

[1] Foreign currency units are computed on basis of Treasury Reporting Rates of Exchange as of Dec. 31, 1974.

Research

Navy research program (India rupees)

Infectious and parasitic diseases $515,000

Many developing countries, such as India, have high incidence of infectious and parasitic diseases that are not endemic to the U.S. and, therefore, any U.S. personnel assigned there or in similar geographic areas are at high risk to get these infections. In many cases, the etiological agents causing the diseases and the epidemiology of these diseases are not known by the medical personnel of the parent country and, therefore, adequate prophylaxis and treatment is not available.

High pressure environmental effects 175,000

The diver working in the open sea is subject to a large number of hazardous conditions that are directly related to his own physiological limitations. The total number of scientists who are investigating such problems is relatively small on a world-wide basis while the number of people that can be studied at any one time is quite limited. Consequently, it is difficult to build a statistically valid data base for the infinite number of variations in diving profiles.

Environmental stress effects on vision 75,000

Marine Corps and Navy personnel must frequently undertake operations during the night and their effectiveness can be greatly impaired by deficient adaptation to the dark. Dark adaptation is largely dependent on the presence of Vitamin A in the retina of the eye. Various environmental stresses have been shown to affect the metabolism of Vitamin A precursors in the body resulting in a suppression of Vitamin A levels in the retina with a subsequent deterioration of night vision.

Environmental stress and biochemical adaptation 125,000

Environmental stresses such as cold, heat, hypoxia, isolation, etc., are frequently concommitants to various operational conditions to which Marine Corps and Navy personnel are exposed. The stresses can cause a severe decrement in the performance of these personnel so that it would be very advantageous to the U.S. to be able to forestall or overcome these performance decrements.

Environmentally induced cardiopulmonary stress 115,000

A substantial percentage of people develop pulmonary and cerebral edema as well as elevated pulmonary arterial pressure when suddenly exposed to chronic hypoxic conditions. Such a condition could develop amongst Marine Corps personnel who might be airlifted for combat in mountainous regions. Susceptible personnel would require treatment and hospitalization under very difficult operational conditions.

Navy research program (Egypt pounds)

Endemic diseases of Africa 1,260,000

There are numerous diseases of Africa that are endemic to this and similar geographic areas that are not, or rarely, found in the U.S. When our military personnel are assigned to these areas, they are highly susceptible to these diseases and many man-days of duty, high costs of treatment and possibly many deaths may result from these dieases. Only if we have adequate knowledge of these diseases, their reservoirs, and mode of transmission can we protect the health and well-being of the personnel.

Indigenous personnel payrolls 150,000

This undertaking is proposed to permit all indigenous personnel in Egypt to be paid from the Special Foreign Currency Program.

Social insurance program 150,000

Participation in the Social Insurance Program for all foreign employees of the U.S. Naval Medical Research Unit No. 3 (NAMRU-3) indigenous to Egypt as required by law.

International health research and development 1,100,000

Conduct biomedical research and development on international health problems. Program comprises: studies of infectious diseases in the fields of virology, bacteriology, parasitology, rickettsiology, entomology, and clinical investigation; development of control measures for endemic and epidemic communicable diseases of importance to the Department of Defense; provision of training in research techniques to foreign national personnel.

Total research 3,665,000

Mr. Chairman and Members of the Committee:

I am appearing before this Committee to discuss the Department of Defense Special Foreign Currency Program. As you know, this program was established for Government agencies to promote the use of excess foreign currencies which are available for U.S. use. Under the language of this appropriation, the dollars appropriated may be used only to purchase from the Treasury currencies needed to finance undertakings which can be carried out with these excess currencies.

There are two principal points in connection with this appropriation which distinguish it from all other Defense appropriations:

1. First, the currencies spent under this program are already owned by the U.S. Treasury. Consequently, there are no net U.S. Government dollar outlays for transactions carried out under the program. While budget authority shows up as a part of DoD Budget authority, obligations, and outlays, there is no net outlay from the U.S. Treasury.

2. Second, our regulations require that projects must be clearly in the national interest; they must not involve excessive dollar costs and only minimal balance of payments outlays; and the projects cannot cover items which have been specifically denied by Congress in other appropriation or authorization requests or be above levels beyond specific congressional recommendations. For research, the criteria also limit undertakings to those which take advantage of (a) special geographical, environmental or cultural conditions, fauna or flora; (b) diseases, epidemiological situations, or availability of clinical material; or (c) unique research ideas highly relevant to the Department of Defense.

In previous years, we also had a strict requirement that undertakings proposed for financing under this program be of such priority that they would not be included in the regular dollar appropriation request. At the request of the Subcommittee on Research and Development, we reviewed our policy on the Special Foreign Currency Program in connection with formulation of the FY 1976 DoD budget. Based on our review and discussions, we have changed our policy so that the Special Foreign Currency Appropriation may now be used, when feasible, in lieu of a regular current year DoD appropriation.

In addition, it is required that each DoD component obtain clearance from the Sate Department to assure that the proposed undertakings are consistent with the foreign policy of the United States.

Our budget request is made up of undertakings that have been proposed by the Military Departments. These proposals are reviewed during the course of the annual budget review to assure their adherence to the criteria for this program. They are then consolidated into a single appropriation request for inclusion in the President's Budget.

Let me point out that the opportunities for the Department of Defense to use this program are quite limited. The countries whose currencies are on the excess list are not countries in which there is a significant defense involvement.

The total request for FY 1976 is $2.670 million. This is primarily for Research undertakings for the Department of the Navy and includes $2.488 million for projects in Egypt and India. There is also $.180 million for housing for the Defense attache personnel in Egypt.

The largest undertaking, a little more than $2.1, is to support the medical research activities being conducted by the Office of Naval Research and Egypt. For several years we have been augmenting the funding for this research with funds from this appropriation. This has enabled them to conduct research related to the many diseases that occur in Africa and the Middle East and that are not endemic to the United States.

Three, other undertakings for $.355 million are for medical research to be carried out in India. We consider that all of the undertakings selected for this program are in fields where the research efforts will be responsive to the needs of the Defense medical program. Moreover, we consider that these are undertakings which are appropriate to conduct in these excess foreign currency countries.

This completes my statement. I will attempt to answer any questions the Committee may have concerning this program.

QUESTIONS SUBMITTED BY CHAIRMAN MCCLELLAN

EXAMPLES OF RESEARCH

Chairman MCCLELLAN. Provide some specific examples of projects previously funded that will continue funding in FY 1976.

Mr. WACKER. All right, sir. Projects that we will continue to fund in 1976 in the area of research will be the study of Schistosmiasis, Blood Sucking Dytera and Fungal Skin Infections.

REVISION OF POLICY

Chairman MCCLELLAN. Explain the impact of the new policy of using this appropriation when feasible in lieu of a regular appropriation—what projects dropped out and what projects were added?

Mr. WACKER. Yes, sir. The only impact at this time is an undertaking of the Department of the Navy to pay the salaries of indigenous personnel from the Special Foreign Currency Appropriation which were previously paid from the Research and Development Appropriation. In the future, this change should facilitate the use of this appropriation by all components whenever there may be any undertakings to be carried out in excess currency countries.

DEFENSE CLAIMS

JUSTIFICATION AND PREPARED STATEMENT

Chairman MCCLELLAN. Mr. Donald B. Shycoff, Director of Operations, Office of the Deputy Assistant Secretary of Defense (Program Budget) has submitted a statement on Defense claims. The justification, plus his statement with corresponding questions and answers will be inserted at this point in the record.

[The material follows:]

APPROPRIATION LANGUAGE—CLAIMS, DEFENSE

For payment, not otherwise provided for, of claims authorized by law to be paid by the Department of Defense (except for civil functions), including claims for damages arising under training contracts with carriers, and repayment of amounts determined by the Secretary concerned, or officers designated by him, to have been erroneously collected from military and civilian personnel of the Department of Defense, or from States, territories, or the District of Columbia, or members of National Guard units thereof; [$54,600,000] $71,600,000.

For "Claims, Defense" for the period July 1, 1976, through September 30, 1976, $15,500,000 (Department of Defense appropriation Act, 1975).

APPROPRIATION INTRODUCTION

[Fiscal years]

	1974	1975	1976	197T
Appropriation or estimate	61,100	54,600	71,600	15,500
Unobligated balance of appropriation	−359			
Total obligations	[1] 60,742	54,600	71,600	15,500

[1] Does not add due to rounding.

This appropriation provides for the payment of all noncontractual claims against the Department of Defense as authorized by law and represents the consolidated requirements of the Secretary of Defense and the Departments of the Army, Navy and Air Force.

CLAIMS, DEFENSE—PROGRAM AND FINANCING

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate	Transition
Program by activities:				
1. Personnel claims	40,351	42,418	51,293	11,173
2. Tort claims	18,288	11,504	19,460	4,159
3. Admiralty claims	2,074	623	804	157
4. Other miscellaneous claims	29	55	43	11
Total obligations	60,742	54,600	71,600	15,500
Financing:				
Unobligated balance transferred from other accounts	−9,000			
Unobligated balance lapsing	359			
Budget authority (appropriation)	52,100	54,600	71,600	15,500
Budget authority:				
Appropriation	49,100	54,600	71,600	
Transferred from other accounts	3,000			
Appropriation (adjusted)	52,100	54,600	71,600	
Relation of obligations to outlays:				
Obligations incurred, net	60,742	54,600	71,600	15,500
Obligated balance, start of year	1,397	13,322	1,922	2,522
Obligated balance, end of year	−13,322	−1,922	−2,522	−1,022
Adjustments in expired accounts	5			
Outlays	48,822	66,000	71,000	17,000

Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before your Committee today to discuss the estimated fiscal year 1976 requirements for the appropriation, "Claims, Defense." This appropriation, as prescribed by law, provides the necessary funds for the payment of non-contractual claims against the Department of Defense.

For fiscal year 1974 we requested and received from the Congress $49.1 million in obligational authority, which included $5.6 million for claims which were adjudicated in fiscal year 1973 and deferred for payment into fiscal year 1974. We subsequently requested and received approval from the Congress to transfer funds under the authority of Section 735 of the FY 1974 Defense Appropriation Act to increase our fiscal year 1974 obligational authority by $12.0 million to a revised program level of $61.1 million. Even with the augmented program level, however, $1.7 million in adjudicated claims had to be carried over into fiscal year 1975 for payment.

For fiscal year 1975 we requested and received from the Congress $54.6 million in obligational authority. It now appears that the total requirements for fiscal year 1975 will be $62.4 million, which means we will have to carry-over some $9.5 million in adjudicated claims into fiscal year 1976 for payment.

For fiscal year 1976 we are requesting $71.6 million. If the $9.5 million carry-over from fiscal year 1975 is subtracted, we are requesting $62.1 million for claims to be adjudicated in fiscal year 1976. This estimate is based upon our experience in FY 1974 and FY 1975. While we can defer nominal amounts of claims from one year to another in order to keep within our obligational authority, it is clear that we have merely been pushing our financial problems forward from year to year. Our fiscal year 1976 request is designed to finance the carry-over from fiscal year 1975 and fully finance the fiscal year 1976 program, thereby eliminating the need to defer payment of claims into fiscal year 1977.

The request of $15.5 million for the transition period is estimated to be sufficient to finance all claims adjudicated during that period assuming that the fiscal year 1976 request is approved.

As you are aware, Claims, Defense is largely an uncontrollable appropriation, and it is very difficult to develop estimates for this account. The claims are filed by the military personnel and others and result from "acts of nature" and accidents involving our military forces. Therefore, claims can be neither programmed in advance nor controlled from year to year. They are adjudicated by properly constituted review authorities and to the extent they are determined payable they must be paid. Only the timing of the payment can be controlled. However, it is only equitable that we pay the claim as promptly as possible, once it has been adjudicated.

I have attached to this statement a brief description of the four categories of claims covered by this appropriation and a summary table on financing. This completes my prepared statement on this subject. I will attempt to answer any questions which the Chairman or members of the Committee may have.

CLAIMS, DEFENSE APPROPRIATION, FY 1976

The various types of claims for which provision has been made in this appropriation request are grouped into four major categories; namely personnel claims, tort claims, admiralty claims and other miscellaneous claims.

PERSONNEL CLAIMS

The personnel claims category which accounts for 71.6 percent of the appropriation request for fiscal year 1976 includes (1) claims of military and civilian personnel for private property lost or damaged in the military services, (2) repayments of erroneous collections, and (3) claims arising from the correction of military or naval records. It is estimated that the general category of personnel claims will require approximately $51.3 million in fiscal year 1976.

TORT CLAIMS

The tort claims category which accounts for 27.2 percent of the appropriation request for fiscal year 1976 includes payments for personal injury or personal property damage caused by the negligence of an employee of the Department of Defense while acting in the scope of his employment. Approximately $19.5 million is expected to be required for claims of these types during fiscal year 1976.

ADMIRALTY CLAIMS

Admiralty claims which account for 1 percent or almost the balance of the appropriation request for fiscal year 1976 include payments under authority of the Admiralty Claims Act and Maritime Claims Act for claims arising from marine accidents and incidents involving vessels of the military departments. Admiralty claims are expected to require $800,000 in fiscal year 1976.

OTHER MISCELLANEOUS CLAIMS

The other miscellaneous claims category accounts for only one tenth of one percent of the appropriation request for fiscal year 1976 and includes (1) amounts for the indemnification of the Post Office Department for claims arising from error, loss or defalcation by unbonded mail clerks and commissioned officers, and (2) claims by contractors for damage caused by accidents arising under training contracts due to the negligence of military trainees. It is estimated that $43,000 will provide for such miscellaneous claims in fiscal year 1976.

CLAIMS, DEFENSE
(In millions of dollars)

			Estimate		
	FY 1973	FY 1974	FY 1975	FY 1976	FY 197T
Carryover from previous years 1/	-	5.6	1.7	9.5	-
Claims adjudicated during the year 1/	50.2	57.2	62.4	62.1	15.5
Total Claims	50.2	62.8	64.1	71.6	15.5
Lapsed	.3	.4	-	-	-
Financing:	45.0	61.1	54.6	71.6	15.5
Appropriation (Initial)	(45.0)	(49.1)	(54.6)	(71.6)	(15.5)
Transferred	-	(12.0)	-	-	-
Adjudicated claims carried over into subsequent year 1/	5.6	1.7	9.5	-	-

1/ Revised to reflect current estimates.

Appropriation History

Chairman McClellan. Would you provide a ten year summary of appropriations for claims, and indicate the amounts actually obligated.

Mr. Shycoff. The information requested is as follows:

CLAIMS, DEFENSE
HISTORICAL SUMMARY
(Thousands of Dollars)

Fiscal Year	President's Budget Request	Enacted Appropriation	Approved Reprogramming	Enacted Supplemental	Revised Program	Actual Obligations	Claims carried over at end of Fiscal Year
1965	23,000	23,000	6,000	-	29,000	28,986	1,123
1966	24,000	24,000	-	-	24,000	23,960	1,710
1967	25,000	25,000	-	9,000	34,000	33,962	3,053
1968	30,000	30,000	8,000	-	38,000	37,966	1,125
1969	38,000	38,000	-	-	38,000	37,530	-
1970	41,000	39,000	-	-	39,000	38,447	1,785
1971	39,000	39,000	13,000	-	52,000	51,607	-
1972	39,000	39,000	6,900	-	45,900	45,742	-
1973	52,900	45,000	-	-	45,000	44,653	5,667
1974	49,100	49,100	12,000	-	61,100	60,742	1,739

Indefinite appropriation requested for FY 1967, FY 1968 and FY 1969.

Development of Fiscal Year 1976 Estimate

Chairman McClellan. Explain how your estimate for FY 1976 was developed, given the inherent uncertainty of this appropriation.

Mr. Shycoff. As you have observed, the Claims, Defense is largely an uncontrollable appropriation, and it is very difficult to develop our estimates for this account. The claims are filed by military personnel and others, they are adjudicated by properly constituted review authorities and to the extent they are determined payable they must legally be paid. They are neither programmed in advance, nor controllable. Only the timing of the payment can be controlled.

Like any other DoD appropriation the Military Departments annually develop and submit to OSD their estimated requirements for the upcoming budget year. We review these requirements in my office, discuss them with the Services, and arrive at a best judgment with regard to the value of claims that will be adjudicated and payable in each fiscal year. This figure is adjusted by claims unpaid because of fiscal constraints in the current year.

The estimates of the Services consider, but do not separately identify, many influencing factors, only one of which is military strength. Many claims result from such unpredictable conditions as natural disasters, and accidents involving our military forces. Further, for the last several years the Military Departments have been passing the authority to adjudicate some of the claims down to lower levels in order to improve responsiveness to the claimant and minimize personal hardships. It appears that this has resulted in claims from people who might otherwise have been discouraged by delays and red tape from claiming what was properly due them. To summarize my answer our claims budget estimates are based on past experience as adjusted on a judgment basis with regard to the extent of continuation of past trends and performance.

Military Medical Tort Claims

Chairman McClellan. Would claims against military doctors for medical malpractice fall under the category of tort claims? Describe how they are being handled. Is the same situation true in the case of medical treatment of military as well as dependents?

Mr. Shycoff. The answer to the first question is yes. However, no claims by military members on active duty for malpractice occurring through the actions of physicians employed by the Department of Defense are payable under either the Federal Tort Claims Act (28 U.S.C. 1346(b), 2401(b), 2402, 2671, 2672, and 2674–2680), or the Military Claims Act (10 U.S.C. 2733). The reason for this is that both of these statutes deny recovery for malpractice claims of active duty military members if the injury occurs "incident to the service of such member." All injuries arising out of medical treatment of active duty military personnel by service physicians performed in a negligent manner occur "incident to the service of such personnel."

The situation is quite different with respect to the dependents of military personnel. Where the malpractice occurs within the United States payments to dependents of military personnel for malpractice claims is made under the Federal Tort Claims Act; and if occurring outside the United States, under the Military Claims Act. Such payments are properly payable out of appropriations made available for the payment of claims.

Court of Military Appeals

prepared statement and justification

Chairman McClellan. We have a statement submitted by the Honorable William H. Cook on the fiscal year 1976 request for the Court of Military Appeals. Mr. Cook is the acting Chief Judge of that court. Without objection, the justification and Judge Cook's statement will appear in the record.

[The justification and statement follows:]

APPROPRIATION LANGUAGE—U.S. COURT OF MILITARY APPEALS, DEFENSE

For salaries and expenses necessary for the United States Court of Military Appeals, (Department of Defense Appropriation Act, 1975) ..... [$1,065,000] $1,134,000

Appropriation title: U.S. Court of Military Appeals, Defense.
Change in language: None required.
Reason for change: None.

DEPARTMENT OF DEFENSE—JUSTIFICATION OF ESTIMATES, FISCAL YEAR 1976

APPROPRIATION: U.S. COURT OF MILITARY APPEALS, DEFENSE—APPROPRIATION INFORMATION

[In thousands of dollars; fiscal years]

	1974 actual	1975 estimate	1976 estimate	Transition
Appropriation or estimate	$914	$1,065	$1,134	$285
Unobligated balance of appropriation	−200			
Total direct obligations	714	1,065	1,134	285

This appropriation provides for the salaries of three judges, other officers and employees, and the necessary expenses of the U.S. Court of Military Appeals, established pursuant to the Uniform Code of Military Justice (10 USC 801). The Court serves as the appellate court of last resort for all of the more serious court-martial convictions of military personnel.

COURT MILITARY APPEALS, DEFENSE

[In thousands of dollars]

	1974 actual	1975 estimate	1976 estimate	Transition
PROGRAM AND FINANCING				
Program by activities: Military justice (obligations)	714	1,065	1,134	285
Financing: Unobligated balance lapsing	200			
Budget authority (appropriation)	914	1,065	1,134	285
Relation of obligations to outlays:				
Obligations incurred, net	714	1,065	1,134	285
Obligated balance, start of year	29	49	48	82
Obligated balance, end of year	−49	−48	−82	−117
Adjustments in expired accounts	8			
Outlays	703	1,066	1,100	250
OBJECT CLASSIFICATION				
Personnel compensation:				
Permanent positions	618	738	751	190
Positions other than permanent	2	3	3	
Total personnel compensation	620	741	754	190
Personnel compensation:				
Personnel benefits: Civilian	50	62	64	16
Travel and transportation of persons	4	10	12	3
Transportation of things		1	1	
Rent, communications, and utilities	13	204	256	65
Printing and reproduction	8	12	12	3
Other services	1	10	10	2
Supplies and materials	18	20	20	5
Equipment		5	5	1
Total, obligations	714	1,065	1,134	285

Mr. Chairman and Members of the Committee:

Senior Judge Ferguson and I are pleased to appear before you today to present the United States Court of Military Appeals appropriation request for fiscal year 1976.

We ask the Committee for a total of $1,134,000. This amount exceeds our present appropriation by $69,000. $52,000 of this increase is for the payment of building rent to the General Services Administration, under the provisions of Public Law 92-318. $10,000 is required for annualization of the October 1974 pay raise, while the remaining increase of $7,000 is required for normal within grade salary raises, costs to the Government for personnel benefits and travel expenses.

We are a small organization authorized a total of 40 positions with only 35 filled at the present time. The average grade of a Court employee is a GS-10. Yet, with a total staff of 32, plus the 3 Judges, we have been able to handle an average workload of 1,295 cases per year since our creation in 1951. In calendar year 1974, we docketed 1,535 Petitions and Certificates, the highest number since 1958, and, if the number of petitions come in at the rate they arrived in January 1975 (178), this year could well represent the heaviest workload in our history.

As of December 30, 1974, the Court has rendered 3,572 written major opinions since 1951. The total averages an annual output of 152 written opinions, with each Judge contributing an average of 51 major opinions annually.

As you know, the United States Court of Military Appeals serves as the appellate court of last resort for all the more serious court-martial convictions of military personnel and the decisions of the Court are final in all such cases and there are no further direct reviews.

But, despite this increasing workload, and with a staff less in number than that authorized, the Court's work remains current. We are bound by the Uniform Code of Military Justice to act on every appeal filed within a 30-day period and we do so. The Court continues to fulfill its judicial obligations.

A statistical report on the number, status and disposition of cases docketed with the Court as of December 31, 1974, is attached.

We would be happy to try to respond to any questions you may have.

UNITED STATES COURT OF MILITARY APPEALS

STATUS OF CASES AS OF DECEMBER 31, 1974

ARTICLE 67(b)(3), UCMJ

PETITIONS		29,348
Army	15,706	
Navy	8,057	
Air Force	5,521	
Coast Guard	64	

ARTICLE 67(b)(2), UCMJ

CERTIFICATES		602
Army	236	
Navy	250	
Air Force	104	
Coast Guard	12	

ARTICLE 67(b)(1), UCMJ

MANDATORY [1/]		37
Army	31	
Navy	3	
Air Force	3	
Coast Guard	0	
TOTAL CASES DOCKETED [2/]		29,987

MISCELLANEOUS DOCKETS
(1967 to Present)

DOCKETED		454
Denied	121	
Dismissed	231	
Withdrawn	4	
Remanded (1 Pet. for New Trial)	2	
Opinions rendered (1 Pet. Recon.)	93	
Petitions for Reconsideration denied	18	
Granted (1 Pet. Recon.)	7	
Issue Moot	4	
Pending	1	
TOTAL [3/]		481

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COURT ACTION

PETITIONS		29,348
Denied	25,396	
Denied by Memorandum Opinion	7	
Granted	3,207	
Dismissed	32	
Charges dismissed by Order	2	
Withdrawn	439	
Disposed of on motion to dismiss:		
With opinion	8	
Without opinion	61	
Disposed of by Order setting aside findings and sentence	7	
Remanded (2 by opinion)	212	
Decision affirmed by Order	1	
Court action due - 30 days	147	4/
Awaiting replies	44	29,564
CERTIFICATES		602
Opinions rendered	579	
Withdrawn	8	
Remanded	4	
By Order	1	
Motion to file denied	2	
Motion to dismiss granted	1	
Opinions pending	4	
Ready for hearing	3	5/
Awaiting briefs	1	603
MANDATORY		37
Opinions rendered	37	6/
Remanded	1	38
OPINIONS RENDERED		3,652
Petitions	2,850	
Motions to dismiss (1 Cert;10 Petitions)	11	
Petitions remanded	2	
Per curiam grants	58	
Certificates	506	
Certificates and Petitions	70	
Certificate (motion to stay)	1	
Mandatory	37	
Petitions for a New Trial	2	
Petitions for Writ of Error Coram Nobis	3	
Petition for Writ of Habeas Corpus	1	
Petitions for Reconsideration:		
Of Opinion	4	
Of Denial Order	10	
Of Petition for New Trial	1	
Motion to Strike	1	
Motion to Reopen	1	
Motion for appropriate relief	1	
Miscellaneous Dockets (1 Pet. for Recon.)	92	
Order on Misc. Docket	1	

COMPLETED CASES		29,726
Petitions Denied	25,396	
Petitions Withdrawn	439	
Petitions Dismissed	32	
Certificates Withdrawn	8	
Certificate by Order	1	
By Opinion (7 Petitions denied)	3,550	
Disposed ofon Motion to Dismiss:		
With opinion	8	
Without opinion	62	
Disposed of by Order setting aside findings and sentence	7	
Remanded (4 Certs. and 1 Mandatory)	215	
Writ of Error Coram Nobis by Order	3	
Motion for Bail denied	1	
Charges dismissed by Order	3	
Decision affirmed by Order	1	
PENDING COMPLETION		241
Opinions pending	28	
Ready for hearing	9	
Petitions granted - awaiting briefs	12	
Petitions - Court action due 30 days	147	
Petitions - awaiting replies	44	
Certificates - awaiting briefs	1	

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1. 33 cases involving 38 accused sentenced to death; 2 cases involved flag officers; 2 cases filed twice.
2. 29,430 cases actually assigned docket numbers. Overage due to multiple actions on the same cases and some filed twice.
3. Overage due to multiple actions on the same cases.
4. Difference of 216 in total is due to more than one action taken on individual cases.
5. 2 opinions released in Docket 8,176.
6. 2 opinions released in Docket 6,388.
7. 3,652 cases were disposed of by 3,572 published opinions.

Uniformed Services University of the Health Sciences

PREPARED STATEMENT

Chairman McClellan. Our final statement is by Dr. Tony Curreri, president of the Uniformed Service University of the Health Sciences.

Without objection, Dr. Curreri's statement will be inserted at this time.

[The statement follows:]

Statement of Dr. Tony Curreri

Good day, gentlemen. I am Tony Curreri, president of the Uniformed Services University of the Health Sciences. I am very pleased to be here today to explain briefly our purpose and operational needs.

The university was authorized in September 1972 by Public Law 92-426. The Secretary of Defense established the University as a separate agency in the Department of Defense to educate professional health care personnel who will became the carreer cadre for the uniformed services. P.L. 92-426 gave the highest priority to the establishment of a School of Medicine. The broad training over four calendar years will prepare young men and women to become fully qualified physicians. Following the award of an M.D. degree they will be obligated to a payback of seven years service.

Dr. Jay P. Sanford, formerly of the University of Texas, Southwestern Medical School at Dallas, has been selected as the first Dean of the School of Medicine and is now actively recruiting department chairpersons and faculty in preparation for the planned opening of the medical school.

In FY 1976, the first students will matriculate. Current plans call for the charter class to number approximately 36. By the Transition quarter 50 more students will be enrolled, bringing the total student load to 86. Since the first increment of the permanent facilities will not be completed in time, arrangements have been made to modify existing space at the Armed Forces Institute of Pathology to provide temporary classrooms and teaching laboratories.

To effectively operate, the University requires $5,491,000 for fiscal year 1976 and $1,659,000 for the Transition quarter. These funds will support a faculty and staff end strengths of 154 civilians and 40 military in FY 1976; and 170 civilians and 60 military in the Transition quarter. In FY 1976 the University will also require $1,000,000 of procurement funds to purchase necessary investment-type equipment.

One of the major requirements for accreditation is the assurance of an adequate level of funding.

Chairman McClellan. Provide analysis of increases and decreases from FY 1975 to 1976, for operating costs of the Uniformed Services University of the Health Sciences explaining each one.

Dr. Curreri. The total net increase requested between FY 1975 and FY 1976 is $2,178,000. This consists of an increase of $2,427,000 for civilian personnel compensation due to increased staff necessary to perform the mission of the University; also includes small increases due to annualization of the GS and wage board pay increases in October 1974. In the area of travel of personnel a decrease of $44,000 is projected due to the growth in University staff capability and the consequent reduction in the necessity to either travel to meet with experts or pay for their travel to the University. A net decrease in supplies, equipment and other support areas for the University is $205,000 is planned. This decrease is due to advanced purchase of supplies and equipment in FY 1975 and in increased ability of the University to perform administrative functions internally in FY 1976 operations that were purchased from others in FY 1975.

SUBCOMMITTEE RECESS

Chairman McClellan. Gentlemen, I thank each of you very much for appearing today, you have been most cooperative.

We will stand in recess until 10 o'clock tomorrow morning.

[Whereupon, at 11:45 a.m., Tuesday, March 11, the subcommittee was recessed, to reconvene at 10 a.m., Wednesday, March 12.]

DEPARTMENT OF DEFENSE APPROPRIATIONS FOR FISCAL YEAR 1976

TUESDAY, JUNE 3, 1975

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

The subcommittee met at 10 a.m. in room 1223, Everett McKinley Dirksen Office Building, Hon. John L. McClellan (chairman) presiding.

Present: Senators McClellan and Young.

DEPARTMENT OF DEFENSE

COMMISSARY LEGISLATION

STATEMENT OF TERENCE E. McCLARY, ASSISTANT SECRETARY OF DEFENSE (COMPTROLLER)

ACCOMPANIED BY:

VICE ADM. J. G. FINNERAN, U.S. NAVY, DEPUTY ASSISTANT SECRETARY OF DEFENSE (MILITARY PERSONNEL POLICY), OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (MANPOWER AND RESERVE AFFAIRS)

BRIG. GEN. E. W. BOWERS, U.S. ARMY, CHAIRMAN, DEPARTMENT OF DEFENSE STUDY OF COMMISSARY STORES

FINANCING COMMISSARY STORE OPERATIONS

Chairman MCCLELLAN. This morning the subcommittee concludes its initial hearings on the Department of Defense budget request for fiscal year 1976 and the 3-month transition period.

Mr. Terence E. McClary, Assistant Secretary of Defense (Comptroller), will discuss the proposed changes in methods used to finance commissary store operations of the military departments.

Dr. George R. Hall, Deputy Assistant Secretary of Defense (Resource Analysis), will discuss the Department's war reserve materiels program.

The first witness is Secretary McClary.

PREPARED STATEMENT

Mr. MCCLARY. Mr. Chairman, I have a prepared statement that I would like to leave with you, but I believe I can save you time if I summarize it in about 5 minutes.

Chairman MCCLELLAN. That will be fine, sir. You may proceed.

[The statement follows:]

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE:

I appreciate the opportunity to discuss with you today the Department of Defense's proposed changes in the methods used to finance the commissary store operations of the military departments.

Background

In 1866 the Congress enacted legislation requiring the Army to provide food and related merchandise for sale at cost to officers and enlisted men who did not have the benefit of shopping in metropolitan area stores at reasonable prices. This resulted in the establishment of Army commissary stores. The Marine Corps opened its first commissary store in 1909, the Navy in 1910, and the Air Force in 1947.

The authorized patrons of commissary stores are primarily active-duty personnel and their dependents; and retired personnel, their dependents, and their surviving spouses. Others include veterans with one hundred percent, service-connected disabilities, and Medical of Honor holders. Surveys show that savings available to commissary patrons amount to 20 to 23 percent.

As of January 1, 1975 we had a total of 415 commissary stores, of which 279 were in the United States and 136 were overseas. In fiscal year 1974 commissary sales amounted to about two and one half billion dollars.

At the beginning of this fiscal year we had about 27,300 commissary store employees, of which 25,200 were civilian and 2,100 were military. We estimate there will be about 27,400 employees at the end of 1975. This compares with approximately 20,600 commissary employees in 1970. This is an increase of nearly 7,000 commissary employees in the past five years.

Funding

Historically, the operating and facilities costs of the commissary stores have been supported by appropriated funds. However, since 1952, the Congress has required that commissary stores be self-sustaining for the purchase and maintenance of operating equipment and supplies, trans-

portation of items within the United States, and utilities, except in Alaska and outside the United States. These costs amounted to $58.3 million in FY 1974. They are recovered by the use of a markup or surcharge added to commissary store base prices which in turn are set to cover the cost of goods.

In December 1974, the Congress passed legislation requiring an additional adjustment or surcharge to generate funds for construction and improvement of commissary store facilities in the United States. While the Military Departments have not yet raised their prices for this purpose, we estimate that an additional one or two percent surcharge or markup will be required. We will continue to request appropriated funds for facilities in overseas and isolated locations, however.

In FY 1975 we estimate that direct costs of appropriated fund support of commissaries will total about $324 million. This consists of about $232 million for civilian pay, $21 million for military pay, $11 million for utility costs overseas, $1 million for construction and improvements of commissaries, and $59 million for the cost of transporting goods to overseas stores. Under our proposed financing procedures we would continue to pay for the transportation to stores overseas. As I mentioned, the FY 1975 level of funding for salaries of civilian personnel was $232 million. This represents a substantial increase over the FY 1970 level of funding, which was $135 million. This is a growth of about 70% in five years.

Department of Defense Proposal

Our budget proposes to reduce the amount of appropriated fund support for commissaries in FY 1976, by requiring customers to reimburse the Government for the costs of personnel and overseas utilities. Beginning October 1, 1975, customers will pay 50 percent of these costs. Our plan is that on October 1, 1976, and thereafter, one hundred percent of these costs will be reimbursed by commissary customers. To accomplish this change in funding policy, the Department proposes to amend Section 814 of the General Provisions of the Department of Defense Appropriations Act.

We have reduced our FY 1976 budget request by $110 million as a result of this change, which reflects the savings for the last 9 months of the fiscal year. We plan to reduce the FY 1977 budget request in the neighborhood of $300 million.

We have made this decision because of our continuing desire to decrease the support areas of our budget requests in favor of increasing the resources devoted to our combat forces - this is the principal reason - and because military pay is now more nearly competitive with civilian pay, and there appears to be insufficient justification for retaining the full subsidy for commissary operations. I want to emphasize that our decision does not contemplate the closing of any commissary stores, because of this change in funding policy. The commissaries will continue to operate, but on a funding basis similar to military exchanges and other non-appropriated activities.

The Department will continue to provide direct support to overseas commissary store operations, by funding the transportation of merchandise to overseas locations. This ensures that military personnel in overseas locations will continue to be able to buy food which is comparable in price and in quality to that available in commissary stores in the United States. Retention of overseas stores with comparable prices is militarily essential. Appropriated funds will also continue to support such indirect costs as maintenance of facilities, cost of fiscal and personnel administration, trash removal, security and police protection, and other base support type functions. In addition to appropriated support for direct and indirect costs, our stores do not pay sales taxes, real estate taxes, corporate taxes, state and local excise taxes, advertising costs, insurance costs or provide for profits. Store management can also purchase in large quantities at lower wholesale costs through the Defense Supply Agency. Moreover, most of our commissaries occupy facilities which are mortage-free and inventories are financed by the Government. When one considers all of these factors, it appears that commissaries should continue to

enjoy a price advantage of approximately 12 percent over commercial food stores, even after the full implementation of our proposal.

Impact

The President and the Secretary of Defense fully appreciate that this proposal, if approved by the Congress, will have an impact on the living costs of active duty and retired military personnel. The decision to take this step was not reached easily; that it has been taken simply reflects the fact that manpower costs are now consuming more than half of the Defense Budget, largely because of the major increases in the relative pay levels of federal civilian and military personnel granted in the past ten years. The decision, in effect, represents a tradeoff of the most difficult kind -- one that recognizes that our force levels proposed for FY 1976 will be the lowest in 25 years and that the competition for Defense resources is fierce. This proposal represents a judgement that we should make this reduction in manpower support costs in the interests of sustaining and equipping the strongest force possible within the resources available to us, while still maintaining a reasonable level of support for our people.

Department of Defense Study Committee

In recognition of the impact the proposed change will have on commissary store patrons, the Secretary of Defense directed that a study be conducted, focusing on possible changes to the commissary store systems to improve their efficiency, organization, and operating structure. A Joint Service Committee, has been studying this matter for the past two months.

It is hoped that we can institute improvements which will help to mitigate the effects of the proposed reduction in the commissary subsidy.

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Mr. Chairman that is the end of my statement.

COMMISSARY STORE OPERATIONS

Mr. McCLARY. The Department of Defense at January 1, 1975, had a total of 415 commissary stores, and of these, 279 were in the United States and 136 overseas.

The sales from these commissaries aggregate about $2.5 billion.

The patrons of commissary stores are primarily active duty personnel and their dependents and retired personnel and their dependents and their surviving spouses.

COMMISSARY BACKGROUND

At the beginning of this fiscal year, we had about 27,000 commissary employees, of which about 25,000 are civilian and 2,100 military.

Chairman McCLELLAN. How many employees did you say you had?

Mr. McCLARY. 27,300 in total, of which 25,200 are civilian and 2,100 are military.

Senator YOUNG. By whom are the civilians paid?

Mr. McCLARY. They are paid by the Department of Defense appropriated funds.

Chairman McCLELLAN. They are not paid out of the profits of the operation?

Mr. McCLARY. No; they are not.

Chairman McCLELLAN. Is that the change you are really seeking to make?

Mr. McCLARY. That is true.

The appropriated funds support in 1975 is $324 million.

Of that, $253 million is for pay; pay for the civilans; pay for the military.

Chairman McCLELLAN. What is the balance for?

Mr. McCLARY. There is $11 million for utility costs overseas, $59 million for the cost of transporting goods overseas, and $1 million for construction and improvements. Those aggregate to $324 million.

Now, the proposal we are making is that the appropriated fund support be reduced, and specifically the pay for the civilian and military employees of the commissary, rather than be paid through appropriated funds; that is, be paid by the patrons of the commissaries.

We propose to do this in two steps: To have half of it effective October 1 of this year when a pay raise takes place, and the total amount on October 1, 1976, when we would expect another pay increase.

Chairman McCLELLAN. That would be half of it now and half of it a year from now?

Mr. McCLARY. That is right. Then, the total a year from now.

As a consequence of that, we have reduced our 1976 budget request by $110 million. That represents nine months of the first year's savings.

Then, on our fiscal 1977 budget, we would expect to reduce that by $300 million.

Chairman McCLELLAN. How much money will this save the first year?

Mr. McCLARY. $110 million this year.

Chairman McCLELLAN. $110 million?

Mr. McCLARY. Yes. That is a 9-month effect. We do not have that in our 1976 budget request.

Chairman McCLELLAN. You have not requested these funds?

Mr. McCLARY. That is right.

Chairman McCLELLAN. What will the reduction be next year when it is in full operation?

Mr. McCLARY. $300 million.

Chairman McCLELLAN. How many patrons do you estimate you have?

Mr. McCLARY. We have potentially 9½ million customers. That will include all of the military personnel and their dependents.

Chairman McCLELLAN. Approximately 9 million.

Mr. McCLARY. Yes. Let me introduce Brigadier General Bowers who has headed up a joint study on commissary stores. Perhaps he can answer that.

General.

Chairman McCLELLAN. What I am trying to determine, and what I want this record to reflect, is how much effect this change will have on your patrons. If you have a potential of 9 million customers who will be sharing the cost of this $300 million reduction, I want to know how much it would cost each patron per year on the average, assuming they would all share equally in the amount of purchases. Of course, that would not be the true case, but give us the average. Let us see what it will be.

We are getting many letters protesting this proposal, both from retired and active personnel. Do you have figures to reveal the true impact on commissary users?

General BOWERS. We think there are around 2½ million families that will be eligible.

COMMISSARY USERS

Chairman McCLELLAN. 2½ million families?

General BOWERS. Right, sir, which would include the active duty families, plus the retired families.

Chairman McCLELLAN. How was that reduced from 9 million so quickly?

Mr. McCLARY. Those were individuals.

Chairman McCLELLAN. I am talking about the patrons who do the purchasing, not the children. Perhaps computing it on a family basis is most accurate, but there are a lot of single people who are also purchasing.

Are these 2½ million families active and reserve personnel?

General BOWERS. I can break it down in people, Mr. Chairman, and then we can apply the——

Chairman McCLELLAN. Let's consider a serviceman's family—a wife and two children. I want to know how much this will cost him annually. Then you can take those who are retired, usually just two, I guess, a husband and wife. How will that effect them?

Mr. McCLARY. Some of the studies have indicated that a military family with two children do save as much as $60 per month by patronizing the commissary.

Chairman McCLELLAN. I want to know how much of this $300 million you are placing on them.

They are still going to have savings, aren't they?

Mr. McCLARY. The $300 million is the subsidy. This represents about a 23 percent saving at the present time.

After not providing this subsidy but having the commissary patrons pay for it, we would expect the commissary patrons to still save about 12 percent. So, there would still be savings to the commissary people.

Chairman McCLELLAN. What you are actually doing, then, is reducing their savings by about half?

Mr. McCLARY. That is true.

Chairman McCLELLAN. In other words, if they have been saving $60 per month——

Mr. McCLARY. That was one statistic.

Chairman McCLELLAN [continuing]. Now they will be saving $30 a month.

Mr. McCLARY. That is right.

Chairman McCLELLAN. You don't propose to go any further than that?

Mr. McCLARY. We do not at the present time.

We actually have no plans for doing it in the future.

Chairman McCLELLAN. Now, General, can you give us the figures we were talking about a few minutes ago?

General BOWERS. I would like to submit that for the record, if I may, so that I can give you accurate figures on this.

[The information follows:]

Commissary Store Savings 1/

	Estimated Food Purchases Per Year	Estimated 2/ Annual Savings Prior to DoD Proposal	Estimated 3/ Range of Savings After Implementation of DoD Proposal	Estimated Range of Lost Savings As Result of DoD Proposal
Enlisted:				
Total Food Purch. 4/	$1,896	$535 (45)	$211-259 (18-22)	$276-324 (23-27)
Commissary Purch. (62% of Total)	$1,176	$332 (28)	$131-161 (11-13)	$171-201 (14-17)
Officer:				
Total Food Purch. 4/	$2,472	$697 (58)	$275-337 (23-28)	$360-422 (30-35)
Commissary Purch. (73% of Total)	$1,805	$509 (42)	$201-264 (17-22)	$263-308 (22-26)
Composite: 5/				
Total Food Purch. 4/	$2,194	$619 (52)	$244-299 (20-25)	$320-375 (27-31)
Commissary Purch. (68% of Total)	$1,502	$424 (35)	$167-204 (14-17)	$219-257 (18-21)

NOTES: ( ) indicates monthly savings.

1/ Data based on 1973 DoD Personnel Survey of 30,110 military people (16,950 enlisted and 13,160 officers). Dollars converted to FY 1975 dollars. Table does not include tax savings.

2/ Based on an estimated savings of 22%.

3/ Based on a range of savings of 10 to 12%.

4/ Estimated savings in this row would be realized if all food purchases were made in commissary stores.

5/ Composite estimated savings was derived by computing a weighted average based on mix of military customers using commissary. This ratio was 48.2% enlisted, and 51.8 officer, as 4.6% of the officers and 31.0% of the enlisted personnel surveyed did not shop in a commissary.

Chairman McCLELLAN. Do you have any other statement to make in connection with the hearing today?

General BOWERS. No, sir; I do not have a prepared statement.

Chairman McCLELLAN. Is there anything else you wish to state now that is pertinent to this discussion we are having?

Admiral FINNERAN. May I help on this, Mr. Chairman?

Mr. McCLARY. This is Vice Admiral Finneran.

Admiral FINNERAN. I think it would help if I gave you a couple of comparisons that are reasonably typical.

If you assume that an average family of four spends $75 a week for their food today, using the commissary store system, this proposal in effect would raise the comparable price of that same market basket to in the range of $90 to $95.

Chairman McCLELLAN. From $75 to $95?

Admiral FINNERAN. Yes, sir.

We are talking in the range of a 14 to 17 percent increase in the markup to the customer for the price of the food he buys in the commissary store, on the average.

If you could fix these prices and, as you recognize, sir, this is a dynamic process, with the cost of food going up all the time, it would represent about a $15 to $18 increase on a weekly market basket buy.

Chairman McCLELLAN. You are saying that it is going to cost the serviceman $60 to $75 more each month?

Admiral FINNERAN. Yes, sir; if he is a full user of the commissary store system.

Chairman McCLELLAN. I am talking about a man on the post who uses a commissary; let's say a private.

Now, it is going to cost him $75 a month more to buy groceries for his wife and two kids?

Admiral FINNERAN. Or he will buy less groceries and change his way of life.

ADDITIONAL COST

Mr. McCLARY. Mr. Chairman, let me get the statistics. We are talking about a sales volume of $2.5 billion. We are talking here roughly about $250 million subsidy in this year's prices. Really, what we are talking about is a 10 percent increase.

Chairman McCLELLAN. Now, that is not what he said.

Mr. McCLARY. I know he did not but I am giving you the statistics as we have made them in our analysis.

This is an overall. Obviously, it could vary by individual patron.

As I mentioned, currently the savings to the customer is about 23 percent from what he would be paying in the commercial supermarket.

Chairman McCLELLAN. Now?

Mr. McCLARY. Now.

After this change, there will still be a savings of about 12 percent.

Now, these savings result from a number of factors:

First of all, there will be a number of indirect costs that the Government will still support. These include such things as maintenance of facilities, cost of fiscal and personnel administration, trash removal, security and police protection, and other base support type functions.

In addition, you should recognize that currently the commissaries have facilities that are paid for, mortgage-free, and also the inven-

tories are financed by the Government. So, the store inventories are financed by the Government.

Also, you should recognize that commissaries do not pay sales taxes; they do not pay real estate taxes or corporate taxes or State and local taxes. They do not have advertising costs. They do not need to provide for profit. Also, they purchase in large quantities through the Defense Supply Agency.

Even after this change, there will be a significant savings to the patron.

One thing I would like to emphasize is that the Department of Defense does not propose to close commissaries. We do believe that these commissaries can continue to operate and operate at a savings to the patron.

Now, as far as overseas is concerned, we still plan to pay for the $59 million a year cost of transporting goods overseas. So that will permit the commissary patron overseas to be able to buy food at a quality and at a price the same as he would be buying back here in the States in the commissary.

So, the overseas member will be able to continue to purchase overseas at price and quality comparable to what he pays here.

Chairman McClellan. Now, that sounds fine. But when you get down to making your decision, the question is, how much will it increase the cost of food to the soldier?

Mr. McClary. That is right.

A soldier with a family of a wife and two children, as I have mentioned, surveys have been made, $60 a week is what he is currently paying. Now he will be paying about $66.

Chairman McClellan. Admiral Finneran gave us different figures.

Mr. McClary. I don't know how he can arrive at those mathematics.

Keep in mind he is a personnel man and I am a financial man. I think my statistics are right.

Admiral Finneran. I don't think they are far different, Mr. Chairman.

Mr. McClary is speaking from a cost-analysis point of view, and I am simply adding a factor that suggests that the closer you get to a more competitive relationship with stores in the private economy, the potential is there to have people use those alternatives rather than the commissary system.

If, in fact, that happens to any degree, the cost estimates are going to tend to be underestimated to that same degree.

So, if you operate on a system that suggests that the customer pays the full cost burden, which I don't necessarily agree with, then I think you have to be cautious about the way you state the potential savings.

I would anticipate that we may, in fact, have some erosion of usage of the commissary store by the patrons as the savings benefit reduces in the face of this change.

PAY INCREASES

Chairman McClellan. I don't know that it makes any difference how you reached your calculations. What concerns me is the effect on our enlisted man with a family of four—or a retiree—or any of your other personnel. With the cost of living going up as it is, how can he afford another $10 or $15 a week for food? What increase now is he getting in pay?

Mr. McCLARY. As you know, over the years, over the past 10 years, we have made significant increases in military pay to the point where military pay is now competitive, nearly competitive, at least, with the civilian salaries. This is part of our rationale for proposing this at this time, that there is this relative comparability with military and civilian pay.

Senator YOUNG. The retired program of the military is different from that of the Government worker.

Mr. McCLARY. In the military, of course, the increases are triggered by the cost-of-living index.

Senator YOUNG. And the Government pays for it. The military man does not pay anything into it.

TIMING OF POLICY CHANGE

Mr. McCLARY. There is an impact on the military serviceman which has been a concern to the Department of Defense. That is why we have the two-step approach to take place at the time that the pay increases take place.

As you may know, the House Armed Services Committee in its report suggested that if there be a pay cap of 5 percent this year, their recommendation is that this commissary subsidy not be reduced. By looking at the logic of that expression, that would suggest that if there is not a pay cap, possibly they would endorse this particular change.

Now, I deduce that from reading the report which, of course, is available to you.

I should point out, though, that we are most concerned about this impact upon the military man and his family and, as a consequence thereof, General Bowers has been assigned and has given leadership to a joint service study to determine how can we improve the effectiveness of commissaries and thereby reduce cost and, to the extent that we can, find improved methods of operation, those costs can be passed on to the commissary patron.

He has issued his report. I think he has identified some opportunities for improvement.

What we need now is to come up with a plan that will give back part of this reduction of subsidy to the commissary patron and make these stores even more attractive.

RECRUITMENT IMPACT

Chairman McCLELLAN. Mr. Secretary, have you considered what impact this may have on recruitment?

Mr. McCLARY. Yes, sir.

It is felt that this will be a negative factor insofar as recruiting is concerned. It is one of the many offerings, one of the many benefits offered to the service people.

In our recruiting literature, we have in the past mentioned commissary stores. I think the point is that we can still mention that the commissary stores will remain a benefit; they will remain a benefit to the member even after he is retired, but the subsidy will not be so great.

Senator YOUNG. One benefit is no taxes. He does not pay sales taxes.

Mr. MCCLARY. That is true.

In Virginia, as you know, that is 4 percent.

Chairman MCCLELLAN. Is that sales tax calculated in your 23 percent savings?

Mr. MCCLARY. No; it is not. Savings from not having to pay sales taxes would be added in addition to the 23-percent savings.

REASON FOR CHANGE

Chairman MCCLELLAN. Still it comes down to one-half?

Mr. MCCLARY. That is true.

I should point out, Mr. Chairman, that, although one of the aspects of our request is this more nearly competitive nature of military versus civilian pay, particularly the increases over the past 10 years, but the major reason we are requesting this change is to decrease the support area of our budget in favor of increasing the resources devoted to combat forces.

As you know, this year our force structure is the lowest it has been in 25 years. We simply had to look at all opportunities for cost reduction. Here is one that we have looked into the area of benefit and have suggested that this is a candidate for reduction. But this is a painful one. It is a painful one that the President and the Secretary have considered in their recommendation, but it is only in the context of these very limited and scarce defense resources.

ENLISTMENT PERIODS

Chairman MCCLELLAN. What is the enlistment period now? Four years?

Mr. MCCLARY. It varies.

We currently have some 2-year enlistments, but we do plan to eliminate those. It will be roughly 3, 4 and 6 years.

Chairman MCCLELLAN. What about the man who has just now enlisted for 4 years, with this as one of the inducements for enlistment.

Would this change constitute a breach of contract with him?

Mr. MCCLARY. There is a feeling on the part of some servicemen that this would be something of a breach.

Again, the point we emphasize is, we are not taking away commissary stores, we are only reducing the benefit.

Chairman MCCLELLAN. It is a depreciation of those benefits.

Mr. MCCLARY. I might add that this year——

Chairman MCCLELLAN. Perhaps erosion would be a better word.

PAY REVIEW

Mr. MCCLARY. This year is a year for our quadrennial military review of compensation. We do this every 4 years. This year, the interested management, the effective management, in the Department of Defense, representatives from all services—I am on the committee; Jake Finneran is on the committee—we are reviewing total military

compensation, including all of the pay and benefits, including fringe benefits.

Hopefully, we will have a recommendation at the end of this study that would propose any modifications in that structure, pay, benefits, and what-have-you.

Chairman McCLELLAN. I ask the same question another way.

How will this affect the morale of your service people?

Based on your earlier remarks, you would be increasing a grocery bill by about $25 a month.

Mr. McCLARY. My figure is a 10 percent increase.

Chairman McCLELLAN. That will run it $25 a month; Admiral Finneran's would be in the neighborhood of $60 to $80 a month.

Mr. McCLARY. It obviously will have a negative impact, Mr. Chairman.

Chairman McCLELLAN. I tell you frankly, my first reaction to this proposal was that we all have to make some sacrifices, and maybe these commissaries should be operated without any subsidy from the Government. They get the benefit of not having to pay any profit. There would still be some subsidy in the transportation of goods and so forth. That was my first reaction.

We have come a long way. We have assumed rather heavy obligations to provide inducements for a voluntary army.

Now, after we have established inducements that have been attractive so far and enabled us to have a voluntary army, are we going to start taking away the benefits that they have traditionally had, and have had a right to expect? I don't know what the impact of it will be.

You say you are doing a lot of studying.

It might be well, Mr. Secretary, for you to give further study to this before you ask the Congress to go through with it. In my judgment, this is more serious than the amount of money involved, considering the tremendous cost of defense. The cut you are proposing is only $200 or $300 million. But it may have a radical effect on the veterans, and those in the ranks in the service.

I don't know whether this is a wise move or not. I wish you would rethink it a little.

INCREASE IN COMMISSARY EMPLOYEES

Mr. McCLARY. We do recognize, Mr. Chairman, that we do need to restructure our pay and benefits as we move from year to year. There has been a good deal of discussion about potential erosion of military benefits. That is certainly not the intention of the Department of Defense. It is not a matter of erosion; it is a matter of restructuring, again a restructuring in the context of available resources.

We should recognize on commissary employees—I gave you some statistics a moment ago that we plan to have 27,400 at the end of 1975. Just 5 years ago, we had only 20,600. So, in the past 5 years we have increased commissary employees by 6,800.

Chairman McCLELLAN. What do you mean by "commissary employees"? Are you referring to military or civilian employees?

Mr. McCLARY. Most of those increases were the civilians. These were the civilian employees working in commissary stores.

Chairman McClellan. You now have fewer military personnel than previously. Why are you increasing the number of employees?

Mr. McClary. A good deal of that increase was due to the lengthening of hours in the stores. That is one reason why we have more. By lengthening the hours of store operation it has taken more employees.

Chairman McClellan. What are the hours of operation now?

Mr. McClary. Generally, they run from about 10 o'clock in the morning until about 8 o'clock at night and then some time on Saturdays in most stores. It does vary by store. So, it is not quite as convenient as supermarkets, many of which operate around the clock and on Sundays.

Chairman McClellan. Couldn't you run them from noon until 8 o'clock at night and get in 8 hours?

Mr. McClary. That again should be part of the consideration of how to improve the operation of commissary stores.

I think you should recognize, Mr. Chairman, there is not a whole lot of incentive on the part of commissary patrons to reduce service in the stores where that bill is being paid by Uncle Sam.

Chairman McClellan. Uncle Sam can control that whether they like it or not. It costs them nothing, but it does save something to the taxpayers if reasonably adequate accommodations could be provided by opening the commissary at noon and running until 8, or opening at 11 o'clock and running until 7.

PERSONNEL COSTS

Mr. McClary. I mentioned the civilian personnel cost $232 million this year, the civilians in these stores. In 1970, that was only $135 million. So, we have had an increase in that category of civilian personnel.

Chairman McClellan. That is because of the increase in wages?

Mr. McClary. Primarily. That also includes the increase of 6,800 employees. It is both the number of employees and the wages paid.

Chairman McClellan. I don't understand the increase in the number of employees, while the patrons are gradually reducing.

Admiral Finneran. The retiree growth has been very dramatic in the past 5 years, and they are eligible patrons.

We embarked on a deliberate policy to improve the service available in the commissary stores, partly through extended hours of operation, trying to operate for periods when the servicemen with their families found it more convenient to go to the stores.

Both of those drives resulted in an increased staffing for the store operations to the tune of some 6,800. This was all part and parcel of our internal efforts to strengthen the All-Volunteer Force concept.

Chairman McClellan. If a man enlists 2 or 4 years, or even 8 years, and then quits the service—he does not reach the age of retirement—is he eligible as a patron?

Mr. McClary. No; he is not.

Chairman McClellan. Only those who serve long enough to receive retirement benefits?

Mr. McClary. That is true.

Admiral FINNERAN. And a 100-percent disabled veteran, whether or not he is a retiree in terms of full service.

Chairman MCCLELLAN. Of course. Does that apply only to service-connected disabilities, or also to those who become disabled afterwards?

Admiral FINNERAN. No, sir, service-connected, 100-percent disability.

Chairman MCCLELLAN. That would be proper, of course.

Is there anything further, Senator.

Senator YOUNG. Admiral, you talk about the cost of food going up. It has the last quarter, but overall it dropped in the last year. It probably will be dropping some in the future. I know something about it because I am in the farming business. Cattle prices are down 50 percent. They are hauling potatoes to the fields and dumping them for fertilizer.

If you want everything on the plate for a TV dinner, and are unwilling to cook, of course, it does cost more.

COMMISSARY STUDY

Chairman MCCLELLAN. When do you expect to have this study completed?

Mr. MCCLARY. We do have a commissary study that we will be acting on to improve the efficiency of the commissaries and improve the savings to patrons, whether this proposal is adopted or not. We are moving ahead on that.

Similarly, we do have our quadrennial review of military compensation.

Chairman MCCLELLAN. Is that review completed?

Mr. MCCLARY. No; that will not be completed until next year so that it would not have an impact on legislation until our budget request for 1978.

There may be some items fall out that we can act on in next year's budget, fiscal year 1977, but for the most part, it will be acted on in fiscal year 1978. At that time, of course, we will be considering, or, let us say, during this study we are considering the impact of commissary stores on the benefits granted to service people. So, we are including it in our consideration.

Chairman MCCLELLAN. Is there anything further?

Senator YOUNG. One more thought.

I continually get complaints from merchants and others who live around these commissaries, that they are increasing their volume that they are doing while the Armed Forces are going down. There are two sides to the story.

I don't think we should go all the way, but I think we should go at least part way in stopping the increased cost of operation.

Chairman MCCLELLAN. All right, gentlemen, I don't know yet what my position will be on this matter, but I do appreciate your testimony.

QUESTIONS SUBMITTED BY SENATORS MC CLELLAN AND YOUNG

We have some questions for you to answer for the record, Mr. Secretary.

Mr. MCCLARY. Thank you very much, Mr. Chairman.

[The questions and answers follow:]

QUESTIONS SUBMITTED BY CHAIRMAN McCLELLAN

Proposed Change in Commissary Policy

Chairman McClellan. Explain the proposed change in commissary policy in detail.

Mr. McClary. Our FY 1976 President's Budget request proposed a change in the method of financing some of the costs of operating commissary stores. In an effort to reduce Defense expenditures and to increase the share of the Defense budget allocated to combat forces, we are proposing to require reimbursement for the personnel costs of commissary store operations. These additional costs will be borne by commissary store customers beginning on October 1, 1975. On that date reimbursement of fifty percent of these costs will be required. Further, our plan is that on October 1, 1976, and thereafter, one hundred percent of the personnel costs would be reimbursable by the commissary store customer. At that time almost all of the direct costs would be reimbursable by the customer, with the major exception being the cost of transporting merchandise to overseas stores. A major consideration in arriving at this decision is our belief that active duty military compensation is now generally competitive with other public as well as private sector compensation.

Since we do not propose to implement this plan until October 1, 1975, and since this proposal requires a change to the Department of Defense Appropriation Act, increasing the limitation on the use of appropriated funds for commissaries, it is clear we cannot implement this proposal without Congressional approval.

Proposed Commissary Operation

Chairman McClellan. Will the commissaries still offer savings below chain store prices? How much below? How can they do this?

Mr. McClary. We are uncertain at this time about the extent of future savings for commissary store patrons. The savings will depend upon the prices the patrons must ultimately pay. Prices in turn depend upon the amount of sales generated in relation to operating costs. We are confident,

however, that savings of at least 12% over prices paid in commercial supermarkets will still accure to the commissary store patron. Appropriated funds will continue to support such indirect costs as maintenance of facilities, cost of fiscal and personnel administration, trash removal, security and police protection and other base support type functions. In addition to appropriated support for indirect costs, our stores do not pay sales taxes, real estate taxes, corporate taxes, state and local excise taxes, advertising costs, insurance costs or provide for profits. Store management can also purchase in large quantities at lower wholesale costs through the Defense Supply Agency. Moreover, most of our commissaries occupy facilities which are mortage-free and the inventories are financed by the Government. When one considers all of these factors, it appears that commissaries should continue to enjoy a price advantage of approximately 12% over commissaries food stores, even after the full implementation of our proposal.

Effect on Present Operation

Chairman McClellan. What will be the effect of this change upon commissary price? How much will this cost each commissary patron annually?

Mr. McClary. As discussed earlier, prices depend upon the amount of sales generated in relation to operating costs. Until we develop some experience after our proposal has been implemented, we cannot accurately forecast the effects. It is also difficult to determine how much more each commissary patron will have to pay as a result of the commissary store proposal. These data would be dependent upon the size of the family, their particular expenditures in commissary stores and the percent of their total food purchases that are made in commissary stores. I can tell you that at the present, commissary patrons save approximately 23 percent on their food purchases. After our proposal is implemented we anticipate that they will continue to save approximately 12 percent. Therefore, commissary prices may increase approximately 10 percent. This increase could amount to as

much as $250 to $300 per year per patron considering a composite average of both officer and enlisted personnel.

Possible Commissary Closing

Chairman McClellan. Will this change require that any commissary be closed?

Mr. McClary: This change in funding policy does not contemplate the closing of any commissary stores.

Applicability to Exchanges

Chairman McClellan. Why is the change applicable only to commissaries and not to exchanges? Is there any reason why the two systems should operate under different policies?

Mr. McClary: Military exchanges, for some time have been generally self-supporting, particularly in the area of employee salaries and other direct costs. Commissary stores operate within statutory authorities whereas exchanges are established under an administrative determination by the Secretaries of the Military Departments. Our proposal will bring commissary stores and exchanges more in line as to the source of funds for financing their operations.

Impact on Budget

Chairman McClellan. What is the impact of this change on this and future budgets?

Mr. McClary: We have reduced our FY 1976 budget request by $110 million and our FY 1977 and future budgets will be reduced approximately $300 million as a result of our proposed funding change.

Trend in Commissary Employees

Chairman McClellan. What is the trend in commissary employees between 1970 and 1975? Please explain any increase?

Mr. McClary: The number of military and civilian personnel employed in the Department of Defense commissary stores during the periods requested are as follows:

FY 1970	FY 1971	FY 1972	FY 1973	FY 1974	FY 1975 (estimated)
20,646	22,631	24,595	27,507	27,292	27,379

The general upward trend in the number of employees has been associated with increased sales and an attempt to improve the quality of service.

Efforts to Improve Commissary Operations

Chairman McClellan. Is the Department of Defense taking special action to improve the efficiency of commissaries and reduce their operating costs? What would be the impact of your actions upon commissary prices?

Mr. McClary: A Department of Defense Committee, under the direction of the Assistant Secretary of Defense for Manpower and Reserve Affairs has been established to determine what changes, if any, should be made to the military commissary store system in its organization and operating structure for improved efficiency, reduced costs, and better service to the patrons. That study is currently being staffed for comments within OSD. It is premature at this time to speculate upon the ultimate changes to commissary store management and operation that may result from this review.

Purpose of Commissaries

Chairman McClellan. What is the purpose of the military commissary? Has this changed over time? What Congressional guidance on commissaries has been given?

Mr. McClary: Commissary stores have been established on military installations to provide food and other mechandise to military personnel at a convenient location and at a reasonable price. This basic purpose has remained the same for some time and has been confirmed by Hearings before a Subcommittee of the House Armed Services Committee in 1970 and 1972. Additionally, statutory authority for the operation of these facilities is contained in Title 10 of the United States Code and the General Provisions of the Annual Department of Defense Appropriations Act.

Patrons Affected by Proposal

Chairman McClellan. Who are the commissary customers that will be affected by this change? What portion of the active military actually use the commissaries? What portion of the retired military?

Mr. McClary: The major groups that comprise authorized patrons of commissary stores are active and retired military personnel, veterans with a service-connected disability rated at one hundred percent and the surviving spouses of these persons. Commissary stores, while not limited to married personnel are primarily patronized by Service members with dependents. The commissary store benefit is not equally shared by all Service members, particularly among those without dependents who comprise a large percentage of our junior grade officers and enlisted personnel. Many of our retired military personnel tend to locate near a military installation in order to avail themselves of the military facilities such as commissary stores, exchanges and hospitals. While we do not know exactly what portion of the retired military personnel actually use commissary stores, some estimates have indicated that at certain locations 50 percent of the patrons are retired military personnel.

Reason for Proposed Change

Chairman McClellan. Why initiate this proposed change at this time?

Mr. McClary: We decided to submit our proposal at this time in an effort to reduce the FY 1976 budget estimate and at the same time to increase the share of the Defense budget allocated to combat forces.

Possible Breach of Contract

Chairman McClellan. Is this action a breach of contract with active and retired military personnel?

Mr. McClary: No, there is no breach of contract nor breach of any implied contract involved although I recognize that many of our personnel may perceive it as such.

Certainly we would all agree that the military compensation system must undergo changes and restructuring from time to time to keep pace with the

evolution of compensation packages in private industry. Without such changes the Department of Defense could not remain competitive with industry for the number and quality of personnel which are required for the armed forces. Equally apparent is the fact that we cannot simply add new compensation items without reducing or eliminating the less effective items. For these reasons certain items of compensation and benefits have been revised and restructured, sometimes to the detriment and sometimes to the advantage of specific groups, in maintaining a dynamic compensation and benefits system.

The Department believes that even with the change in the status of commissaries, military compensation including the supplemental benefits area, is still highly competitive with the wages and benefits of private industry. Further, Defense believes that the frequent and substantive increases in retirement pay under the CPI adjustment formula have acted to minimize the impact of the reduced commissary savings on retired personnel.

Time Schedule for Change

Chairman McClellan. Could this subsidy for commissary labor be completely eliminated on October 1, 1975?

Mr. McClary: Yes, it could. However, the impact on the patrons and the commissary system is lessened over a two-year period.

Personnel End Strength

Chairman McClellan. Provide the military and civilian personnel end strength for commissaries, by service, FY 1974, 1975 and 1976. For the same years provide the appropriated funds support, by appropriation. How much was the FY 1976 budget reduced, by appropriation, as a result of the change in policy on commissaries?

Mr. McClary: The information follows:

Commissary Store Operations
Appropriated Fund Support

	Personnel End Strength					
	FY 1974		FY 1975		FY 1976	
	Mil	Civ	Mil	Civ	Mil	Civ
Army	283	10,401	283	10,392	283	10,392
Navy	1,136	3,978	1,300	4,018	1,300	4,019
Marine Corps	20	821	9	775	9	775
Air Force	640	10,013	628	9,974	629	9,961
Total	2,079	25,213	2,220	25,159	2,221	25,147

	(Dollars in Millions)		
	FY 1974	FY 1975	FY 1976 1/
Military Personnel Funds			
Army	2.7	2.8	3.2
Navy	10.9	11.7	12.4
Marine Corps	.2	.2	.1
Air Force	6.6	6.6	6.9
Total	20.4	21.3	22.6
Operation and Maintenance Funds			
Army	83.9	87.3	59.7
Navy	40.8	46.0	23.6
Marine Corps	8.1	8.0	5.7
Air Force	86.1	92.6	59.3
Total	218.9	233.9	148.3
Military Construction Funds			
Army	-	-	-
Navy	1.8	1.3	-
Marine Corps	-	-	-
Air Force	7.4	-	-
Total	9.2	1.3	-
Research, Development, Test, and Evaluation Funds			
Army	2.2	2.2	1.5
Navy	-	-	-
Marine Corps	-	-	-
Air Force	5.1	5.4	3.3
Total	7.3	7.6	4.8
Reserve Funds			
Army	.2	.2	.1
Navy	-	-	-
Marine Corps	-	-	-
Air Force	1.0	1.0	.6
Total	1.2	1.2	.7

	(Dollars in Millions) FY 1974	FY 1975	FY 1976 1/
Total Army	89.0	92.5	64.5
Total Navy	53.5	59.0	36.0
Total Marine Corps	8.3	8.2	5.8
Total Air Force	106.2	105.6	70.1
Total All Appropriations 2/	257.0	265.3	176.4

1/ Indicates change in policy effective October 1, 1975, a portion of personnel costs will be supported through surcharge by commissary customers.
2/ Excludes the cost of transporting merchandise to overseas stores.

The FY 1976 budget was reduced $110 million as a result of the change in policy on commissaries. The total amount of savings was taken in the Operation and Maintenance Appropriation.

Justification of Proposal

Chairman McClellan. If you can justify this new policy, why are you proposing it be implemented over a two year period instead of a one year period? If this is the right thing to do, why not do it immediately?

Mr. McClary: As mentioned earlier, our proposed change in commissary store funding has been spread over a two year period to lessen the financial impact on the patrons of commissary stores. Further, we need to provide the necessary administrative lead time in order to affect changes in pricing, accounting and operational procedures.

Food Stamp Usage

Chairman McClellan. What is the incidence of food stamp usage in commissaries? If some patrons already must use food stamps, what is the rationale for increasing prices further?

Mr. McClary: During the period April 1974 to March 1975 a total of $10,655,873 in food stamps were redeemed in commissary stores. These sales account for about .5 percent of our sales in commissary stores that redeem food stamps. We believe our patrons will still achieve a savings on their commissary store purchases after implementation of this proposal.

Commissary "Contract"

Chairman McClellan. To what extent were military members provided a "contract" upon entry into the service which stipulated that the commissary privilege would always be a part of military life? Are such "guarantees" being made by recruiters today?

Mr. McClary: There is no doubt that the availability of commissary stores offering substantial savings has been used over many years as one of the advantages of military service. This has led to the expectation by many military personnel that these stores and their concomitant savings would be available throughout their service and into retirement. We recognize that the Department of Defense proposal, by eliminating the government subsidy of payroll costs will change this expectation. The substantial increases in military compensation coupled with the necessity for maximum reduction in Defense expenditures, not directly related to combat forces, resulted in the Defense proposal.

While references to commissary stores are contained in recruiting literature, no guarantees have been made by the recruiting commands that the benefits will continue unchanged. Our Service Recruiting Commands are aware of the Department of Defense proposal and the possibility that while our stores will continue to be available, the potential savings will be reduced.

Effect on Retirees

Chairman McClellan. It has also been purported that the commissary change will be particularly severe in regard to the retired population. Do you agree with this proposition? Please explain.

Mr. McClary: Retired military personnel, as well as our other patrons, will find reduced savings on their commissary store purchases. In cases where a retiree is unemployed and receives only his retired income, it may have a greater impact on him than on some others. However, under the retired pay adjustment formula, the "real income" of retired personnel from their retired pay has been increasing in recent years. This would tend to lessen the effect of reduced savings as a result of our proposal.

Commissary Privilege as an Element of Compensation

Chairman McClellan. Do you consider the present availability of the commissary privilege to be an appropriate element of military compensation?

Mr. McClary. Yes. It is the Department of Defense's position that the commissary privilege, while not an element of direct wages paid to military personnel, is nonetheless an element of total military compensation.

The 1967 Quadrennial Review of Military Compensation (QRMC) determined that an item is considered to be compensation if it:

a. Costs the government money (either now or in the future); and

b. Is of value to the recipient in one or more of three ways:

1. It adds net cash to his current income.

2. It permits him to realize a current net cash savings; or

3. It creates a present value to him based on the prospect of future receipt.

Commissary privileges are classified as supplemental benefits and are considered to be an element of total military compensation because they: (1) are a cost to the government, and (2) allow, when exercised, the realization of current net cash savings.

You should recognize, however, that benefits derived from commissary use are not uniformly experienced by all service members. Where commissaries are available, married personnel, and in particular married personnel with families, are the major users of the commissary. Therefore, the extent to which the commissary privilege is considered part of a particular service member's total military compensation is proportional to the availability of the facility and the frequency of its use.

Increases in Pay Structure

Chairman McClellan. Indicate what increases to the military pay structure have been authorized over the past twelve years. Of those, which were independent of raises to civilian government employees and which were in tandem with such raises? Compare the increases with the increase in the Consumer Price Index.

Mr. McClary. The following table provides the information requested:

DEPARTMENT OF DEFENSE
PAY INCREASE AND CONSUMER PRICE INDEX SINCE 1964

Military and civilian pay increase			Pay & CPI (FY 1964=100)			
Effective Date	Regular Military Compensation a/	Class. Civilian Salaries	Fiscal Year	Regular Military Compensation	Class. Civilian Salaries	Consumer Price Index b/
Oct. 1, 1965	-	3.6%	1964	100.0	100.0	100.0
Jul. 1, 1966	2.8%	2.9%	1965	102.1	106.3	101.3
Oct. 1, 1967	4.5%	4.5%	1966	107.8	109.2	103.5
Jul. 1, 1968	4.9%	4.9%	1967	112.0	113.2	106.7
Jul. 1, 1969	9.1%	9.1%	1968	116.7	117.1	110.2
Jan. 1, 1970	6.0%	6.0%	1969	124.2	124.2	115.6
Jan. 1, 1971	6.0%	6.0%	1970	140.1	139.6	122.4
Nov 14, 1971	13.1%	-	1971	148.5	148.0	128.7
Jan. 1, 1972	5.5%	5.5%	1972	173.3	156.5	133.4
Jan. 1, 1973	5.1%	5.1%	1973	193.2	164.8	138.7
Oct. 1, 1973	4.8%	4.8%	1974	208.4	174.9	151.2
Oct. 1, 1974	5.5%	5.5%	1975	222.6	184.3	169.2
Oct. 1, 1975	5.0%	5.0%	1976	234.1	193.7	185.3

a/ Regular military compensation is the sum of basic pay, quarters allowance, subsistence allowance, and the tax advantage on these allowances (which are not subject to income tax).
b/ CPI for FY 1975 and FY 1976 based on estimates published in President's FY 1976 Budget.

From FY 1964 to FY 1976 (12 years) Regular Military Compensation increases at a compound annual rate of 7.5%, classified civilian pay at 5.7%, and the CPI at 5.3%.

Comparability of Pay

Chairman McClellan. Critics of the commissary proposal indicate that military pay is still lower than in the civilian sector, and that commissary privileges offer a necessary benefit. Are military and civilian pay comparable? Please describe and compare the two categories at several equivalent job levels, paying particular attention to actual disposable income.

Mr. McClary. The 1967 Quadrennial Review of Military Compensation linked regular military compensation (RMC) as a military equivalent of salary with Federal General Schedule pay. General Schedule pay is, in turn, linked by work level with similar work levels in the private sector. Each year the Bureau of Labor Statistics (BLS) conducts a survey of pay for selected jobs which are related to General Schedule pay grades, and it is used as the basis for their annual pay adjustment. Since 1967, the military have received a matching increase each time General Schedule pay was adjusted. Additionally, legislation (P.L. 92-129) was enacted in November 1971, which raised military pay to generally competitive levels, reflecting the new national policy of manning the military forces on an entirely voluntary basis.

The attached table shows comparison of the linkage pay grades in 1967 and today. The comparison uses regular military compensation data as an approximation for the military, and salary for General Schedule employees. General Schedule salary, however, must be reduced by 6.5% in 1967 and 7% in 1974 to recognize their contribution to retirement. Military personnel do not contribute to their retirement program and this reduction is necessary to equate the two "salaries".

As you are aware, DoD is currently conducting the 1975 Quadrennial Review of Military Compensation. The competitiveness of military pay will be reviewed in detail.

(The table follows:)

Comparison of
Military and General Schedule Pay Rates
at the Linkage Points
1967 - 1974

Linkage Point [1]	1967		Oct 1974	
	RMC [2]	Civilian [3] Salary	RMC [2]	Civilian [3] Salary
Major General to GS-18	$24,397	$25,296	$43,778 [4]	$43,092 [4]
2nd Lieutenant to GS-7	5,906	6,974	10,327	10,763
Private 1st Class to GS-3/WB-5	2,972	4,873	7,155	7,957

1/ Linkage Points are Maj Gen (0-8) with 28 years of service with GS-18, 2nd Lt (0-1) under 2 years of service with GS-7 Step 4, Pvt 1st Class under 2 years of service with average of GS-3 and WB-5

2/ Regular Military Compensation, which is the total of basic pay, quarters and subsistence allowances, and the tax advantage that accrues because the allowances are not subject to Federal Income Tax. Calculations are based on the assumption that all allowances are received as cash payments.

3/ Civilian basic salary is reduced by 6.5% in 1967, and 7% in 1974 to account for the fact that civilians contribute these percentages of salary for retirement while military personnel make no explicit contribution.

4/ Figures shown do not reflect Executive Level V statutary limitations of $36,000 on military basic pay and General Schedule Salary.

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QUESTIONS SUBMITTED BY SENATOR YOUNG

Opposition to Proposal

Senator Young. This Committee has heard testimony from a wives group of service personnel opposing the administration's proposal to reduce the cost savings to military families shopping in the commissaries. They stated that this saving was a benefit primarily for the lower paid military personnel, some of which are buying food stamps, and the incentive for personnel to elect a military career.

What is the Defense Department's position in regard to these statements?

Mr. McClary. While we realize that there will be an adverse impact on military personnel, there will still be a 12% savings over commercial food stores. We do not anticipate an adverse impact on the recruitment of our military personnel as a result of this policy change. We feel that our active duty military pay is competitive with civilian counterparts. During the period from April 1974 to March 1975 a total of $10.7 million in food stamps were redeemed in commissary stores. These sales amount to only .5 percent of our sales in commissary stores that redeem food stamps.

Funding Policy

Senator Young. What impact does the retail commissary stores administration and procurement have on the issue commissary activities?

Mr. McClary. Commissaries procure their food stuffs largely in bulk quantities through the Defense Supply Agency. Our change in funding policy will not change that procedure.

Administration Procedures

Senator Young. Do any of the services combine the procurement storage and issue of commissary items for both the retail commissaries and the enlisted mess halls?

Mr. McClary. Yes, both the Army and Air Force combine the administration of procurement, and issue of both commissary and troop issue items under one organization. However, effective July 1, 1975 each service will implement an accounting system which will fiscally separate the costs of operating commissary resale and troop issue functions.

Cost Increase to Servicemen

Senator Young. Of the estimated $324 million direct costs for the commissaries, what would be the pro-rated cost per serviceman using the commissaries?

Mr. McClary. While we cannot precisely account for the specific cost increase per serviceman using commissaries we estimate about a 10% price increase resulting from our proposed change in policy which would amount to approximately $250 to $300 additional per year per patron considering a composite average of both officer and enlisted personnel.

Pro-rated Cost of Funds

Senator Young. What is the pro-rated cost of appropriated funds for the commissaries per military base?

Mr. McClary. We do not know the answer to this question. Commissary stores vary in size from base to base. Some bases do not have commissaries. For these reasons a pro-rated cost of appropriated funds per military base would not be statistically meaningful.

War Reserve Materiels Program

Office of the Secretary of Defense

STATEMENT OF DR. GEORGE R. HALL, DEPUTY ASSISTANT SECRETARY OF DEFENSE (RESOURCE ANALYSIS), OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (PROGRAM ANALYSIS AND EVALUATION)

ACCOMPANIED BY:

CHARLES GROOVER, DIRECTOR, LOGISTICS DIVISION, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (PROGRAM ANALYSIS AND EVALUATION)

ROBERT ROZYCKI, DIRECTOR, REQUIREMENTS AND PROVISIONING DIVISION, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE (INSTALLATIONS AND LOGISTICS)

DEPARTMENT OF THE ARMY

JAMES H. LASTER, OFFICE, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

LT. COL. TOM LEWIS, OFFICE, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

DEPARTMENT OF THE NAVY

REAR ADM. E. A. GRINSTEAD, DIRECTOR OF THE MATERIAL DIVISION OF DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)

MAJ. GEN. F. W. VAUGHT, U.S. MARINE CORPS, DIRECTOR OF PLANS, PROGRAMS AND MANAGEMENT/ASSISTANT DEPUTY CHIEF OF STAFF FOR INSTALLATIONS AND LOGISTICS, HEADQUARTERS MARINE CORPS

CAPT. W. P. GATEWOOD, ASSISTANT DIRECTOR, OFFICE OF BUDGET AND REPORTS

DEPARTMENT OF THE AIR FORCE

LT. COL. HERBERT C. TYGETT, STOCK FUND MANAGER, SUPPLY SUPPORT AND SERVICES DIVISION, OFFICE OF THE DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

LT. COL. CHARLES McCAUSLAND, CHIEF, SUPPLY PROGRAMS OFFICE, AIRCRAFT/MISSILES DIVISION, OFFICE OF THE DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

LT. COL. DERRICK V. MITCHELL, CHIEF, NONNUCLEAR MUNITIONS SECTION, COMMAND PLANS DIVISION, OFFICE OF THE DEPUTY CHIEF OF STAFF, SYSTEMS AND LOGISTICS

PREPARED STATEMENT

Chairman McCLELLAN. Dr. Hall, do you have a prepared statement?

Dr. HALL. Yes; I do, sir.

Chairman McCLELLAN. It will be printed in full in the record, and you may highlight it.

Dr. HALL. Yes, sir, I shall be pleased to do it.

Chairman McCLELLAN. All right. Let it be inserted in the record, and you may proceed, Dr. Hall.

[The statement follows:]

THE DEPARTMENT OF DEFENSE WAR RESERVE PROGRAM

Mr. Chairman, members of the Committee: I appreciate this opportunity to discuss with you a facet of the total Defense program that is vitally essential to our capability to support our forces in combat, on short notice, in any future war. I refer to the DoD war reserve program.

OVERVIEW:

War reserves are those inventories of combat essential items which we procure and maintain in peacetime so that we can support our combat forces on short notice in case of war. Both consumable and major equipment items are included. War reserves are usually classified as:

(1) Munitions, including tactical missiles and other nonnuclear munitions

(2) Equipment, such as combat vehicles, weapons, radios, and similar items

(3) Secondary items, such as weapon system spare parts, personnel support items, and the like.

We procure and maintain war reserves for several hundred different munition items, more than 2,500 different equipment items, and approximately 350,000 different "secondary items." Some of these secondary items are procured directly by the Military Departments with funds appropriated to specific procurement accounts. However, the majority of the secondary items, mostly consumable, are procured and managed by the Defense stock funds.

CRITICALITY OF WAR RESERVE INVENTORIES:

About 60% of the total Defense budget goes to acquire, maintain, and operate the general purpose force structure. Adequate peacetime war reserve inventories are essential to a general purpose force structure that is to be able to respond to unforeseen combat contingencies on short notice. About two percent of the Defense budget spent or not spent on procurement of war reserves can make the difference between having a general purpose force structure that can respond rapidly to unforeseen contingencies and one that has no immediately available combat capability.

Adequate munitions, combat equipment, and spare parts must be on hand immediately were some future conflict to start. History offers many convincing examples of the importance of war reserves. For instance, in 1972, the Air Force was required to deploy a 72 aircraft A-7D Tactical Fighter Wing to Thailand on short notice. The unit had a pre-packaged "war readiness spares kit," or WRSK, for each of the three squadrons involved. More than one-third of the 72 aircraft had to draw one or more parts from their WRSK to replace a failed component while en route. The 72 aircraft wing started flying combat sorties within hours of their arrival in Thailand. In the first 16 days of combat, about 70% of that wing's spare parts demands were satisfied out of the WRSKs that had accompanied them. That wing's total combat sorties during that first 16 days were about 37% higher with its war reserves, than they would have been without them.

PLANNING CONCEPTS:

Item Selection -- Because of the significant expense involved in procuring, storing, and maintaining war reserves we naturally wish to maintain the smallest possible quantities of the fewest possible items that will permit us to fully support our general purpose forces in combat with a minimum of warning. We stock only combat essential items. In general, we maintain inventories of all combat essential consumable items such as munitions, weapon system spare parts, fuel, and medical supplies. We also maintain war reserves of certain major equipment items to permit us to replace those likely to be destroyed in combat and to try to keep units engaged in combat fully equipped as combat continues.

In general, we buy equipment war reserves for very labor-intensive combat units but do not buy them for highly capital-intensive units. In the capital-intensive forces such as tactical air and naval forces, the procurement cost of the primary weapon system is, by definition, large relative to the total cost of equipping, maintaining, and operating such units. Therefore, we provide the additional resources needed to form these expensive weapon systems into the largest possible combat force to maximize its deterrent effect in peacetime and immediate combat capability in case of war. On the other hand, in the labor-intensive land forces,

manpower costs are dominant. Here, we provide war reserves of equipment to replace expected combat attrition losses so that the manpower can continue to fight. Thus, we buy war reserves for the combat attrition replacement of guns, artillery pieces, tanks, field radios, and like items. We do not buy war reserves of ships, aircraft, and like items.

War Reserve Positioning -- War reserves are positioned in peacetime to strike the best balance between support of forward deployed forces and their planned reinforcements, and the need to provide flexibility to support our forces in unforeseeable contingencies worldwide. This means that in theaters of critical interest to the U.S., the Services pre-position the minimum war reserves that would be required to support the forward deployed and reinforcing units until such time that a resupply flow into the theater could be established. Other war reserve stocks are generally located in the continental U.S. from whence they could be shipped to any theater where they might be required.

Consideration of Potential Allies -- I wish to emphasize that our war reserves are intended to support U.S. forces or allied forces fighting alongside U.S. forces. Because we envision that in any future conflict, Americans would fight alongside allies, when DoD's legislative authority permits, we take into consideration the requirements of those allies who would be fighting with us, when we plan our war reserves.

Some of our potential allies lack the industrial capacity and economic resources necessary to provide the peacetime war reserve inventories and wartime production capability for their own defense. The Republic of Korea is an example. The theoretical fraction of our war reserves that is related to the possible demands of allies is called War Reserve Stocks, Allies (WRSA).

Realistic U.S. advanced planning and programming for our allies' possible future wartime needs is necessary if those allies' forces are to be able to make the maximum possible contribution to their own defense from any future attack and minimize any possible U.S. combat force involvement. WRSA assets are held under U.S. title and control, and would be released to an ally only upon Executive decision with the proper

Congressional authorization. The WRSA component of our reserves consists for the most part of items also used by U.S. forces. Most of them are stored, comingled and interchangeable with the stocks which our own forces would use.

Section 514 of Foreign Assistance Act of 1974 -- The Foreign Assistance Act of 1974 removed our authority to continue planning and procurement of a composite U.S. and Allied war reserve stockpile. Section 514 of that act prohibits the use of DoD funds for stockpiling for foreign countries "any defense article or war reserve material including the acquisition, storage, or maintenance of any war reserve equipment, secondary items, or munitions, if such article of material is set aside, reserved, or in any way earmarked or intended for future use by any foreign country." The provisions contained in Section 514 clearly prohibit DoD from obligating funds to support the War Reserve Stocks, Allies (WRSA). We consider this new legislative proscription unwise. We will continue to scrupulously obey the law; however, we are proposing an amendment to this legislation which would permit the Defense Department to continue building toward a realistically designed war reserve posture. The proposed legislation guarantees Congress continued control over the release of any such war reserve materiel to foreign countries.

The point to be made here is that we should distinguish between war reserve procurement planning and programming, and the possible future use of those war reserves. We believe it only prudent to plan and program so as to have the capability to supply allies should they be fighting alongside us. On the other hand, we fully recognize that transfer of war reserves or any other DoD assets to another country should and does require specific legislative authority.

Special Contingency Stockpiling -- During and after the October 1973 Mid-East War, DoD provided modern equipments and munitions to Israel from U.S. force inventories, in some cases with an attendant impact on U.S. force readiness. As a result, the Secretary of Defense has instructed the Military Departments to procure and maintain a

Special Contingency Stockpile of modern munitions and equipment. These stocks could be drawn upon to provide transfers to our friends without impacting on U.S. force readiness. They could be used, subject to Congressional approval, whenever and wherever future U.S. interests might dictate. They could be transferred as grant aid, foreign sales, or any other legally authorized form of transfer. Assets would be U.S.-owned, under U.S. control, and in many instances in the hands of U.S. forces but available for rapid withdrawal.

Just as with WRSA, the Special Contingency Stockpile would be an integral component of the Military Departments' war reserve inventory objectives. To reiterate, it is important to distinguish between war reserve procurement planning and programming, and asset use. No asset in the U.S. inventory, regardless of the rationale or assumptions that were used to establish the requirement for its procurement, can be transferred to any foreign country without the necessary Executive department decision and Congressional authorization under the Foreign Assistance Act, Foreign Military Sales Act, or some other enabling legislation.

Requirements Computation -- War reserve inventory objectives for munitions are computed using either a "mission-oriented" or a "level-of-effort" computation. The mission-oriented computation is used for specialized, usually high unit cost, weapon systems such as air-to-air missiles, anti-tank missiles, or anti-radiation air-to-surface missiles. Here, the numbers of the specific target types against which the weapon is designed to operate, other friendly weapon systems that could be expected to be operating against the same target types, possible mal-distributions of the enemy targets relative to the friendly kill systems, and distribution of friendly assets are considered.

The level-of-effort computation is used in computing war reserve objectives where the item has broad application to a wide variety of target types, is of relatively low unit cost, or has an estimated war-time consumption level that is clearly linked to the operating activity level of the combat unit or weapon system which employs it. This methodology is used for some munitions and virtually all major equipment

and secondary items of which we maintain war reserves. In computing an objective with this methodology, the number of consuming units and expenditure rates per consuming unit per time period are combined to estimate combat consumption per unit of time.

Inventory and Production Base Interactions -- For hypothetical conflicts with a long duration, we can plan to satisfy some or most of that demand from post-D-Day production. Therefore, in planning for such hypothetical contingencies we explicitly consider the potential tradeoff between procuring war reserves or investing in more responsive production capability that would reduce the war reserves needed on D-Day. The Military Departments are given explicit guidance to consider this stockpile versus production base tradeoff and to identify the lowest total peacetime cost combination of the two that would provide the required wartime combat support capability.

However, even with the best planned industrial preparedness program and the most modern and responsive of production bases, it would require several months after a decision to mobilize our industry before production deliveries to a combat theater could be significantly increased. For example, during the Vietnam buildup we found that it took about four months from decision to significantly expand production output and 6-12 months to reach full production capacity on a needed item. Therefore, in planning for potential contingencies of relatively short, finite duration the production base would not help, and we must rely exclusively on war reserves procured in peacetime.

OVERVIEW OF WAR RESERVE FUNDING:

The following table summarizes for the Defense Department as a whole the major categories of war reserve materiel, the dollar value of existing war reserve inventories, the ultimate war reserve inventory objectives, the additional funds requested in this budget, and the approximate unfunded war reserve deficiency that will remain after FY 76/7T. Major equipment items are not shown because war reserves account for a relatively small portion of these inventory objectives; they are dominated by the assets needed to equip units in peacetime. We do not normally

attempt to identify the portion of any given year's equipment procurement that is intended for war reserves as opposed to unit equipment fills.

WAR RESERVE MATERIEL INVENTORIES, OBJECTIVES, AND ASSOCIATED FUNDING
($ Billions)

Category	Existing Inventories	Inventory Objectives	Funds Contained In FY 76/7T Budget Request	Unfunded Deficiency After FY 76/7T
Munitions	15.0	28.5	1.9	11.6
Tactical Missiles	(5.0)	(10.4)	(1.0)	(4.4)
Other Nonnuclear Munitions	(10.0)	(18.1)	(0.9)	(7.2)
Secondary Items	2.8	6.0	.6	2.6
Appropriation funded	(1.0)	(2.3)	(0.3)	(1.0)
Stock funded	(1.8)	(3.7)	(0.3)	(1.6)

The point that stands out from the table is that our existing inventories are substantially less than our inventory objectives. Even after applying the funds requested in the FY 76 and transition budgets, we will still be far short of our objectives, as indicated by the column labeled "unfunded deficiency".

INVENTORY OBJECTIVES VERSUS DISTRIBUTION OF ASSETS ON HAND:

It is important to distinguish between the processes of computing inventory objectives and procurement needs on one hand, and asset distribution on the other. DoD translates specific war planning assumptions into war reserve inventory objectives (I/Os). In the case of equipment, these become part of total I/Os, which also include the assets needed to equip units and provide a peacetime repair pipeline.

We specify target dates for attaining the established I/Os and construct the detailed procurement programs to meet them. Guidance on target dates and the resulting procurement programs are designed to move toward a long-term I/O at a pace that strikes the best possible balance between overall fiscal constraints and concerns for near-term inventory levels, force modernization, and maintaining active production lines.

The distribution of assets in current inventories among active and Reserve units and war reserves is a completely different process based on short-term considerations. The current distribution of these assets and their location are thus directly related to existing force structure and the current world situation.

As the previous table shows, at FY 76 procurement levels we are still several years away from our long-term inventory objectives on most items. This points up the inherently long-term characteristic of the war reserve planning process. It takes many years to adjust the quantity and mix of our war reserve inventory to the programmed force structure and evolving world situation. We live in a changing world. Our perceptions of an acceptable level of war reserve readiness can change far more rapidly than we can adjust that war reserve posture itself. Therefore, I solicit your continued support for the procurement funds necessary for the Defense Department to progress toward a long-term war reserve inventory objective that provides adequate support to our general purpose forces.

SUMMARY:

In conclusion, I have outlined our war reserve program and the process of determining inventory objectives, and emphasized the military essentiality of a healthy war reserve acquisition program. I seek your support of this program and particularly your support of DoD's proposed amendment to Section 514 of the Foreign Assistance Act of 1974. War reserves are integral to Defense readiness. The currently planned multi-year stretchout of war reserve procurement already entails some recognized risk. Any temptation to further reduce and stretchout this procurement would, in the judgment of DoD, be imprudent and should be a matter of great concern to the Congress.

WAR RESERVES

Chairman McCLELLAN. You may proceed, sir.

Dr. HALL. Thank you very much.

With me at the table is Mr. Charles W. Groover, who is the Director of the Logistics Division in the Office of the Assistant Secretary for Program Analysis and Evaluation.

I appreciate this opportunity to discuss the very vital subject of war reserves.

OVERVIEW OF PROGRAM

War reserves are inventories of combat essential items procured and maintained in peacetime to support combat forces on short notice in case of war.

There are three major categories: Munitions; equipment, such as vehicles and weapons; and secondary items, such as spare parts.

War reserve equipment items are a relatively small part of the total objectives for those items. Total equipment inventory objectives include assets to equip units. Therefore, equipment war reserve funding is not separately identified.

The war reserve inventory objectives and funding levels are shown on a chart that I will ask Mr. Groover to put on, if he would, which shows the objectives and the funding level for the munitions and the secondary items.

The point that this chart brings out is that our inventories are substantially less than our inventory objectives.

Now, the time set for achieving inventory objectives is determined by balancing overall fiscal constraints, concern for near-term inventory levels, force modernization needs, and the advantages of maintaining active production lines.

Therefore, it is important to maintain the stability and momentum of this program.

War reserves are an essential part of the conventional deterrent and are essential to avoiding nuclear escalation.

The chart shows that, for example, our munitions inventory objective is $28.5 billion. Our existing inventories are $15 billion. We are asking for almost $2 billion in fiscal 1976 and the transition period. This will leave us $11.6 billion to acquire after the 1976 and transition period.

PROBLEM OF OBSOLESCENCE

Chairman McCLELLAN. Let me ask you a question. Does any of this reserve materiel become obsolete?

You say you have $15 billion now, and you want to build it up to $28 billion. By the time you get that increase over the period of the next 10 years, what part of it becomes obsolete?

Dr. HALL. We are constantly reworking our inventory objectives in order to keep them current, and as new materiel comes in, to have it reflected in inventory objectives, and as materiel phases out, to phase it out of the inventory objectives.

Chairman McCLELLAN. Are munitions that are 10 years old any good?

Mr. GROOVER. Yes, sir.

In general, virtually all of the munition items in the inventory are items that don't have what we call a shelf life problem. They don't deteriorate so that they are unusable. They do become obsolescent — the sense that new and more effective, more modern items become available.

Over a period of many years, we do phase old items out of the inventory, some via foreign military sales; occasionally they are declared surplus and disposed of.

Chairman McCLELLAN. Do you sell some of them to underdeveloped countries?

Mr. GROOVER. We sell some of them to a variety of customers. In Southeast Asia, for instance, we actually used bombs that had been bought during World War II and were in our inventories at the end of World War II.

Chairman McCLELLAN. They were effective?

Mr. GROOVER. Yes, sir.

Chairman McCLELLAN. At $2 billion a year it will take you 8 or 10 years, will it not?

Dr. HALL. Yes, sir.

Chairman McCLELLAN. Do you ever expect to reach what you would like to have as a goal?

Dr. HALL. Let me address that by pointing out that one of the important considerations is to try to maintain warm production lines.

Chairman McCLELLAN. Pardon me?

Dr. HALL. Warm production lines, as they speak of it, production lines that are operating in order that if an emergency came we would have some production capability going.

One of the important considerations in determining inventory objectives is to balance off your need to have inventories right now versus your need to maintain production capability that is working to produce this item over time. This is a tradeoff which requires a great deal of effort to analyze, but we do try to maintain a program which builds toward our inventory objectives over a number of years in order to keep the production capability available.

Chairman McCLELLAN. You never really achieve this objective, do you?

Mr. GROOVER. In the case of a few items, we don't expect to reach those inventory objectives in the next few years.

Now, there are numerous items on which we have reached inventory objectives and closed down production lines.

As you can imagine, there are several hundred different items involved here. The situation varies from item to item.

Chairman McCLELLAN. Senator Young?

ITEMS INCLUDED

Senator YOUNG. What items does this include? Does it include conventional and nuclear weapons?

Mr. GROOVER. There are no nuclear weapons in the war reserve stockpile that we are talking about here.

Senator YOUNG. What items are included?

Dr. HALL. Let me mention a few things.

We have a slide here; I don't know whether it is readable.

Mr. GROOVER. In the munitions category there are 200 to 300 different individual item types. They range from different types of general purpose bombs to guided bombs with different types of guidance systems on them, air-to-air missiles, air-to-ground missiles, artillery shells, bullets for machine guns.

Senator YOUNG. Were these reserves drawn down during the Mideast conflict?

Mr. GROOVER. There were items of several types that were withdrawn from our inventories and sent to Israel during and after the 1973 war.

Senator YOUNG. Have those been replaced yet?

Mr. GROOVER. We are in the process of reprocuring most of the items that were shipped to Israel.

Dr. HALL. I might continue on as long as the chart is up here.

CHART

There are about 2,500 equipment items, such things as tanks, artillery pieces, radios, and that kind of equipment.

I am sorry, Chairman McClellan, that this chart is not included in my statement.

[The chart follows:]

WAR RESERVES

Category	*Examples*	*Different items*
Munitions	Shells, bombs, air-to-air missiles, air-to-surface missiles, guided bombs, etc.	200–300
Equipment	Tanks, artillery pieces, radio, etc.	~2, 500
Secondary items	Spare components, repair parts, tires, combat boots, medical supplies, etc.	~350, 000

Dr. HALL. The secondary items account for the largest number of specific items. There are about 350,000 such items that are stocked. These include items such as spare parts, repair parts, tires, clothing items, boots, that sort of thing. That is the largest category in terms of the number of items.

Chairman MCCLELLAN. Suppose a war broke out in the Mideast and we undertook to supply Israel her needs. Would it come out of these reserves?

Mr. GROOVER. Yes, sir.

Chairman MCCLELLAN. Much of it?

Dr. HALL. Yes, sir.

Chairman MCCLELLAN. The more we deplete them, the greater risk we are incurring of being caught short if we needed them ourselves.

Dr. HALL. Yes, sir. That, as you know, is a matter of some concern.

We have at various times proposed a special contingency stockpile that would permit us to increase stockpiles in anticipation of such an event.

Chairman MCCLELLAN. Don't we now have an adequate stockpile for that purpose?

Mr. GROOVER. Sir, what we have now is a total inventory objective that includes the special contingency piece that Mr. Hall mentioned.

Chairman MCCLELLAN. If you ever reach the goal you have established here, will you have the contingency reserve necessary to meet both situations—to meet what you need to supply an ally actually engaged in war, and at the same time have a large enough reserve to meet our own needs should we be drawn into that or some other conflict?

Mr. GROOVER. Yes, sir.

Chairman MCCLELLAN. This goal would achieve that?

Mr. GROOVER. Yes, sir; it is designed to do exactly what you have said.

Chairman MCCLELLAN. As it is now, some items are adequate but others are not. Overall, it is a little more than half what you need; is that right?

Mr. GROOVER. Yes, sir. That is almost exactly right for the munitions and secondary items categories.

Chairman MCCLELLAN. All right.

Proceed.

ILLUSTRATION OF WAR RESERVE APPLICATION

Dr. HALL. War reserves also provide a quick response capability.

Let me illustrate.

In 1972, the Air Force deployed 72 A–7D fighters to Southeast Asia on short notice. The units carried war reserves in the form of war readiness spares kits. More than one-third of the aircraft had to replace a failed component from its reserves while en route to its destination. During the first 16 days of combat, about 70 percent of the required spare parts came from these reserves. The aircraft flew 37 percent more sorties because of these reserves.

IMPACT OF LATEST FOREIGN ASSISTANCE ACT

Recent controversy about war reserves has centered on whether DOD should consider the needs of allies in its planning. Section 514 of the Foreign Assistance Act of 1974 precludes this. We believe this prohibition is unwise. In any future war, we should expect to fight alongside allies; it makes sense for the United States to consider allied resources and possible needs in our planning.

Section 514 also may make it more difficult to achieve standardization with our NATO allies. However, transferring war reserves to another country does and should require special legal authority.

In short, about 2 percent of the Defense budget spent on war reserves provides the ability of our general purpose forces to respond rapidly to unforeseen contingencies.

This ends my summary.

I appreciate the opportunity to discuss this subject, and we are available for questions.

Chairman MCCLELLAN. If you get the $1.9 billion this year, what are you going to do with it?

Dr. HALL. The $1.9 billion is for munitions.

More than 100 different munition items, all the way from Sidewinder air-to-air missiles, Maverick air-to-surface missiles, to artillery shells and bullets.

For secondary items, we are asking for $600 million. We will apply it to the individual inventory objectives.

Chairman McClellan. And that is your total request?

Mr. Groover. In the fiscal year 1976 budget and the transition period, there is about $1.9 billion for all types of missiles and munitions, and an additional $600 million for secondary items.

Chairman McClellan. That is for the 15-month period?

Mr. Groover. Yes, sir.

Chairman McClellan. It is primarily ammunition?

Mr. Groover. Yes, sir. That $1.9 billion is all missiles and munitions.

Chairman McClellan. Do you have anything further, Senator?

Senator Young. Yes.

On your chart here, you show munitions, existing inventories, $15 billion.

How much was it 5 years ago?

Mr. Groover. We would have to provide that for the record, sir. We don't have that number here.

Senator Young. Did much of this go to Southeast Asia?

Mr. Groover. Certainly the total munitions consumption in Southeast Asia during the course of the war was far in excess of $15 billion.

Senator Young. Will you give us the amount of munitions that went to Southeast Asia for each of the last 5 years and what your inventory was for each of those 5 years? How much did we lose when the Communists took over?

Dr. Hall. I don't have up-to-date figures on that.

STATUS OF MUNITIONS AT FALL OF SOUTH VIETNAM

Senator Young. Was it the South Vietnamese inventory, or did we have some over there?

Mr. Groover. The first question concerned munitions that were shipped over there and had been expended before South Vietnam fell.

Senator Young. We didn't have any of our own?

Mr. Groover. All of the munitions that were in South Vietnam when South Vietnam fell had been turned over to South Vietnam and had been most recently paid for out of the Defense Assistance Vietnam (DAV) account.

Senator Young. In other words, we were never going to get back?

Mr. Groover. Those had all been transferred to the South Vietnamese.

Somebody can correct me, if that is wrong.

Chairman McClellan. So, we sustained no loss above what we had already incurred by giving them away.

Mr. Groover. The assets that were in Vietnam had been turned over to the Vietnamese.

Chairman McClellan. What do you mean by "turned over"?

Mr. Groover. Title had been transferred to the Vietnamese.

Chairman McCLELLAN. They were not ours at the time, but goods that we provided, which they lost?

Mr. GROOVER. Yes, sir.

Chairman McCLELLAN. So far as we were concerned, we had no further claim on them and never expected to get them back?

Mr. GROOVER. I would have to defer an answer on the question of a legal claim. I understand there is still some outstanding question about whether the United States has some residual claim to some of the equipment.

Chairman McCLELLAN. At the time we made it available to them, we never expected to get it back, did we?

Mr. GROOVER. That is my understanding.

Senator YOUNG. We had in mind to give them more.

Chairman McCLELLAN. Yes; I guess we did.

Is there anything further, Senator?

Senator YOUNG. No; Mr. Chairman.

QUESTIONS SUBMITTED BY SENATORS M'CLELLAN AND YOUNG

Chairman McCLELLAN. Gentlemen, there will be some additional questions submitted to you to complete the record.

Do you have anything further?

Dr. HALL. No, sir.

Thank you very much.

[The questions and answers follow:]

QUESTIONS SUBMITTED BY SENATOR McCLELLAN

War Reserve Stocks for Allies

Chairman McClellan: In presenting previous budget requests for allied war reserves to the Congress, the Defense Department has stated that allied war reserve items were not designated specifically for the allies and are available for use by U.S. forces. Army procurement documents show that the FY 1975 ammunition procurement request for the allied war reserve program included $44 million for ammunition items which were not in use by U.S. forces, e.g., $17 million for nonstandard mortar ammunition. Other items, such as 57mm recoilless rifle ammunition, though not being procured, is also no longer used by U.S. forces but is being stored in substantial quantities for the allies. How does the Department of Defense reconcile the procurement and/or storage of such items with what the Congress was told? In a period of rapidly rising costs and the need to reduce federal spending, how can the cost of procuring and storing items solely for the allies be justified?

Answer: The war reserve program was designed to give the U.S. a responsive capability to assist certain Asian Allies by providing materiel support in the event of some future conflict while those allies provided the bulk of the manpower required for their own defense. Since WRSA stocks remain under U.S. title and control until their transfer to an ally is legally authorized, and are not normally segregated from other war reserves, they could be used to support U.S. forces if the need arose. Furthermore, the vast majority of the individual items, and the bulk of the aggregate stockpile, are common to the U.S. and the specific allies considered. Therefore, it is generally true that WRSA is part of the total U.S. war reserve that could be used by U.S. or allied forces as an emerging situation demanded, subject to proper legal authority. This general explanation was previously provided the Congress. There are some exceptions to the general rule: there are a few items stocked as WRSA which are not planned for use by U.S. forces (e.g., 57mm, 60mm). A few additional WRSA items (e.g., 2.75" rockets, CBU-25, some fire-bombs -- BLU-32), the U.S. Services Currently state no requirement for but, "in a pinch" these items could be used by U.S. forces. The WRSA concept required the U.S. to plan to provide materiel support for all allied weapons if it is to be effective; thus it is necessary to build and maintain inventories of some ammunition items which have no applica-

tion to U.S. equipment. To do otherwise would reduce the total effectiveness of our allies' forces. As previously noted, the items which are not common to U.S. needs, however, represent a very small fraction of the total requirement. The alternative to this approach would have been to plan on replacement of non-U.S.-standard equipment in Asian allied inventories which would have eliminated the need to maintain ammunition which is not planned for use by U.S. forces.

Tank Acquisition

Chairman McClellan: Are authorized acquisition objectives of our allies for M48 or M60 series tanks?

Previous budget requests for allied war reserves have included funds for the procurement of the M60 series tank. The Congress has been told that these funds were requested on the basis of theoretical allocation of funds and that the allied requirement would be filled from older items replaced in U.S. units. Army spokesmen stated that the M60 series tank would not be available for allied war reserves until 1981. Since the U.S. requirement for these items would stand on its own merits, why were they used as the basis for the allied war reserve request? Couldn't the older items be retained for the allies in retention levels in the inventory without including them in the DoD procurement program?

Answer: The FY 76/7T tank requirements for allies consist of 3,149 tanks. For planning purpose, the Army has always considered that this requirement could be satisfied by the M48 series tank because the M41 series tank which is a portion of this requirement, is out of production and inventories have been depleted. The Army also includes 500 M60 special contingency tanks in the tank AAO of 10,381 tanks. These tanks were added to the AAO at OSD's direction as a special contingency stockpile to meet unprogrammed requirements such as the security assistance that was necessitated by the recent Arab-Israeli War. The Army includes these tanks in the AAO because they are not earmarked for any country, belong to the Army, and can be used by U.S. forces.

The confusion that has developed over tank procurement has resulted from a misunderstanding of the difference between the manner in which authorized acquisition objectives (AAOs) and procurement requirements are calculated and the method in which on-hand assets are distributed. For any given item (e.g., tanks) a <u>total</u> requirement or

"AAO" is calculated. This AAO has included items needed to equip active and Reserve U.S. forces, for maintenance float, and for war reserves (U.S. and Asian Allied combat attrition, combat pipeline needs, special contingency needs and certain specific operational projects). Current inventories and projected losses from inventory are considered to compute the procurement needed to attain the AAO at some specified time (normally several years in the future).

In contrast, the distribution of on-hand assets is based on priorities established by the Army resulting from an assessment of how the Army would react to conflict that could occur in the very near term.

In determining the new procurement requirement all existing inventories of a particular item are applied against the AAO. In the case of tanks this means that on-hand assets of both M60 and M48 series tanks are applied to determine any new procurement funding needs.

Many requirements contribute to the total AAO, allied war reserves stocks being one of the numerous contributors to the total. No priority is implied in this process. However, it is in the short-term distribution of existing inventories that relative priorities are recognized. As a result of a previous DoD practice of identifying, through a hypothetical allocation of dollars, procurement requests to WRSA, confusion over the tanks occurred. There has never been any intention within DoD to earmark and set aside M60 series tanks for Asian Allies' war reserves while U.S. needs were not fully met. In fact, our current distribution plans identify older M48 series tanks for the possible use of our Asian Allies.

Total Allied War Reserve Program

Chairman McClellan: What is the estimate of the total allied war reserve program? Does DoD actually plan to stockpile defense items in these amounts for the possible future use of allies?

How are the allied stockpile programs related to and coordinated with the foreign assistance programs?

Answer: The total requirements (Inventory Objective/Authorized Acquisition Objective) for the War Reserve Stocks, Allies (WRSA) and Special Contingency Stockpile (SCS), as now computed by the Services, approximate $7.5 billion. Available U.S.-owned assets on hand or on order are approximately $633 million with total funds included in the FY 1974, FY 1975, FY 1976, and FY 197T budgets being approximately $710 million.

This $7.5 billion total stated requirement for WRSA and the SCS is dominated by the Army's $5.0 billion computed requirement for WRSA ammunition. This $5.0 billion compares with an Army WRSA ammunition requirement computed at approximately $3.4 billion about 12 mont s ago, and reviewed in detail by OSD last summer. The increase in the s ted requirement from $3.4 billion to $5.0 billion has two components: (1) within the past year, the Army has introduced a WRSA requirement for $700 million worth of modern ground munitions; and (2) price increases which account for the other $900 million. Primarily because of the recently severe ammunition price increases, the current 5-year (FY 76-80) defense program does not contain funds to meet the total Army ammunition AAO (including WRSA and the SCS) by end-FY 80.

A current shortfall of about $6.2 billion exists against the total WRSA/SCS requirement when considering available U.S.-owned assets and current budget dollars. This shortfall will eventually be addressed by considering not only assets made available as a result of Service funding but likewise by considering ally-owned assets whether acquired via local manufacture, FMS, MAP or MASF. It is valid to assume that U.S. Service funding in future years would be something less than the amount of the current shortfall.

Based on the nature of these requirements the exact future Service funding to specifically meet WRSA and the SCS war reserve cannot be determined. Not only are the requirements fluid in nature but like-

wise the future availability of ally-owned assets from other sources is unknown.

Any stocks provided to allies via foreign assistance programs are treated as available assets and taken as an offset against the total U.S./Allied inventory objective computed by the Services.

Provision of War Reserves to Asian Countries

Chairman McClellan: Has the Defense Department provided war reserve ammunition to any Asian country since 1969? Is this ammunition considered a part of the allied war reserve? What was the cost, source of funding, and authority for stockpiling these assets? Was the Congress told that these assets had been set aside for the allies? Have assets been set similarly aside for other allies?

Answer: War Reserve Stocks for Allies (WRSA) remain under U.S. title and control and generally are not physically segregated from other U.S. assets. Stocks from the total U.S. inventory were sometimes "sold" to the MAP or DAV accounts and used to meet allied requirements. Those MAP or DAV funds were, of course, within the funds authorized by the Congress for that purpose. The funds received by the Services were then used to procure those items for the U.S. inventory that were considered to be needed worst.

In considering net WRSA requirements, assets in-country, assets in the peacetime pipeline and any in-country production capability are given full credit. The funds and authority for the WRSA program were first requested in FY 1973 through the DoD authorization and appropriations acts and totalled $745.3 million through FY 1975. Notification of the Congress concerning this program was made during the appropriate committee hearings. Funds were requested in the FY 76 budget for a Special Contingency Stockpile of more modern munitions for other friendly non-Asian nations. These assets would be utilized with the proper Congressional authorization should their use be required to serve U.S. interests.

Modernization of Production Facilities

Chairman McClellan: To what extent is the overall modernization and expansion program of Army ammunition production facilities and the $368 million procurement request in FY 1976/197T based on the allied requirements, and how does Section 514 of the Foreign Assistance Act affect the program?

Answer: The overall ammunition modernization and expansion plan is currently sized on hypothetical future wartime consumption requirements which include Asian Allied consumption of

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Depending on the specific item of ammunition, the portion of the total capacity requirement that is attributable to possible future Asian Allied wartime demands can vary from none of the requirement to most of the requirement.

It is the opinion of the DoD that Section 514 of the Foreign Assistance Act of 1974 (which proscribes stockpiling for allies) does not apply to the DoD munitions production base modernization and expansion program.

Contingency Stockpile

Chairman McClellan: In addition to the allied war reserve program, DoD is planning to request funds in FY 1976 for a special contingency stockpile. What is the objective of this stockpile, and how does it differ from the allied war reserve program?

Under this program, would DoD procure defense items in advance of offers or acceptances of sales to foreign countries? Are these purchases authorized under present law? Would these purchases be in addition to those provided for with funds appropriated under the Foreign Military Sales Act? Are there any assets presently on hand for the purpose of the special contingency stockpile? Have purchases been previously made for the special contingency stockpile or similar purposes?

Answer: In general, the Asian Allied force structure used to size WRSA requirements is less modern and sophisticated than some other potentia U.S. Allies. As a result of this, munitions and equipment stockpiled as WRSA would not, in general,

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SCS will constitute a flexible stockpile which could be used, with the proper Congressional authorization, whenever, wherever, and as future U.S. interests might dictate. Like WRSA, SCS will remain under U.S. title and control until their transfer is legally authorized.

Both WRSA and SCS are included within U.S. Service inventory objectives (called AAOs by the Army). In contrast, the DoD request for Congressional authority and appropriations to permit procurement in anticipation of Foreign Military Sales (FMS) from inventory has not been translated into any adjustment to U.S. Service inventory objectives.

The Special Contingency Stocks are not intended as procurement in advance of offers or acceptances of sales to foreign countries. SCS requirements are included in U.S. Service inventory objectives so that, once they are procured and in inventory,

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Some ammunition and equipment assets which were on hand prior to establishing SCS requirements have been applied to those requirements; however, the current budget requests the first new funds to procure for SCS.

However, as a separate program, the FY 76 budget request does include draft legislation that provides for authorization and appropriation of funds which will be used to finance the lead time needed to replenish inventories of combat essential hardware and consumables in advance of anticipated inventory drawdown caused by Foreign Military Sales -- the Inventory Replenishment Fund (IRF). Specifically, this proposal provides for (a) authorization; (b) a separate appropriation within the DoD military functions; and (c) transfer authority from the separate appropriation to existing appropriations. Funds requested for the IRF are different from and not additive to funds appropriated under the Foreign Military Sales (FMS) Act. Funds appropriated for FMS are solely for the purpose of extending credits or guaranteeing loans to finance military purchases by foreign countries. The IRF, in contrast, is intended to finance the procurement leadtime of selected items for which an urgent FMS demand is anticipated so that the sale is less likely to have to be made from U.S. inventories.

Foreign Assistance Act

Chairman McClellan: Section 514 of the Foreign Assistance Act provides that only funds authorized under foreign assistance legislation (or DoD appropriations in the case of Vietnam) may be used to acquire, store, and maintain any defense articles or war materials intended for future use of allies. Assuming that section 514 will continue in force without amendment: How will allied war reserve assets presently on hand or delivered from FY 1974 funds be accounted for in the DoD inventory? How will assets delivered from FY 1975 funds be disposed of? Is DoD considering an increase in war reserves for U.S. forces to compensate for the elimination of the allied stockpile programs in DoD appropriations? Does DoD plan to request funds under the foreign assistance program for allied stockpile programs? Is DoD requesting amendment of section 514?

Answer: The FY 1976 DoD authorization request and the proposed Foreign Assistance Act for 1975 contain a proposed amendment to Section 514 of the Foreign Assistance Act of 1974. The DoD feels strongly that it has compelling and convincing reasons for requesting amendment of Section 514. Therefore, we feel confident that the Congress will recognize the wisdom and logic of those arguments and grant the requested legislative relief. The DoD is not currently developing any specific plans against the contingency that Section 514 remains in force without amendment. However, there is a comprehensive review of Defense planning now in process. If Section 514 is not amended, since it is prospective only it would not technically affect war reserves for which funds had been obligated prior to the date of its enactment or items set aside, reserved or earmarked prior to that date. However, should Section 514 remain in effect without amendment, the DoD will have to completely rethink the assumptions and ground rules which underlie all its logistics planning for wartime.

Excesses in the Supply System

Chairman McClellan: According to a recent report to the Congress on supply system inventories, about $8.5 billion in various defense items, including ammunition, tanks and other combat vehicles, weapons, and spare parts, are being held in the inventory above approved force acquisition objectives in economic and contingency retention levels. Although not declared DoD excesses, these stocks come within the definition of excess defense articles and may be transferred under the conditions of the Foreign Assistance Act at no cost to MAP, or may be sold to foreign countries at reduced prices. A comparison of year-end balances over several years shows that considerable quantities or various types of these defense articles have moved in and out of the inventory.

What is the source of these "excesses," where are they physically located, and are any of these standard items still in general use by U.S. forces?

Answer: DoD economic and contingency retention stocks are that portion of the supply system inventory which were originally procured by the Military Services or Defense Supply Agency to satisfy requirements in support of U.S. forces or authorized allied forces. At some time subsequent to the procurement and receipt of this materiel, reevaluation of these requirements indicated that these assets were now beyond the immediate needs of the Services but were within authorized retention limits. In recent years the primary reason for the increase in these stocks has been the reduction in demands and the decreased pipeline requirement following the cessation of active U.S. participation in the Vietnam conflict. The majority of economic retention and contingency stocks are physically located at the Military Service/Defense Supply Agency supply depots. The remaining stocks are located in storage facilities at posts, camps, stations and bases in the United States and possessions and in foreign countries and supply ships afloat. Current DoD policy states that in order to qualify for economic retention, an item must have a reasonably predictable demand rate. Therefore, it follows that the economic retention stock is maintained for items in use and being demanded by U.S. forces. Contingency items however, in accordance with DoD policy, have no predictable future requirement based on past demands, but are being retained for possible contingencies. Contingency items are usually not in general use by U.S. forces.

What are the economic and contingency purposes for which these assets are being retained and give some specific examples?

Answer: Economic retention stock is that portion of the quantity of an item excess to the Approved Force Acquisition Objective which it has been determined will be more economical to retain for future peacetime issues in lieu of replacement of future issues by procurement. To

warrant economic retention, items must have a reasonably predictable demand rate. Contingency retention stock is that portion of the quantity of an item for which there is no predictable demand or quantifiable requirement, and which normally would be allocated as Potential DoD Excess Stock, except for a determination that the quantity will be retained for possible contingencies. Some specific examples of contingency retention items are:

A. Items peculiar to ships in the reserve fleet such as parts for the battleships, Missouri and New Jersey.

B. Aviation parts to support aircraft in storage at Davis Monthan AFB, Arizona.

C. Minuteman I missiles to be used for training targets in the event of Safeguard deployment.

D. Obsolete Minuteman guidance sets which are gradually being transferred to colleges and universities for educational purposes.

E. Materiel to support selected weapons which have been or are planned to be transferred to allied forces, such as F-4 aircraft, destroyers and submarines.

Are any of these assets being specifically held for possible future transfer to foreign countries by sales, grants, loans or other legally authorized transfer?

Answer: Yes, each of the Military Services has identified items in the supply inventory as contingency retention stocks using as justification the possible future transfer of these assets to foreign countries through sales, grants, loans or other legally authorized transfer. In many instances this action is necessary to prevent the premature disposal of assets prior to the accomplishment of the authorized transfer.

Would you provide a listing of articles furnished from these stocks to foreign countries in FY 1974 and FY 1975, showing the authority for such transfers, the amount DoD was reimbursed for them, and by whom the reimbursements were made?

Answer: (a) These excess articles listed below were provided to foreign countries under the Military Assistance Program (MAP):

MAJOR ITEMS	FY 74	FY 75 (6 Months)
Vehicles & Weapons		
Buses	10	-
Commercial Ambulances	31	14
Commercial Trucks	2114	54
Pistols	2807	316
Carbines	1752	26
Rifles	29243	527
Submachine Guns	1666	9476
Machine Guns	24127	27
Riot Control Guns	3	-
Subcaliber Weapons	2	-
Anti-Aircraft Guns	18	-
81mm Mortars	161	26
Loading Machines	1	-
Rocket Launchers	13	-
Fire Control Computers	2	-
Other Weapons Up to 75mm	-	2
107mm-4.2 Inch Mortars	-	2
Missiles		
Nike	1	-
Falcon	89	-
Bullpup	2060	-

(b) The excess articles listed below were allocated to foreign countries requesting purchase through the DoD MIMEX procedures. These articles require reconditioning by recipient country.

DESCRIPTION	1974 (Qty)	1975 (Qty)*
Aircraft A-37A	-	8
Aircraft C-54	5	-
Aircraft U-6A	-	1
Aircraft T-28C	-	3
Helicopter OH-13S	16	-
Helicopter TH-13T	54	-
Trailers All Types	15	245
Trucks 2½T and Under	1,183	824
Trucks 5T	15	75
Trucks 10T	17	3
Rocket 3.5 Smoke	7,850	-
Warheads Rocket 2.75"	-	5,000
Grenade	5,860	1,303
Submachine Gun Cal 45	223	-

DESCRIPTION	1974 (Qty)	1975 (Qty)*
Machine Gun Cal 50	20	-
Howitzer SP M155	13	-
Rifle Cal 30	20,200	4,595
Launcher	8	-
Generators	4	27
Loader	-	1
Graders Road	6	3
Scrapers Road	3	-
Cranes	22	2
Concrete Mixer	2	-
Pontoons	-	4
Engine Jet T-58/GE1	-	2
Beacon AN/URN-5	-	1
Training Aids	-	3
Fuel Tanks	-	120
Receiving Set	-	1
Remote Recorder	-	1
Terminal Telephones	-	116
Pump Water	-	2
Outboard Motors	-	2

*As of January 1975

Value of allocations for sale of excesses for FY 74 was $3.1 million and FY 75 was $1.8 million as of January 1975. Identification of the purchasers is not presently available.

Since these assets are considered "excess defense articles" and would not be replaced, what happens to the funds received by DoD when they are sold to foreign countries?

Answer: The funds revert to the U.S. Treasury.

Army Stock Fund

Chairman McClellan: How are the stock fund "requirements" by various materiel category determined? Do these requirements consider only U.S. forces? If others are considered, who are they?

Answer: War reserve requirements represent the difference between peacetime requirements and total combat consumption less production receipts until such time as the receipts from production equal and continue to equal rate of combat consumption. Only those items determined to be combat essential by maintenance engineers (and in agreement with major commanders) are included in the war reserve. Requirements by various Materiel Categories are determined using the same procedure, e.g.:

1. End item densities, through P-day are the basis for support. An example would be tank tracks. For personnel related items troop population is used. Examples are combat rations, armored vests.

2. Peacetime consumption experience or actual wartime consumption, where available, is used to determine support quantities for end items in use.

3. The gross requirement established in the above manner is reduced by the peacetime pipeline on hand on order at D-day, plus assets already held in war reserve accounts and the balance is the shortage requiring funding.

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However, no funds are requested nor procurement planned for support of allies at this time. This request for $94.0 million is only for support of U.S. forces.

Chairman McClellan. How was the determination, item by item, made to purchase certain quantities of a given item? Was some percentage of requirements being sought -- the percentage of requirement after purchase will still vary significantly?

Answer: No percentage of requirements was used in determining the $94.0 million fund requirement in FY 1976. This amount represents the dollar value of Army's highest priority war reserve requirements. Procurements will be made in accordance with currently published Army priorities. The remaining deficiencies are programmed to be eliminated during the succeeding five year period. Requirements priorities are established on each item in the following sequence: (1) Prepositioned War Reserve Stocks (PWRS) for a selected force in CONUS, (2) PWRS for Europe, (3) PWRS for the Pacific, (4) PWRS for special contingencies stored in CONUS, and (5) Other War Reserve Stocks stored in CONUS.

Chairman McClellan. How much has Army Stock Fund invested in war reserve reuirement, by year, in each of the past ten years?

Answer: The following table reflects the Army Stock Fund investment in war reserve assets over the past ten years:

FY	MILLIONS OF DOLLARS
1965	$ 47.6
1966	59.8
1967	-
1968	19.2
1969	2.9
1970	19.9
1971	-
1972	24.0
1973	-
1974	67.8
1975	4.0
	$245.2

Chairman McClellan. Will the Army Stock Fund generate any cash in FY 1976 that can or will be used to buy war reserve stocks? How much?

Answer: The Army Stock Fund will not generate sufficient cash which can be used for investment into war reserve requirements.

Chairman McClellan. If all funds are denied in this request, what would be the specific impact?

Answer: If all funds were denied, Prepositioned War Reserve deficiencies of $6.6 million in Korea; $6.3 million in Japan, $8.4 million in Europe and $72.6 million in CONUS would be carried over to the total War Reserve deficiency in FY 1977, of which $409.6 million is for Prepositioned War Reserve Stocks. Denial of funding will adversely affect the buildup of combat readiness necessary to sustain operations in the event of a conflict.

Navy Stock Fund

Chairman McClellan: What is the total war reserve requirement in the Navy Stock Fund and the asset position?

How much has been invested, using cash balances in prior years over the past ten years, in war reserve materiel in the Navy Stock Fund?

How much more needs to be invested, year by year, to meet Navy Stock Fund war reserve requirements?

What would be the impact of providing no funds for this appropriation in FY 1976?

Answer: The war reserve statistics as of 31 December 1974 (in thousands of dollars) are:

	Requirements	Assets	Deficiencies
Prepositioned War Reserve Material	215,595	87,414	128,181
Other War Reserve Material	103,764	14,889	88,875
	319,359	102,303	217,056

The Navy Stock Fund Cash expended for war reserve requirements over the past ten years (in millions of dollars) is:

FY	Amount
1965	10.7
1966	12.7
1967	16.6
1968	4.4
1969	.9
1970	.2
1971	4.1
1972	3.1
1973	6.1
1974	2.4
Total	61.2

To fully fund the above deficiencies, the following allocation of funds is needed during the next five fiscal years (in millions of dollars).

FY	Amount
1976	43.4
197T	0
1977	43.4
1978	43.4

FY	Amount
1979	43.4
1980	43.4
Total	217.0

If the $42 million requested is not provided, risk assessment judgments made during the latter stages of budget review will be invalidated. These judgments involved, broadly, various degrees of contingencies and their duration without sufficient strategic warning to permit increased production rates and or stockpile build-up in time to meet support requirements. Failure to provide the $42 million would lower our capability to provide stock fund support to the lower level, shorter duration, no warning situations judged to require stockpiled support. In other words, some of our forces could not fight for as long as they should be able to before serious shortages of spares and repair parts would begin to slow them down. These stock fund items are the spares and repair parts required to maintain such things as Marine Amphibious assault craft, aircraft, ships, weapons and other combat equipment such as tactical vehicles, construction battalion equipment, and other support items such as combat rations along with selected personnel troop equipment. Included in the spares and repair parts areas are thousands of individual items such as gun and missile launcher parts, radio parts, tactical vehicle parts and myriads of smaller bits and pieces required to repair components of equipment in the field and at forward locations. The principal areas targeted by the $42 million requested in FY 76 are in the Marine Amphibious Forces and deployed Fleet Forces. Application of these funds to the most critical of these areas will permit acquisition of about 60% of their prepositioned portions of war reserve deficiencies and permit balancing stocks for high priority forces. The overseas base development deficiencies and other war reserve requirements are not part of the planned use of the $42 million and have been deferred to future years for funding.

Air Force Stock Fund

Chairman McClellan: What is the total war reserve requirement in the Air Force Stock Fund and the asset position?

How much has been invested, using cash balances in prior years over the past ten years, in war reserve materiel in the Air Force Stock Fund?

How much more needs to be invested, year by year, to meet Air Force Stock Fund war reserve requirements?

What would be the specific impact of denial of this appropriation?

Answer: The total war reserve requirement in the Air Force Stock Fund through the end of FY 1980 is $415.3 million. The projected asset position at the end of FY 1975 is $298.0 million. During the FY 77-80 timeframe, $14.4 million in raw materiels will be attrited from the inventory.

$29.7 million has been invested in WRM from FY 1971 through FY 1974, the only years stock fund monies were invested.

To meet Air Force war reserve requirements of $415.3 million through FY 1980, the following year by year investments will be required:

FY 77	FY 78	FY 79	FY 80
9.6	11.5	13.5	15.0

The figures assume approval of $82.1 million contained in this appropriation and do not include Defense Supply Agency (DSA) requirements in support of Air Force.

The denial of this request would degrade the capability primarily of the general purpose and airlift forces to be able to respond to and sustain military operations in unforeseen combat contingencies.

Defense Stock Fund

Chairman McClellan: What will the $250 million requested be used to purchase?

Answer: $150 million is required for the fuel commodity and $100 million for all other DSA commodities. It should be noted that the tabular

display on War Reserve Materiel Inventories, Objectives, and Associated Funding in the prepared statement did not include fuels.

Chairman McClellan. Will these funds be used to meet war reserve requirements? If so, how much?

Answer: Of the $150 million requested for the fuel commodity, approximately $60 million will be used for prepositioned war reserve supplies, and $90 million for a reserve against the contingency of any future interruption of supply. The entire $100 million for other DSA commodities is for war reserve requirements.

Chairman McClellan. How much has been invested, using cash balances in the past ten years, in war reserve materiel in the Defense Stock Fund?

Answer: About $450 million has been invested for war reserves in the last ten years. I would like to provide the detail for the record.

(Information follows)

	($ Millions)
FY 1966	57
FY 1967	220
FY 1968	0
FY 1969	43
FY 1970	0
FY 1971	0
FY 1972	100
FY 1973	0
FY 1974	27
FY 1975	3
TOTAL	450

Chairman McClellan. How much more needs to be invested, year by year, to meet Defense Stock Fund requirements?

Answer: Approximately $640 million. There has not yet been a decision on the year to year phasing of the required resources.

Chairman McClellan. What would be the impact of denial of this entire Fy 1976 funding request?

Answer: Denial of the $160 million for war reserves would reduce DSA's ability to support the Military Services' approved plans by that

amount. As a result, the readiness position of the Military Services would be degraded. The balance of $90 million will be used for additional petroleum reserves; denial of the request would have serious impacts in the event of another interruption of the United States' petroleum imports. Since the Armed Forces must maintain a ready posture, training operations, such as flight training, ships steaming, etc., the fuel to support these operations would have to be obtained from the domestic economy. In general, therefore, the $90 million of petroleum reserves will serve as a buffer to protect non-Defense elements which consume petroleum.

Chairman McClellan. As a general policy matter, why was FY 1976 selected as a year to request new budget authority in the stock funds? Has budget authority been requested before in the stock funds for the same purposes as in FY 1976? If so, when and how much?

Answer: The Secretary of Defense intends to do everything he can to improve the readiness capability of the Military Services, and he has recognized the DSA requirement for war reserve materials as a serious deficiency. As I previously stated, we have been able to procure approximately $450 million of war reserves during the past ten years primarily by using cash generated by the one-time opportunities of drawing down long supplies. Even if similar opportunities were to become available, and I question this, it would take approximately twenty years to fulfill current requirements at the rate of investment we have been able to accomplish over the last seven or eight years. Since the likelihood of generating sufficient cash for this purpose is questionable and the length of time required to satisfy the requirement, even if the cash were generated, is unsatisfactory, we are for the first time requesting funds to invest in inventory to satisfy our war reserve requirements.

Location of War Reserves

Chairman McClellan: Delineate the location of war reserve materiel by major geographic area -- U.S., Europe, Asia, etc. Characterize these stockpiles generally.

Answer: Each Service maintains stockpiles of war reserves throughout the world -- CONUS, Europe, Asia and islands throughout the Pacific, and Panama. Materiel stockpiled varies from specific location to location but is generally comprised of ammunition, spares and repair parts, combat rations, ground forces equipment, medical supplies, and POL.

War Reserve Stocks Allies

Chairman McClellan: Since the 1974 Foreign Assistance Act prohibited use of DoD funds for acquisition, storage, or maintenance of war reserve stocks for allies, what specific actions has the Department taken with existing allied stocks? Have any additional stocks been obtained? Were any disposals made? Has DoD been spending money for storage and maintenance of these stocks?

Answer: DoD is seeking legislative relief from the provisions of the 1974 Foreign Assistance Act that prohibit expenditure of DoD funds for war reserve stocks for allies. Pending the decision of Congress on DoD's request, the Services have taken the following actions:

ARMY

Stocks for allies are being retained, but no additional stocks are being obtained other than those on contract prior to enactment of the new Section 514. Some requirements to store stocks for allies have been eliminated, and assets have been applied against other needs. Disposal action has been initiated for some items no longer required. Costs associated with the storage of allied war reserve stocks are being identified. However, it is DoD's position that maintenance and storage costs must be charged to MAP only on stocks procured for allies with obligations after Section 514 was enacted. Stocks for allies are normally comingled with U.S. stocks and identified separately only on stock record accounts. Current records reflect that storage of such stocks in the Pacific area has cost about $22,000 per month through May 1975, and should cost about $17,000 per month thereafter.

AIR FORCE

Since passage of Section 514 to the Foreign Assistance Act the U.S. Air Force has taken no action to acquire stocks specifically for

the allies' war reserve. On-hand assets, previously procured against WRSA inventory objectives, have been applied to U.S. Air Force requirements. There has been no disposal action or expenditure of funds for maintenance and storage of allies war reserve stocks since none of the WRM inventory is specifically identified or set aside for allies.

Gradual Attainment of War Reserve Objectives

Chairman McClellan: Your statement indicates that we are many years away from achieving our full inventory objectives and implies that we probably never want to fully achieve them for management purposes. If that is the case, why has FY 1976 been selected as the year to fund large amounts of war reserve materiel via new appropriations for the stock funds? Will additional appropriated funds be requested in FY 1977 for stock fund war reserves?

Answer: Stock Funds finance inventories of consumable materiel which are "sold" to the operating forces; sales proceeds are used to finance inventory replenishment. War reserve requirements for these same consumables represent a "fixed" investment in peacetime, and routine sales will not normally generate the funds required to procure them. (Both the Services and the DSA maintain stock funded war reserve stocks.) Because of this inability of the stock funds to generate funding for war reserves, until now these war reserve inventories could be procured only to the extent that surplus cash accumulated in the Stock Fund.

The new appropriation request for stock funded war reserves in FY 76 reflects three facts: (1) the Secretary of Defense is placing increased emphasis on U.S. force readiness; (2) there is an increased appreciation within DoD of the need for balanced support capability, including all the critical "horse-shoe nails"; and (3) the stock fund cash position is not adequate to finance war reserve inventories.

In order to resolve the deficiencies in our war reserve posture associated with this inability of the stock funds to finance war reserve inventories, we have established a procedure whereby the Services are now required to program funds for these items during the programming phase of the Planning Programming Budgeting System (PPBS). Authority to procure these items will be requested in future budget submissions.

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Funds required which exceed available stock fund cash balances will be submitted to the Congress as requests for stock fund Budget Authority.

-- The Services will program funds for these war reserves in the programming phase of the PPBS to eliminate deficiencies by FY 81.

-- OSD is committed to fund validated war reserve requirements which will require future requests to the Congress for new stock fund Budget Authority.

Inventory Replenishment Fund

Chairman McClellan: Does Defense plan to request money for this fund in future years? If so, what is the ultimate objective balance for the fund?

Given the high cost of some of the items on the Army's "hot items" list and the even highercost of the other services' "hot items," isn't $300 million too small to be significant?

Why doesn't the Department simply make foreign customers wait if drawing down U.S. stocks will hurt U.S. readiness? Why is it necessary to sacrifice or hurt U.S. forces to meet foreign demand?

Answer: The DoD does plan to request additional funds in future years to support the Inventory Replenishment Fund (IRF). No ultimate funding objective has been established. The IRF has been established to "procure equipment and consumable supplies in high demand for Foreign Military Sales." Items procured with IRF monies would be available to meet foreign sales in those cases where the criticallity is such that the customer requires delivery prior to availability of assets from the production line. By necessity, all future requirements for additional IRF funding will have to be continually analyzed based on the then existing FMS status prior to DoD requesting any additional funding.

The $300 million requested for FY 1976 is felt to represent a reasonable request for those items meeting the criteria for procurement with IRF funds. These criteria are:

a. A high probability of sale within the funded delivery period.

b. The Service inventories must be critically low.

c. Drawdown of force equipment or diversion of U.S. production to satisfy a FMS sale would have a serious affect on combat readiness.

d. The procurement action must be realistically planned for contract during the life of the procurement appropriation to which the transfer will be made.

The "Hot Items List" represents items showing a pattern of high foreign demands. Not all items on this list represent candidates for procurement in FY 1976 with IRF funds. Some items, such as the M48 and M60 tanks, would not meet the criteria for the IRF, i.e., the M48 tank is not in production and the M60 tank production is at the maximum existing capacity.

There are occasions when overall national security objectives (which may include certain foreign policy considerations) dictate the requirement to transfer military equipment from military department inventories. When such occasions arise, the military department involved is afforded the opportunity to comment upon the impact on its force readiness. If during the review by OSD staff offices of any impact statements provided, it is determined that the transfer is necessary and outweighs the probable impact, the matter is referred to the Secretary of Defense or Deputy Secretary of Defense for final decision. It should be emphasized that meeting foreign requirements from U.S. forces assets is not our normal way of doing business. Equipment is diverted from U.S. requirements only to cope with unusual situations. Most sales are from production arranged specifically for the foreign buyer.

QUESTIONS SUBMITTED BY SENATOR YOUNG

War Reserve Program

Senator Young: How much of the $2.6 billion requested is for real growth and how much is for inflation?

Answer: The real program growth of FY 1976 over FY 1975 is approximately $1.1 billion (FY 1976 dollars). Inflation amounts to $77 million (above FY 1976 dollars). Of the $1.1 billion growth, about 90% is accounted for by procurement of stock funded items, Navy and Air Force missiles, and aircraft spares. Stock funded war reserve items have habitually been in short supply, with any available stock fund cash balances being devoted to other items. DoD has consciously decided to improve this critical area starting with this year's budget request. Increases in funding for aircraft spares have resulted from Israeli-lessons-learned and are needed to insure completeness of war readiness spare kits (WRSK) which are deployed with our tactical aircraft. In addition to improving our general air-to-surface and air-to-air missile stockpile posture, over 50% of the FY 76 over FY 75 funding increase adds new capability to the Service inventories with the introduction of Condor and improved Sidewinder.

Draw Down for Israel

Senator Young: Have the War Reserve materials been drawn down to support Israel? If so, how much?

Answer: The impact of Israeli support on Service War Reserves is as follows:

ARMY

Some materiel was drawn down from the War Reserve Stocks to support Israel. The following items are the end items withdrawn/diverted from War Reserve, POMCUS, and Operational Project stocks which have had a significant impact on Army readiness.

ITEM	QUANTITY	CASH VALUE
Tank, M60		$162,978,000
Armored Personnel Carrier, M113A1		90,698,000
Self-Propelled Howitzer, 115 mm, M109A1	(Deleted)	27,856,000
Command Post Carrier, M577A1		4,862,000
Cargo Carrier, M548		6,759,000
Recovery Vehicle, M88		2,593,000
Recovery Vehicle, M578		1,097,000
TOW MIssiles		21,000,000
REDEYE Missiles		19,363,000
TOTAL		$337,207,000

NAVY

The Navy issued approximately (Deleted) for support of Israel, of this amount (Deleted) was from war reserve stocks. The remainder reflects diversions from the operating forces and peacetime stock. All the draw down of war reserve stocks required for replacement have been replaced or are presently under procurement.

AIR FORCE

During the (Deleted) shipments of arms to Israel aggravated some existing shortages in Air Force War Reserve Materiel (WRM) inventories of AIM-7 and SHRIKE missiles. Although shortages in these systems persist, replacement will be accomplished through new production. (Deleted) SHRIKES which were shipped during the (Deleted) (Deleted) will be fully replaced in the first quarter of FY 77. The (Deleted) AIM-7E2s shipped will not be replaced because the missile is no longer in production. The new AIM-7F is only programmed for use on the Air Force F-4E and F-15, thereby resulting in an inventory shortfall of AIM-7E2 for the F-4C/D aircraft. However, with the planned rate of replacement of F-4C/Ds with F-4Es in combat wings, there is but a small

shortfall by end FY 78 -- too small to justify restarting the AIM-7F. Other stocks shipped (munitions, chaff, TRAP - tanks, racks, adapter and pylons) caused shortages of a temporary nature. All of these stocks have been replenished. There has been no drawdown of WRM to support Israel since the (Deleted) .

European Equipment as part of the War Reserve Program

Senator Young: Are the prepositioned tanks, ammunition, artillery pieces and other items in Europe considered as part of the War Reserve materials?

Answer: Yes, in the general sense. However, these items serve two principal purposes. The first is to facilitate the rapid deployment to Europe of both combat and support forces needed in the early stages of potential conflicts. The second is to sustain the forces in Europe until effective wartime resupply is established.

Age of War Reserve Items

Senator Young: Are War Reserve items of equipment always new items or are they used equipment or a combination of new and used equipment?

Answer: War reserve items of equipment are a combination of new and used equipment.

Procedure to Draw Down

Senator Young: What steps does the Defense Department go through before a draw-down on War Reserve materials can be made?

Answer: The decision to sell specific military equipment, which would require a draw down on War Reserve materials, is made on a case-by-case basis and is based upon a judgment of the degree of impact on our forces in relation to the urgency of the requirement for immediate shipment. When a country wishes to buy a particular item of military equipment from the U.S. to fill an urgent requirement, it makes an appropriate request through Department of Defense or Department of State channels. Upon receipt of the request, the State Department determines, after consultation with the Department of Defense, whether the proposed

purchase is consistent with U.S. objectives and policy, and whether it will serve our national interests. If the sale is approved, the appropriate Military Department is afforded an opportunity to review the request and provide statements for any possible adverse impact such as a draw down on War Reserve stocks. Any impact statements provided are reviewed, in relationship to the requirement, by OSD staff offices. If it is determined by OSD staff offices that overall national security objectives dictate that the sale should be made, the matter is referred to the Secretary of Defense or the Deputy Secretary of Defense for final decision.

Munitions to Asia

Senator Young: Will you give us the amounts of munitions that went to Southeast Asia for each of the last five years and what your inventory was for each of those five years? How much did we lose when the Communists took over?

Answer:

AMMUNITION EXPENDITURES IN SOUTHEAST ASIA BY U.S. AND ALLIES
(Short Tons)

Year	Ground	Air
1970		
1971		
1972	(Deleted)	
1973		
1974		

END OF YEAR WORLDWIDE U.S. INVENTORY OF CONVENTIONAL AMMUNITION
(Short Tons)

Year	Ground	Air
1970		
1971		
1972	(Deleted)	
1973		
1974		

There is no way that the DoD can determine the amount of ammunition lost when the Communists took over. Our inability to determine how much was lost results from the fact that we had no on-the-ground advisors to report losses. In addition the reporting mechanism that had been in existence

was considerably less effective during the final days and information provided was extremely limited and highly suspect.

The only information available to the DoD is that during the time period of the Communists' final offensive there was approximately 150,000 short tons of ground and air ammunition at the disposition of the government of South Vietnam. We have no way to determine how much of this ammunition was expended by the South Vietnamese in their final defense, how much was destroyed by hostile action, or how much was destroyed by the South Vietnamese to prevent its capture. We do have information which indicates the South Vietnamese destroyed some ammunition stockpiles.

SUBCOMMITTEE RECESS

Chairman MCCLELLAN. The subcommittee will stand in recess, subject to the call of the Chair.

[Whereupon, at 11 a.m., Tuesday, June 3, the subcommittee was recessed to reconvene at the call of the Chair.]

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