

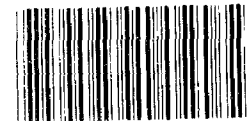
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STUDY BY THE STAFF OF THE U.S.

General Accounting Office

Defense Spending And Its Relationship To The Federal Budget

Defense policy and its implications on the Federal budget is subject to much debate. GAO's study covers historical trends in defense outlays and total obligational authority, defense policy and its relationship to the budget, long-term factors which influence defense policy and spending, and questions for use when considering public policy and corresponding budget decisions. The study focuses on the major defense budget areas of investment, operations and maintenance, and military personnel.



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PREFACE

Defense is an insurance policy which contributes to protecting us from external threats to our way of life. Since the United States constitution directs the Federal Government ". . . to provide for the common defense," a large portion of the Federal budget is dedicated to the defense function.

This study covers the following:

- Historical trends in defense outlays, and their relationship to other Federal programs and the gross national product.
- Defense policy and its relationship to the Federal budget.
- Long-term factors which influence defense policy and spending.
- Questions for use when considering public policy and corresponding budget decisions.

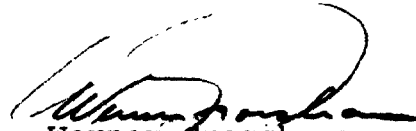
The level of defense spending that is authorized and appropriated is determined by a number of factors. We have attempted to discuss key long-range factors affecting defense spending decisions and their primary relationships. For some of the factors, we present trend data; for others, we simply note what factors they interact with to affect spending levels and/or decisions. Finally, we present some of the key questions that emerge as these factors and their interrelationships show themselves to be part of a very complicated area. Also, there are many more factors and interrelationships that we have presented here which affect defense spending decisions.

The study consists of five parts:

- Section 1 discusses a historical perspective on defense outlay and total obligational authority.
- Section 2 discusses defense policy and its relationship to the budget.
- Section 3 discusses investment strategies and reasons for investment cost growth.
- Section 4 discusses the major activities funded under the operations and maintenance budget subfunction.
- Section 5 discusses the major activities funded under the military personnel budget subfunction.

To keep this study unclassified, we were required to limit the specificity and completeness of some data.

This study was compiled from data contained in DOD documents, other published Federal Government reports, and current popular literature. We did not seek nor obtain comments from the Department of Defense on the contents of this study.



Werner Grosshans
Director
DOD Budget Task Force

D I G E S T

A substantial portion of the Federal budget is dedicated to the programs funded under the auspices of the Department of Defense. Defense programs are funded within the budget process by major areas, such as investment, operation and maintenance, and military personnel. This study presents selected Defense data for 1962-1983 and identifies some questions that should be answered as the Congress is considering public policy and corresponding budget decisions.

HISTORICAL PERSPECTIVE
OF THE BUDGET

The 1962-1983 period saw a decline in the defense share of the total Federal outlays and an equally significant rise in Federal outlays for the entitlement programs. However, the real purchasing power of the defense budget as expressed by total obligational authority (TOA) increased by 22 percent during the 1962-1983 period. In both cases, the decrease in outlays and the increase in TOA were not gradual and steady, but rather contained many peaks and valleys. (Section I.)

DEFENSE POLICY RELATIONSHIP
TO THE BUDGET

Defense policy is based on subjective evaluations of enemy threat, our alliances and commitments, and what we believe our world role is. Linking defense policy to budgeting can be done in several ways. One such way is to express goals in terms of the four pillars of military capability: force structure, readiness, sustainability, and modernization. Another way is to focus on the defense missions and programs, e.g., strategic forces, research and development, central supply, and maintenance. The resources to support these methods are priced out in terms of appropriation account categories using the Defense Five Year Defense Program. The following are some key questions to help define this nation's defense policy. (Section II.)

- What should be our world role?
- What combination of military conflict should we be prepared to wage at any one time?
- What are the goals and intentions of the Soviet Union?
- What, if anything, should our military role be in third world conflicts?
- Are our plans for fighting conventional and nuclear wars realistic?

INVESTMENT STRATEGIES
AND REASONS FOR INVESTMENT
COST GROWTH

Investment strategies center on developing and procuring new weapons systems and modernizing current systems to meet enemy threat and fulfill our treaty commitments. Restructuring our forces investment has focused congressional attention on the persistent problem of weapon system cost growth. Some factors which contribute to cost growth include inflation, cost estimates, high-risk system design, program stretch-out, changes in specifications, budgeting for future cost, and lead times. The following are some key questions designed to help outline future investment funding requirements. (Section III.)

- What investment do we need to make to maintain a credible deterrence?
- Are the right systems being developed and procured?
- How many systems and items do we need?
- Are the current weapons systems under development appropriated to current and/or future battlefield needs?

OPERATIONAL AND MAINTENANCE
SUPPORT FOR INVESTMENT
AND PERSONNEL

Operations and maintenance appropriations pay for operating and maintaining the Armed Forces, except military personnel costs. Included are amounts for pay of civilians; contract services

for maintenance of equipment and facilities; fuel; supplies; and repair costs for weapons and equipment. Financial requirements are influenced, in part, by the number of military units, installations, military strength and deployments, rates of operational activity, and the quality and complexity of major equipment in use. The answers to the following key questions affect future operation and maintenance funding requirements. (Section IV.)

--Have the services adequately planned the integration of replaced systems into guard units in terms of maintenance and supportability?

--The cost to operate and maintain facilities is substantial. Do we need all the facilities?

--The new weapons systems being fielded are sophisticated and of high technology and cannot be used effectively without adequate number of highly educated and/or skilled people to operate them. Will the service be able to compete with a growing private sector to obtain and retain educated, skilled staff?

--What is being done to reduce the level of depot maintenance backlog for today's investment and to plan for the expected depot level maintenance that the new investments will impose?

MILITARY PERSONNEL
COST IMPACTS ON
THE BUDGET

The military personnel appropriations finance the payroll-related costs to support active duty, reserve, cadets, and retired personnel. Included are amounts for pay and allowances, bonuses, relocation expenses, Government contributions for social security tax payments, and unemployment benefits. The answers to the following key questions affect future military personnel funding requirements. (Section V.)

--DOD expects to increase active duty end-strength to operate and maintain new, high technology weapons systems. With demographic trends indicating fewer young males in the future labor pool, has DOD fully considered

the personnel requirements for the new systems in planning and estimating bonus structure and costs?

- Skilled personnel are promoted to positions which do not use their skills. Is there a way to compensate skilled military people without moving them out of their skill area?
- Given increased longevity and the increasing numbers of "technicians and managers" versus "warriors" needed, should the 20-year retirement policy be reconsidered?

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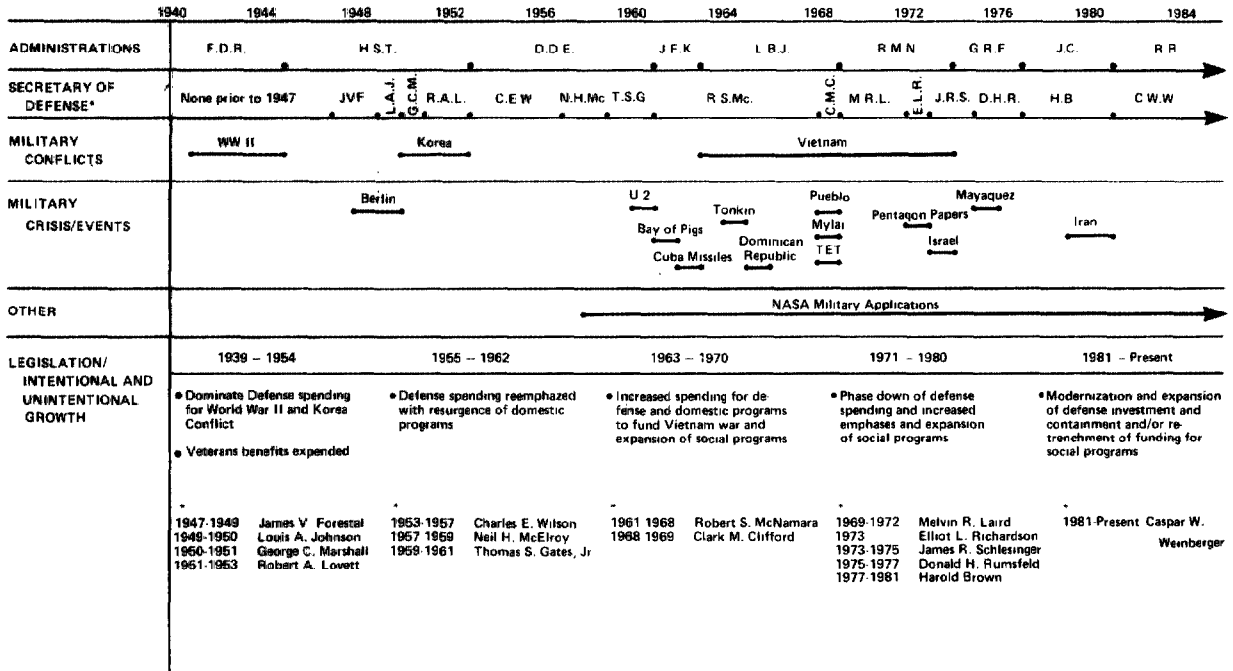
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SECTION I

A HISTORICAL PERSPECTIVE ON DEFENSE OUTLAYS AND TOTAL OBLIGATIONAL AUTHORITY

A DEFENSE PROFILE SINCE 1940



Relationship of Defense Outlays to Other Federal Programs 1962-1981

The 1962-1981 period saw a decline in the defense share of total Federal outlays and an equally significant rise in Federal outlays for the entitlement programs.

Our analysis of this relationship compares defense outlays with other large clusters: human resources, net interest, and others. In this comparison, defense outlays' share of the total Federal budget peaked in 1962 at 45.9 percent and declined steadily to the middle 1970's when it leveled off at 23 to 25 percent of the annual outlays.

Another analysis compares defense outlays with the same sectors but excludes the primary entitlements of Medicare,

TABLE 1
BUDGET OUTLAYS BY LARGE CLUSTER: 1962-1988
(fiscal years: dollar amounts in millions)

Year	National Defense		Human Resources		Net Interest		All Other		Total (amount)
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total	
1962	\$49,040	45.9	\$30,727	28.8	6,877	6.4	\$20,168	18.9	\$106,813
1963	50,142	45.0	32,502	29.2	7,731	6.9	20,036	18.8	111,311
1964	51,528	43.5	34,145	28.8	8,189	6.9	24,721	20.8	118,584
1965	47,456	40.1	35,394	29.9	8,579	7.2	27,001	22.8	118,430
1966	54,852	40.7	41,824	31.1	9,369	7.0	28,607	21.2	134,652
1967	68,243	43.3	50,283	31.9	10,258	6.5	28,823	18.3	157,608
1968	78,755	44.2	57,207	32.1	11,077	6.2	31,096	17.5	178,134
1969	79,417	43.2	63,319	34.5	12,694	6.9	28,215	15.4	183,645
1970	78,553	40.1	72,490	37.1	14,374	7.3	30,215	15.5	195,652
1971	75,808	36.1	88,505	42.1	14,837	7.1	31,023	14.8	210,172
1972	76,550	33.2	103,290	44.8	15,474	6.7	35,367	15.3	230,681
1973	74,541	30.3	115,118	46.9	17,346	7.1	38,643	15.7	245,647
1974	77,781	29.0	103,531	48.7	21,449	8.0	38,150	14.2	267,912
1975	85,552	26.4	166,785	51.4	23,244	7.2	48,663	15.0	324,245
1976	89,430	24.5	196,062	53.8	26,711	7.3	52,270	14.3	364,473
TQ	22,307	23.7	50,101	53.2	6,946	7.4	14,835	15.8	94,188
1977	97,501	24.3	213,504	53.3	29,877	7.5	59,624	14.9	400,506
1978	105,186	23.5	232,850	51.9	35,435	7.9	74,896	16.7	448,368
1979	117,681	24.0	256,733	52.3	42,606	8.7	73,977	15.1	490,977
1980	135,856	23.6	300,270	52.1	52,458	9.1	88,090	15.3	576,675
1981	159,765	24.3	345,471	52.5	68,726	10.5	83,240	12.7	657,204
1982	187,418	25.7	372,615	51.2	84,697	11.6	83,645	11.5	728,375
1983(est)	214,769	26.7	415,921	51.7	88,936	11.0	85,576	10.6	805,202
1984(est)	245,305	28.9	424,049	50.0	103,180	12.2	75,949	9.0	848,483
1985(est)	285,268	31.1	446,638	48.6	114,210	12.4	72,339	7.9	918,515
1986(est)	323,035	32.6	472,988	47.8	122,692	12.4	70,856	7.2	989,571
1987(est)	354,277	33.5	501,349	47.4	130,405	12.3	72,396	6.8	1,058,437
1988(est)	385,591	34.2	533,767	47.4	134,264	11.9	73,315	6.5	1,126,937

"National Defense" is the national defense function.

"Human Resources" is composed of the education, training, employment, and social services functions; the health function, the income security function; and the veterans benefits and services function.

"Net Interest" is composed of the interest function net of interest received by trust (non-revolving) funds.

Source: Federal Government Finances, 1984 Budget Data February 1983, Office of Management and Budget.

TABLE 1b
 BUDGET OUTLAYS BY LARGE CLUSTER: 1962-1988
 (fiscal years: dollar amounts in millions)

YEAR	National Defense		Human Resources		Net Interest		All Other		Total (amount)
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total	
1962	\$49,040	45.9	\$30,727	28.8	6,877	6.4	\$20,168	18.9	\$106,813
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"National Defense" is the national defense function.

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Source: Federal Government Finances, 1984 Budget Data February 1983, Office of Management and Budget.

Medicaid, and Social Security from the human resources cluster. These programs are excluded because they are not routinely considered in the budget process and are primarily funded from user taxes. In this analysis, the defense share of the total Federal outlays peaked in 1969 at 54 percent and declined steadily to the middle 1970's when it leveled off at 33 to 34 percent of the annual Federal outlays.

A third analysis compares defense outlays with the same sectors but excludes outlays from trust funds. These outlays are excluded because they are primarily funded from user taxes. In this analysis, the defense share of the total Federal outlays peaked in 1962 at 59 percent, declined during the 1970's to 35 percent in 1978 and climbed again in 1980's with the 1984 share at an estimated 46 percent of annual Federal outlays.

Changes in Defense
Total Obligational
Authority (1963-1983)

Between 1963 and 1983, the real purchasing power of the defense budget, as expressed by total obligational authority, increased by 28 percent. This has not been a gradual and steady increase, but rather has contained many peaks and valleys.

During the 1960's, the United States focused considerable attention on the missile gap and the Vietnam War. Increased U.S. participation in these areas between 1963 and 1969 caused the real purchasing power of the defense budget to increase by more than 23 percent. Procurement and Operations and Maintenance (O&M) increased by 10 and 44 percent. After deducting for inflation, the 1969 defense budget was 34.1 billion more than it was in 1963. Procurement and O&M accounted for \$1.9 and \$24.4 billion of this increase. This trend was reversed in the 1970's as attention was focused on other domestic needs.

During the 1970's, the United States focused considerably less attention on peacetime national security needs than on other domestic policy needs. Between 1970 and 1979, the real purchasing power of the defense budget declined by almost 28 percent. During this time, procurement and O&M declined by 55 and 3 percent, respectively. After deducting for inflation, the 1979 defense budget was \$58 billion less than it was in 1969. This trend reversed in the 1980's as defense programs gained more attention.

After declining during the 1970's, the 1980, 1981, 1982, and 1983 defense budgets led to real increases in purchasing power of 2.4, 10.8, 9.5, and 8.6 percents, respectively. During this timeframe, procurement increased by 87 percent and O&M by 23 percent, respectively. After adjusting for inflation, the 1983 defense budget as appropriated was \$62 billion greater than in 1979. The procurement and O&M budgets were \$37.5 and \$12.4 billion greater. (All adjustments for inflation are 1983 constant dollars.)

TABLE 2
DISTRIBUTION OF DEFENSE OUTLAYS
BY LARGE CLUSTERS
1949-1984
(in billions of current dollars)
Defense Outlays

<u>Fiscal Year</u>	<u>Total Federal Outlays</u>	<u>Total</u>	<u>Physical Capital Investment</u>	<u>Research and Development</u>	<u>Other</u>
1949	38.8	11.6	2.3	0.8	8.5
1950	42.6	12.3	2.1	0.8	9.4
1951	45.5	21.5	5.5	0.8	15.2
1952	67.7	43.0	14.2	1.2	27.6
1953	76.1	49.6	20.6	1.6	27.4
1954	70.0	45.9	19.3	1.6	25.0
1955	68.5	39.5	16.1	1.6	21.8
1956	70.5	39.3	15.6	1.9	21.8
1957	76.7	41.8	17.3	2.1	22.4
1958	82.6	43.1	17.6	2.5	23.0
1959	92.1	45.3	18.3	5.4	21.6
1960	92.2	44.5	17.2	5.9	21.4
1961	97.8	45.8	16.8	6.9	22.1
1962	106.8	48.2	17.8	7.1	23.3
1963	111.3	49.0	19.4	7.1	22.5
1964	118.6	50.3	18.0	7.9	24.4
1965	118.4	46.0	14.2	7.1	24.7
1966	134.7	53.3	16.9	7.1	29.3
1967	157.6	66.4	21.4	8.1	36.9
1968	178.1	76.6	25.4	8.5	42.7
1969	183.6	76.9	26.2	8.3	42.4
1970	195.7	75.7	23.6	8.0	44.1
1971	210.2	72.4	20.7	8.1	43.6
1972	230.7	72.6	19.1	8.8	44.7
1973	245.7	70.0	17.6	9.1	43.3
1974	269.4	72.6	17.4	9.4	45.8
1975	332.3	79.3	18.7	9.7	50.9
1976	371.8	82.0	19.2	9.8	53.0
TQ	96.0	20.4	4.5	2.5	13.4
1977	409.2	89.3	21.6	10.9	56.8
1978	458.7	96.0	23.2	12.1	60.7
1979	503.5	107.3	29.0	12.1	66.2
1980	590.9	123.8	33.0	14.6	76.2
1981	678.2	146.0	39.6	16.9	89.5
1982	745.7	172.4	48.8	19.8	103.8
1983EST	822.2	196.8	61.8	24.7	112.1
1984EST	862.5	228.4	76.7	29.3	122.4

SOURCE: Office of Management and Budget
Budget Review Division
Fiscal Analysis Branch
February 1983

TABLE 2a
DISTRIBUTION OF DEFENSE OUTLAYS
BY LARGE CLUSTERS
1949-1984

(in billions of constant fiscal year 1972 dollars)
Defense Outlays

<u>Fiscal Year</u>	<u>Total Federal Outlays</u>	<u>Total</u>	<u>Physical Capital Investment</u>	<u>Research and Development</u>	<u>Other</u>
1949	85.3	27.9	4.0	2.0	21.9
1950	93.8	30.5	3.7	2.0	24.8
1951	97.3	50.3	9.1	2.2	39.0
1952	134.6	89.4	23.3	2.8	63.3
1953	144.4	97.0	34.3	3.4	59.3
1954	131.3	88.6	33.0	3.2	52.4
1955	126.4	76.1	26.7	3.3	46.1
1956	128.7	75.2	24.6	4.1	46.5
1957	131.0	74.0	25.1	4.2	44.7
1958	135.3	73.7	25.2	4.7	42.8
1959	146.6	74.5	25.7	9.7	39.1
1960	143.3	71.9	23.4	10.5	38.0
1961	149.7	73.5	23.5	11.9	38.1
1962	162.1	76.2	24.9	12.0	39.3
1963	162.8	74.0	25.2	11.7	37.1
1964	170.3	74.5	23.5	12.4	38.6
1965	166.9	67.1	18.4	10.8	37.9
1966	183.0	74.2	21.5	10.3	42.4
1967	207.5	89.6	26.4	11.3	51.9
1968	224.6	98.6	30.2	11.4	57.0
1969	220.2	94.5	30.2	10.5	53.8
1970	220.2	86.9	25.9	9.4	51.6
1971	222.6	77.7	21.4	8.8	47.5
1972	230.7	72.6	19.1	8.8	44.7
1973	233.3	65.7	17.1	8.5	40.1
1974	238.2	63.8	16.3	8.1	39.4
1975	266.5	63.5	16.5	7.5	39.5
1976	279.6	61.5	15.6	7.2	38.7
TQ	69.5	14.8	3.5	1.7	9.6
1977	286.5	61.8	15.9	7.4	38.5
1978	300.4	61.8	15.8	7.6	38.4
1979	304.7	64.2	17.8	7.2	39.2
1980	324.7	65.9	18.1	7.7	40.1
1981	339.2	69.3	19.7	7.9	41.7
1982	346.6	74.4	21.7	8.4	44.3
1983EST	364.1	72.3	26.1	10.0	45.2
1984EST	363.5	90.3	31.3	11.4	47.6

SOURCE: Office of Management and Budget
Budget Review Division
Fiscal Analysis Branch
February 1983

TABLE 2b
PERCENTAGE DISTRIBUTION OF DEFENSE OUTLAYS
BY LARGE CLUSTERS
1949-1984

<u>Fiscal</u> <u>Year</u>	<u>Total</u> <u>Federal</u> <u>Outlays</u>	<u>Defense Outlays</u>			
		<u>Total</u> ^{1/}	<u>Physical</u> <u>Capital</u> <u>Investment</u>	<u>Research</u> <u>and</u> <u>Development</u>	<u>Other</u>
1949	100.0	29.9	6.0	2.0	21.9
1950	100.0	28.9	4.8	1.8	22.0
1951	100.0	47.3	12.0	1.9	33.4
1952	100.0	63.5	21.0	1.8	40.8
1953	100.0	65.2	27.1	2.0	36.0
1954	100.0	64.7	27.2	2.2	35.3
1955	100.0	57.7	23.5	2.3	31.8
1956	100.0	55.7	22.1	2.7	30.9
1957	100.0	54.5	22.6	2.8	29.2
1958	100.0	52.2	21.4	3.0	27.9
1959	100.0	49.2	19.9	5.8	23.5
1960	100.0	48.3	18.6	6.4	23.2
1961	100.0	46.8	17.2	7.1	22.6
1962	100.0	45.1	16.7	6.6	21.8
1963	100.0	44.0	17.4	6.4	20.3
1964	100.0	42.4	15.2	6.6	20.6
1965	100.0	38.9	12.0	6.0	20.9
1966	100.0	39.6	12.5	5.3	21.8
1967	100.0	42.1	13.6	5.1	23.4
1968	100.0	43.0	14.3	4.8	23.9
1969	100.0	41.9	14.3	4.5	23.1
1970	100.0	38.7	12.1	4.1	22.5
1971	100.0	34.4	9.8	3.9	20.7
1972	100.0	31.5	8.3	2.8	19.4
1973	100.0	28.5	7.2	3.7	17.6
1974	100.0	26.9	6.5	3.5	17.0
1975	100.0	23.9	5.6	2.9	15.3
1976	100.0	22.1	5.2	2.6	14.3
TQ	100.0	21.3	4.7	2.6	14.0
1977	100.0	21.8	5.3	2.7	13.9
1978	100.0	20.9	5.1	2.6	13.2
1979	100.0	21.3	4.8	2.4	13.2
1980	100.0	21.0	5.6	2.5	12.9
1981	100.0	21.5	5.8	2.5	13.2
1982	100.0	23.1	6.5	2.7	13.9
1983EST	100.0	23.9	7.5	3.0	13.6
1984EST	100.0	26.5	8.9	3.4	14.2

^{1/}Totals may not add up due to rounding to nearest tenth of one percent

SOURCE: Office of Management and Budget
 Budget Review Division
 Fiscal Analysis Branch
 February 1983

TABLE 2c
MAJOR PHYSICAL CAPITAL INVESTMENT OUTLAY
1949-1984
(in billions of constant fiscal year 1972 dollars)

Fiscal Year	Total Outlays	Total	Direct Federal			Grants in-aid
			Total	National defense	Non- defense	
1949	85.3	6.6	5.7	4.0	1.8	0.9
1950	93.8	7.0	6.1	3.7	2.4	1.0
1951	97.3	12.4	11.4	9.1	2.2	1.1
1952	134.6	26.6	26.7	23.3	2.4	1.0
1953	144.4	38.2	36.9	34.3	2.7	1.3
1954	131.3	36.7	35.4	33.0	2.4	1.3
1955	126.4	30.0	28.5	26.7	1.8	1.4
1956	128.7	27.6	26.0	24.6	1.4	1.5
1957	131.0	28.6	26.8	25.1	1.7	1.8
1958	135.3	29.9	27.1	25.2	1.9	2.8
1959	146.6	32.5	28.0	25.7	2.3	4.5
1960	143.3	31.2	26.0	23.4	2.6	5.2
1961	149.7	31.1	26.3	23.5	2.8	4.8
1962	162.1	33.2	28.2	24.9	3.3	5.0
1963	162.8	33.9	28.5	25.2	3.3	5.5
1964	170.3	34.0	27.3	23.5	3.8	6.7
1965	166.9	29.6	22.3	18.4	3.9	7.3
1966	183.0	32.7	25.7	21.5	4.2	7.0
1967	207.5	37.3	30.2	26.4	3.8	7.1
1968	224.6	41.3	33.7	30.2	3.4	7.6
1969	220.2	40.8	33.1	30.2	2.9	7.7
1970	220.2	36.9	28.7	25.9	2.8	8.2
1971	222.6	32.9	24.5	21.4	3.1	8.4
1972	230.7	31.1	22.7	19.1	3.6	8.4
1973	233.3	29.2	20.8	17.1	3.6	8.4
1974	238.2	28.4	20.0	16.3	3.7	8.4
1975	266.5	28.2	20.2	16.5	3.7	7.9
1976	279.6	28.7	19.2	16.6	3.7	9.4
TQ	69.5	7.3	4.5	3.5	1.0	2.8
1977	286.5	30.5	19.8	15.9	3.9	10.7
1978	300.4	31.2	20.2	15.8	4.4	11.0
1979	304.7	33.0	22.4	17.8	4.6	10.6
1980	324.7	33.0	22.4	18.1	4.2	10.6
1981	339.2	33.6	23.8	19.7	4.1	9.8
1982	346.6	34.1	25.5	21.7	3.7	8.7
1983EST	364.1	38.1	29.8	26.1	3.7	8.2
1984EST	363.5	43.5	34.5	31.3	3.2	9.0

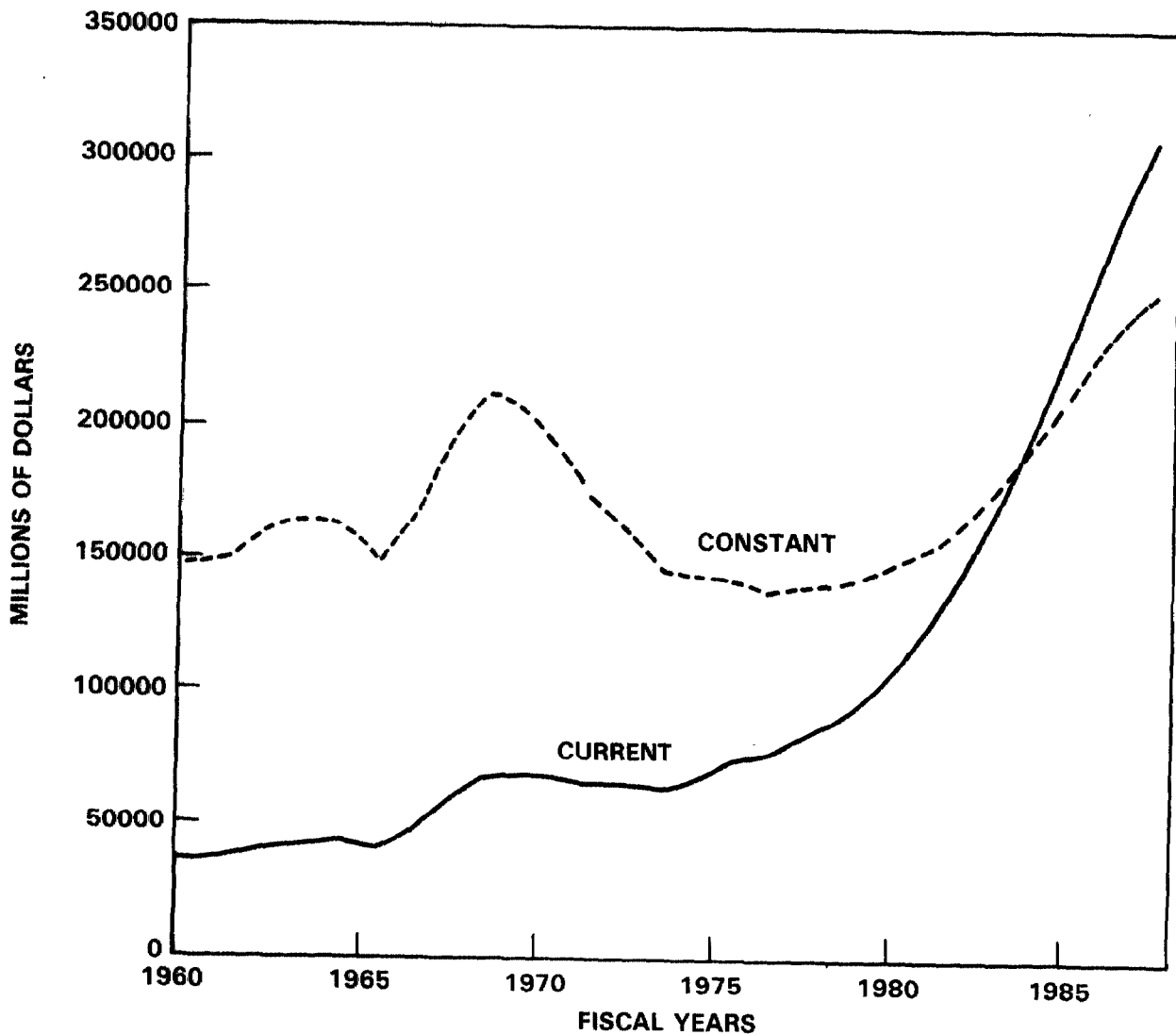
SOURCE: Office of Management and Budget
Budget Review Division
Fiscal Analysis Branch
February 1983

TABLE 2d
PERCENTAGE DISTRIBUTION OF MAJOR
 PHYSICAL CAPITAL INVESTMENT OUTLAYS
 1949-1984

<u>Fiscal Year</u>	<u>Total Outlays</u>	<u>Total</u>	<u>Direct Federal</u>			<u>Grants in-aid</u>
			<u>Total</u>	<u>National defense</u>	<u>Non- defense</u>	
1949	100.0	9.9	8.7	6.0	2.7	1.2
1950	100.0	9.1	8.0	4.8	3.1	1.1
1951	100.0	16.2	15.0	12.0	3.0	1.2
1952	100.0	24.0	23.1	21.0	2.1	0.9
1953	100.0	30.2	29.2	27.1	2.1	1.0
1954	100.0	30.2	29.2	27.2	2.0	1.0
1955	100.0	26.3	25.1	23.5	1.6	1.2
1956	100.0	24.7	23.4	22.1	1.3	1.3
1957	100.0	25.6	24.1	22.6	1.5	1.5
1958	100.0	25.1	23.0	21.4	1.6	2.2
1959	100.0	24.9	21.7	19.9	1.8	3.2
1960	100.0	24.3	20.7	18.6	2.1	3.6
1961	100.0	22.4	19.2	17.2	2.1	3.1
1962	100.0	21.9	18.8	16.7	2.2	3.0
1963	100.0	23.0	19.7	17.4	2.3	3.2
1964	100.0	21.4	17.6	15.2	2.5	3.8
1965	100.0	18.8	14.6	12.0	2.6	4.2
1966	100.0	18.6	14.9	12.5	2.4	3.6
1967	100.0	18.8	15.5	13.6	1.9	3.3
1968	100.0	19.1	15.9	14.3	1.6	3.3
1969	100.0	19.0	15.7	14.3	1.4	3.4
1970	100.0	17.0	13.4	12.1	1.3	3.6
1971	100.0	15.0	11.3	9.8	1.4	3.7
1972	100.0	13.5	9.8	8.3	1.5	3.6
1973	100.0	12.3	8.7	7.2	1.5	3.6
1974	100.0	11.6	7.9	6.5	1.5	3.7
1975	100.0	10.3	7.1	5.6	1.5	3.3
1976	100.0	10.2	6.6	5.2	1.4	3.6
TQ	100.0	10.2	6.1	4.7	1.4	4.1
1977	100.0	10.6	6.7	5.3	1.4	4.0
1978	100.0	10.5	6.5	5.1	1.4	4.0
1979	100.0	11.3	7.3	5.8	1.5	4.0
1980	100.0	10.8	6.9	5.6	1.4	3.8
1981	100.0	10.4	7.1	5.8	1.3	3.3
1982	100.0	10.4	7.7	6.5	1.1	2.7
1983EST	100.0	11.0	8.6	7.5	1.1	2.5
1984EST	100.0	12.5	9.8	8.9	0.9	2.7

SOURCE: Office of Management and Budget
 Budget Review Division
 Fiscal Analysis Branch
 February 1983

CHART I
DEFENSE OUTLAYS IN CURRENT
AND CONSTANT FISCAL YEAR 1983 DOLLARS



Source: Office of Assistant Secretary of Defense
 Manpower, Reserve Affairs and Logistics

Comparison of DOD Outlays
in Constant and Current
Fiscal Year Dollars (1962-1981)

For the period 1962-1981, different patterns exist when comparing DOD outlays in current and constant dollars. For example, the constant-dollar outlays tend to show the extreme yearly variations while the current-dollar outlays tend to show patterns that are somewhat level. This is most apparent in the

patterns that are somewhat level. This is most apparent in the early 1970's when outlays in constant dollars dropped dramatically, yet these same outlays in current dollars showed very little drop.

Analysis of Comparison Between
Growth in GNP and Defense Outlays
1962-1981

During the 20-year period 1962-1981:

--GNP increases from the prior year ranged from 5.45 to 13.7 percent.

--Defense outlay increases and decreases from the prior year ranged from 7.8 to 24.2 percent.

--In 6 years (1966, 1967, 1968, 1975, 1980, 1981), the percentage increase in defense spending exceeded the percentage increase in GNP. The 1966-1968 increases were in support of the Vietnam conflict. The increase in 1975 was to replace investments left in Vietnam and provided Israel. The 1980-1982 increases represent the recent attempt to revitalize the military investment posture.

However, for the 6-year period 1983-1989, estimates indicate that, for all 6 years, the percentage increases in defense outlays will exceed the percentage increases in GNP. As can be seen, such sustained increases are unprecedented in the last 20 years.

TABLE 3
COMPARISON OF DEFENSE AND GROSS NATIONAL PRODUCT GROWTH

<u>FISCAL YEAR</u>	<u>GNP</u> (\$ b i l l i o n s)	<u>GNP Increase from prior Yr.</u> (\$ b i l l i o n s)	<u>Percentage Increase</u>	<u>Defense Outlays</u> (\$ b i l l i o n s)	<u>Defense Increase from prior Year</u> (\$ b i l l i o n s)	<u>Percentage Increase</u>
1962	\$548.2	\$38.9	7.6	\$49.0	\$2.4	5.2
1963	578.0	29.8	5.4	50.1	1.1	2.2
1964	618.2	40.2	7.0	51.1	1.4	2.8
1965	659.5	41.3	6.7	47.5	(4.0)	(7.8)
1966	724.1	64.6	9.8	54.9	7.4	15.6
1967	777.3	53.2	7.3	68.2	13.3	24.2
1968	831.3	54.0	6.9	78.8	10.6	15.5
1969	910.6	79.3	9.5	79.4	.6	.8
1970	968.8	58.2	6.4	78.6	(.8)	(1.0)
1971	1,031.5	62.7	6.5	75.8	(2.8)	(3.6)
1972	1,128.8	97.3	9.4	77.6	1.8	2.4
1973	1,252.0	123.2	10.9	74.5	(3.1)	(4.0)
1974	1,379.4	127.4	10.2	77.8	3.3	4.4
1975	1,479.9	100.5	7.3	85.6	7.8	10.0
1976 ^{a/}	1,640.1	160.2	10.8	89.4	3.8	4.4
1977	1,862.8	222.7	13.6	97.5	8.1	9.1
1978	2,091.3	228.5	12.3	105.2	7.7	7.9
1979	2,357.7	266.4	12.8	117.7	12.5	11.9
1980	2,573.9	216.2	9.2	135.9	18.2	15.5
1981	2,871.8	297.9	11.6	159.8	23.9	17.6
1982	3,033.0	161.2	5.6	187.4	27.6	17.3
1983(est)	3,193.7	160.7	5.3	214.8	27.4	14.6
1984(est)	3,488.7	295.0	9.2	245.3	30.5	14.2
1985(est)	3,806.7	318.0	9.1	285.3	40.0	16.3
1986(est)	4,144.6	337.9	8.9	323.0	37.7	13.2
1987(est)	4,504.5	359.9	8.7	354.3	31.3	9.7
1988(est)	4,893.6	389.1	8.6	385.6	31.3	8.9

^{a/}The GNP and defense outlays have not been included for the transition quarter between fiscal year 1976 (July 1975 - June 1976) and fiscal year 1977 (September 1976 - August 1977). Therefore, the comparisons between fiscal years 1976 and 1977 could be misleading.

Source: GAO Computations from data furnished by OMB Fiscal Analysis Branch.

Analysis of Defense Outlays
by Budget Subfunction
1962-1981

During the period 1962-1981, there was no consistent pattern to defense outlays between or within the 050 budget subfunctions. Although the defense outlays have risen on an overall basis, they have not always risen on an annual basis.

<u>Budget Subfunction</u>	<u>Years where outlays were less than prior year</u>
051 Department of Defense--Military	1971
Military personnel	1971
Retired military personnel	1970
Operation and Maintenance	1970, 1971, 1973,
Procurement	1964, 1965, 1979, 1971, 1972, 1973, 1974, 1976
Research and Development	1965, 1969, 1970
Military Construction and Other	1963, 1969, 1973, 1978
053 Atomic energy defense activities	1963, 1964, 1965, 1966, 1967, 1971, 1972
054 Defense related activities	1964, 1965, 1966, 1967, 1970, 1971, 1973, 1974, 1975, 1976, 1977

SECTION II

DEFENSE POLICY AND ITS RELATIONSHIP TO THE BUDGET

Defense is an insurance policy which contributes to protecting us from external threats to our way of life. The answers to the following key questions translate into our defense policy.

- What should be our world role? For example, do we want to be a global policeman?
- What combination of military conflict should we be prepared to wage at any one time?
- What are the goals and intentions of the Soviet Union?
- What is the Soviet bloc capacity for achieving its goals?
- What contribution will be provided by our NATO allies and others with whom we have explicit or implicit treaty commitments?
- What, if anything, should our military role be in third world conflicts?
- Are our plans for fighting conventional and nuclear wars realistic?

In this study, we do not attempt to answer these questions; neither do we attempt to provide data which could be used to find answers. In this area, the data are generally provided by the State Department, the intelligence community, and DOD. The data presented in this area characterize the threat and our treaties around the world. (See appendix II.) However, many of the data presentations have been criticized. Below we have summarized selected comments made by defense critics:

- Threat analyses are rarely presented in a NATO alliance vs. Warsaw Pact context.
- A United States vs. Soviet presentation of the threat may be a significant overstatement since Warsaw Pact satellites produce little warmaking capability relative to NATO allies of the United States.
- When comparing the number of Soviet divisions with those of the United States, it is seldom made clear that Soviet divisions are much smaller than United States divisions, i.e., 10 tanks per USSR company versus 17 United States tanks per company; 11,000 troops in a Soviet division versus 17, 500 in a United States division.

- Soviet production figures are often cited as a growing threat. But little is said about the Soviet capability to maintain the vast amounts of equipment, or about the overall condition of equipment in the field.
- The United States defense industry is based on generational leaping of technology whereas the Soviets operate using an incremental approach. When this is not properly presented, Soviet technological advance is overstated.
- There is no actual Soviet budget; consequently, what is usually presented is what the United States would spend for a similar investment and the same end-strength. The Soviet soldier receives a much smaller salary. Whenever the United States soldier gets a pay raise, the gap between the United States and the USSR budget grows.
- Historically, the Soviets have relied heavily on massive number of troops and armor rather than a balanced blend of land and sea forces which may not be sufficient in certain situations.
- The Soviets lack versatility in weapons systems and army organization.
- The Soviet military personnel structure results in troops who conform with little flexibility, creativity, and ingenuity.
- When comparing weapons systems, it would be more appropriate to compare numbers of systems and antisystems, not just numbers of systems.
- The Soviet Navy is icebound much of the year.
- The numbers of troops and weapons devoted to the China border is not always discounted in a threat presentation. The Soviets have a long border to patrol between the USSR and China, whereas the United States has a long history of friendly relations with its neighbors.
- Different elements of the intelligence community see the threat differently.

Ultimately, the definition of our defense policy is based on a subjective evaluation of the threat, our alliances and commitments, and what we believe our role is. The next step is to take the defense policy and translate it into plans, programs, and budgets.

Four Pillars of Military Capability

Linking defense policy to budgeting can be done in different ways. One such way is to express budget goals in

terms of the four pillars of military capability, which are defined below:

- Force structure. The number, size, and composition of the units that constitute the defense forces, such as divisions, ships, and airwings.
- Readiness. The ability of forces, units, weapon systems, or equipment to function as intended and to deploy and employ without unacceptable delays. (This includes material readiness, manpower, facilities, and other support.)
- Sustainability. The ability of our forces to continue fighting in the event of a prolonged conventional war. (This includes replacement equipment, spare parts, ammunition, fuel and other essential consumables, and the manpower required to maintain combat strength in the course of a campaign.)
- Modernization. The technical sophistication of forces, units, weapon systems, and equipment. (This includes new or improved technology and replacement equipment.)

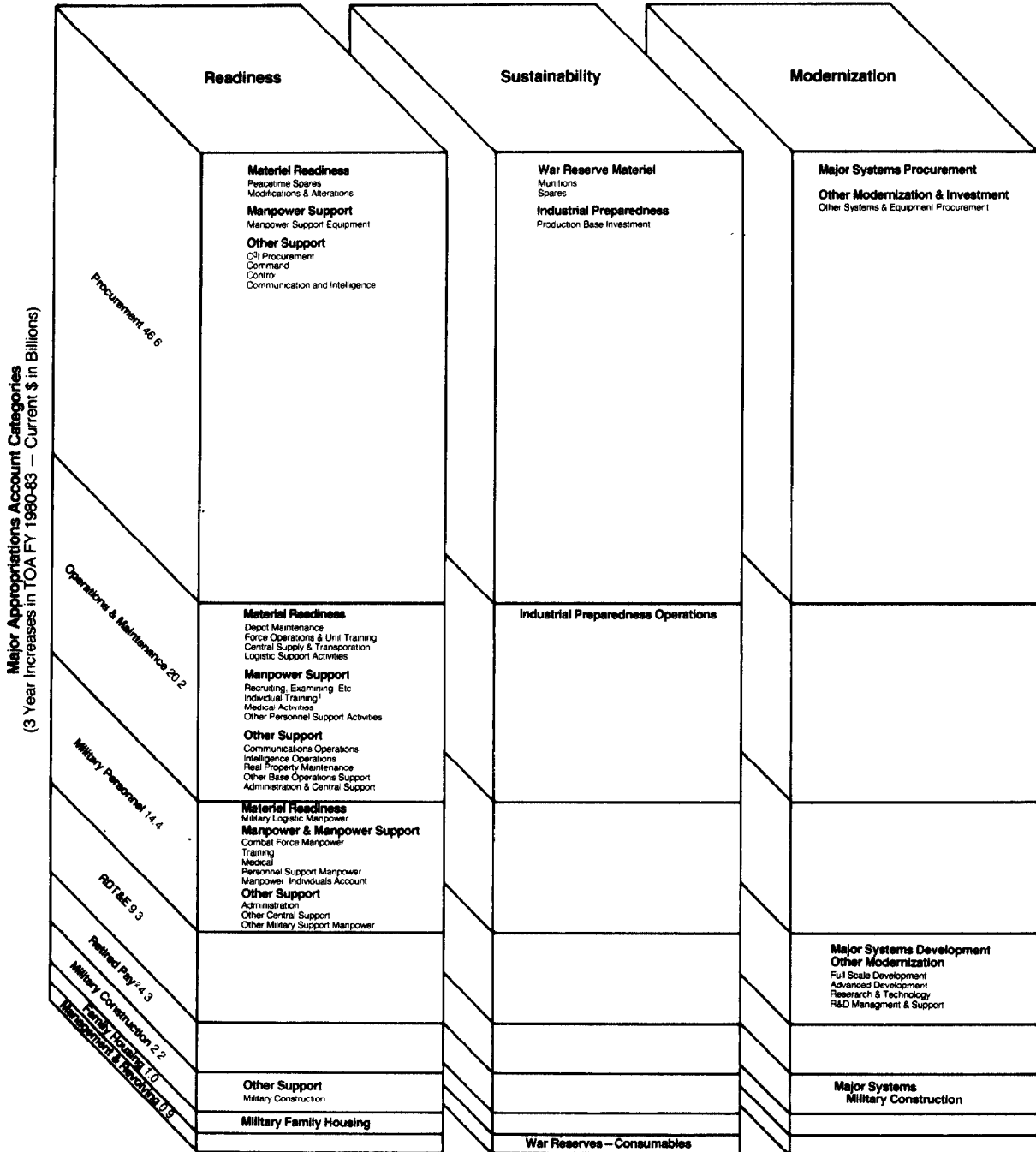
Although DOD has planned for and described accomplishments within the framework of the four pillars, the services do not fully agree on a definition of the pillars, nor are these output categories clearly linked to the funding sources (appropriations amounts) that support them. Opinions differ on how to distribute budget resources among the pillars and on how increases in funding affect accomplishments.

The table on the following page shows one attempt to link budget resources and accomplishments. Program elements contributing to three of the four pillars were identified within resource planning categories. Force structure was excluded because it is not viewed as a mutually exclusive category. (One DOD official suggested that, since force structure cuts across all programs, annual increases or decreases in this fourth pillar could be identified in an ancillary display.) Notice how the procurement budget is split between modernization and materiel and personnel readiness and sustainability needs. Likewise, O&M funds contribute to both readiness and sustainability.

CHART 2

Linking Military Capability to Funding and Planning Structures

Pillars of Military Capability¹



¹Force structure costs are excluded since they are integral to every other category, thus changes in the above 3 pillars may translate into changes in force structure
²Contribution of retired pay to military capability not determined

Defense Missions and Programs

The Department of Defense also has several missions and programs directed at achieving its objectives and strategies:

- Strategic Forces. U.S. strategic programs fall into three categories: offense, defense, and command-control-communications (C3). Offense includes intercontinental ballistic missiles (ICBMs), submarines carrying nuclear missiles, and bombers carrying bombs and missiles. Defense includes air defenses to counter Soviet bombers and cruise missiles, ballistic missile defenses, and civil defense. C3 includes the means of transmitting information on and assessment of a Soviet attack to national command authorities, the means of processing it, and the means of transmitting commands to strategic forces. Often included are satellites, radars, and other devices to provide warning of attack (the combination is then called C3I for C3-intelligence).
- General Purpose Forces. The general purpose forces which deter or counter non-nuclear military aggression include 16 Army divisions, 3 Marine divisions, 3 Marine airwings, 26 wings of Air Force tactical aircraft, and 371 general purpose Naval warships, including 13 aircraft carriers and 13 air carrier wings.
- Intelligence and Communications. This category includes the centralized intelligence and communications activities of the Department of Defense. Intelligence activities consist of the consolidated Cryptologic Program and the General Defense Intelligence Program. Communication activities include the long-haul Defense Communications System, the military services communications systems, satellite communications systems, communications security, communications engineering and installations activities, and the Electromagnetic Compatibility Analysis Center.
- Airlift and Sealift. This category includes the resources for strategic, tactical, and administrative airlift and sealift of passengers and cargo by both military and commercial carriers.
- Guard and Reserve. This category includes the resources to operate, staff, and maintain the services' guard and reserve forces.
- Research and Development. This category focuses on the resources to develop and test new and improved weapon systems in response to changing military requirements, while maintaining a strong research and technology base for longer term weapon applications.

--Central Supply and Maintenance. This category includes the funding for operation of supply depots and centers; inventory control points; centralized procurement offices; military personnel support to Defense Logistics Agency; centralized repair, modification, and overhaul of items of equipment and their components conducted at depots, arsenal, reprocessing facilities, and logistic centers.

--Training, Medical, and General Personnel Activities. This category includes the resources for providing training and medical services for active duty personnel and benefits for retired military personnel.

--Administration and Associated Activities. This category provides for the administrative support of departmental and major administrative headquarters, field commands and administrative activities, construction support activities, and miscellaneous activities not accounted for elsewhere.

--Support of Other Nations. This category consists of elements identified in support of operational logistical, and training support of free world forces, the U.S. share of support to NATO military headquarters and agencies; and operating costs of Military Assistance Advisory Groups and Missions in Europe, the Pacific, the Middle East, and South and Central America.

The ability of the above missions and programs to meet defense policy objectives and strategies depends on the resources contributed by the individual services. Annually, each service plans and programs for the resources that it needs to support the missions and programs. The budget is then priced, and budget amounts are requested of the Congress in terms of the appropriations account categories:

- procurement
- military personnel
- retired military personnel
- research and development
- operations and maintenance
- military construction
- family housing.

The missions and programs are used as activity breakouts in the operations and maintenance, research and development, and, to a limited extent, the procurement appropriations accounts.

The other appropriations accounts (and, to a limited extent, procurement) use other activity break outs.

The Five Year Defense Program

The Five Year Defense Plan Program (FYDP) is used by DOD to price out over 5 years their most current plan. Each year, a new FYDP is prepared which makes specific projections of overall budget growth for the next 5 years. It projects detailed dollar costs 5 years into the future for over 2,000 separate items and activities. The January FYDP is tied to the President's budget request for that year.

GAO Analysis of Five Year Defense Program

The Five Year Defense Program (FYDP) is the official program which summarizes the Secretary of Defense's approved plans and programs for the Department of Defense. The January FYDP reflects the President's new budget request plus the defense plans for the next 4 years. According to Secretary of Defense Caspar W. Weinberger, the FYDP is the "heart" of DOD's planning, programing, and budgeting system. The FYDP is expressed in terms of the total obligational authority (TOA) required for each year of the FYDP.

We reviewed all the historical years of the January (or their equivalent) FYDPs that DOD had in its files as of January 1983. We have been informed by Defense officials that the 1984 FYDP will not be available to GAO until October 1, 1983. The earliest FYDP that DOD had in its files was for 1963.

The 1971 FYDP we obtained is missing the procurement section. All others are complete. At this time, all FYDPs are classified secret or above. This limits the amount of data that can be discussed in an open study. This study contains only unclassified data.

Scope

Our study of the FYDP is looking at four spending levels:

1. DOD--Appropriations accounts categories, i.e., military personnel, O&M, procurement, etc.
2. Service--Appropriations accounts categories, i.e., Army military personnel, active, reserve, national guards, etc.
3. Procurement--Budget activities, i.e. M-60 tank, F-15 aircraft, etc. A profile of the sample is shown in the following table. (For a complete listing of the sample, see appendix III.)

Note: Analysis consisted of quantity and dollars.

TABLE 4
 PROCUREMENT - ANALYSIS BY BUDGET ACTIVITY
 PROFILE OF WEAPONS SAMPLE

<u>Systems</u>	<u>Total consider</u>	<u>Insufficient data available</u>	<u>Sufficient data available</u>	<u>1974 percentage total activity \$ sample covers</u>	<u>1981 percentage total activity \$ sample covers</u>
<u>Army</u>					
Aircraft	8	--	8	60%	52%
Missile	14	1	14	69	57
Track Vehicle	10	--	9	62	81
Other (Comm/Elect)	<u>5</u>	<u>1</u>	<u>4*</u>	<u>3</u>	<u>7</u>
Total	<u>37</u>	<u>2</u>	<u>35</u>	<u>44^a/</u>	<u>50^a/</u>
<u>Navy</u>					
Aircraft	15	1	14	55	49
Missile	14	2	12	40	72
Ships	19	7	12	113	74
Other (Comm/Elect)	<u>3</u>	<u>2</u>	<u>1*</u>	<u>6</u>	<u>--</u>
Total	<u>51</u>	<u>12</u>	<u>39</u>	<u>69^a/</u>	<u>54^a/</u>
<u>Air Force</u>					
Aircraft	19	--	19	80	41
Missile	13	4	9	32	28
Other (Comm/Elect)	<u>3</u>	<u>3</u>	<u>--</u>	<u>--</u>	<u>--</u>
Total	<u>35</u>	<u>7</u>	<u>28</u>	<u>46^a/</u>	<u>31^a/</u>
<u>DOD Total</u>					
Aircraft	42	1	41	67	44
Missile	42	7	35	42	50
Track Vehicle	9	--	9	62	81
Ships	19	7	12	113	74
Other	<u>11</u>	<u>6</u>	<u>5</u>	<u>3</u>	<u>3</u>
Total	<u>123</u>	<u>21</u>	<u>102</u>	<u>58^a/</u>	<u>45^a/</u>

^a/The total procurement account included ammunition dollars. This amount is considered in our total.

NOTE: *Sufficient data available but sample too small to be representative of category.

4. Selected weapons systems life-cycle case studies.

- | | |
|---|----------------------|
| (1) F-4 aircraft | (5) MK-60 captor |
| (2) F-15 aircraft | (6) M-60 tank |
| (3) AGM-65 missile | (7) AH- 1 helicopter |
| (4) FFG-7 class guided
missile frigate | |

We will present selected analyses from this work in the various sections of this study.

The following display from our FYDP analysis shows the variance between projected and actual defense budget totals. To show an unclassified comparison of the FYDP projected TOA to actual, the chart shows the percentage the actual TOA was over or under when compared to the projected TOA. Individual comparisons are discussed in the investment, O&M, and personnel sections which follow.

As we stated earlier, defense policy is translated into defense budget decisions at the micro level, e.g., specific weapons. The rest of this study is broken into the three major appropriations account categories: investment, operations and maintenance, and personnel. Key factors affecting costs in those areas and questions which emerge are presented.

Of the 58.0-billion increase in the investment accounts since fiscal year 1980, \$54.6 billion, or 94 percent of the increase, has been in the Procurement and the RDT&E accounts. At the same time, these two appropriations have more than doubled over the period. In fiscal year 1983, they totaled \$103 billion. In the Procurement accounts, the Navy has received the largest amount of funding in each year since fiscal year 1980 and has also received the largest increase over the period. Within the RDT&E accounts, the Air Force has received the greatest amount of funding in each of the years as well as the largest increase over the period.

Table 6

<u>Total Obligational Authority</u>				
	<u>FY 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>	<u>FY 1983</u>
	-----billions-----			
Procurement:				
Army	\$ 6.5	\$10.5	\$14.2	\$ 15.8
Navy	15.6	20.1	26.7	36.0
Air Force	12.8	16.8	24.0	28.4
DOD agencies	<u>.3</u>	<u>.3</u>	<u>.5</u>	<u>.5</u>
Subtotal	<u>\$35.2</u>	<u>\$47.7</u>	<u>\$65.4</u>	<u>\$ 80.7</u>
RDT&E:				
Army	\$ 2.8	\$ 3.1	\$ 3.6	\$ 3.9
Navy	4.6	5.0	5.8	6.0
Air Force	5.0	7.1	8.9	10.7
DOD agencies	<u>1.1</u>	<u>1.3</u>	<u>1.7</u>	<u>2.1</u>
Subtotal	<u>\$13.5</u>	<u>\$16.5</u>	<u>\$20.0</u>	<u>\$ 22.7</u>
Total	<u>\$48.7</u>	<u>\$64.2</u>	<u>\$85.4</u>	<u>\$103.4</u>

- Source: 1. National Defense Budget Estimates for FY 1983, dated March 1982.
 2. DOD Financial Summary Tables for FY 1984, dated January 31, 1983.

SECTION III

DISCUSSION ON INVESTMENT

Four major appropriations titles constitute the Department of Defense investment accounts: Procurement; Research, Development, Test and Evaluation (RDT&E); Military Construction; and Family Housing. In the recent buildup, these accounts have budgeted for the largest increase in TOA and as a percentage of the DOD budget. In fiscal year 1980, these four accounts totaled \$52.6 billion. In fiscal year 1983, they received \$110.6 billion, an increase of \$58.0 billion (110 percent) since 1980. The chart below shows TOA and outlays for the investment accounts.

Table 5
DOD Investment Accounts

	<u>Total Obligational Authority</u>			
	<u>FY 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>	<u>FY 1983</u>
	------(billions)-----			
Procurement	\$ 35.3	\$ 47.7	\$ 65.4	\$ 80.7
Research, Development, Test & Evaluation (RDT&E)	13.5	16.5	20.0	22.7
Military Construction	2.3	3.4	5.1	4.6
Family Housing	<u>1.5</u>	<u>2.0</u>	<u>2.3</u>	<u>2.6</u>
Total	<u>\$ 52.6</u>	<u>\$ 69.6</u>	<u>\$ 92.8</u>	<u>\$110.6</u>

Note: Totals may not add up due to rounding.

Outlays

	FY 80	FY 81	FY 82	FY 83
	(billions)			
Procurement	\$29.0	\$35.2	\$43.3	\$55.2
RDT&E	13.1	15.3	17.7	21.4
Military Construction	2.4	2.5	2.5	4.1
Family Housing	<u>1.7</u>	<u>1.7</u>	<u>2.0</u>	<u>2.4</u>
Total	<u>\$46.3</u>	<u>\$54.7</u>	<u>\$65.9</u>	<u>\$83.1</u>

Source: 1. National Defense Budget Estimates for FY 1983, dated March 1982.

2. DOD Financial Summary Tables for FY 1984, dated January 31, 1983.

Table 7
Production of Selected
Weapons 1974-82 ^{1/}

<u>Category</u>	<u>Soviet Union</u>	<u>U. S.</u>	<u>Soviet to U.S. Ratio</u>	<u>Non-Soviet Warsaw Pact</u>	<u>Non-U.S. NATO</u>	<u>Pact to NATO Ratio</u>
Tanks	17,350	6,400	2.7:1	3,450	2,600	2.3:1
Other Armored Vehicles ^{2/}	36,650	4,800	7.6:1	9,100	10,300	3.0:1
Artillery and Rocket Launchers	13,350	350	38.1:1	1,300	700	14.0:1
Tactical Combat Aircraft ^{3/}	6,100	3,050	2.0:1	800	2,650	1.2:1
Intercontinental Ballistic Missiles	2,035	346	5.9:1	--	--	--
Major Surface Warships	85	72	1.2:1	10	79	0.6:1
Attack Submarines	61	27	2.3:1	--	33	1.0:1
Ballistic Missile Submarines	33	2	16.5:1	--	3	6.6:1
Theater Nuclear Missiles ^{4/}	5,850	3,550	1.6:1	--	1,450	1.2:1

^{1/}Totals represent that portion of a nation's production earmarked for its own military services plus imports and excludes production for export.

^{2/}Includes light tanks; armored personnel carriers; infantry fighting vehicles; reconnaissance, fire support, and air defense vehicles.

^{3/}Includes fighter, attack, reconnaissance, electronic warfare, and all combat-capable tactical training aircraft.

^{4/}Includes ground- and sea-launched missiles. Also intermediate- and medium-range ballistic missiles.

Source: FY 84 DOD Annual Report to the Congress.

Why Do We Acquire New Investments?

As stated earlier, the current U.S. defense policy is to protect America's people, its institutions, its lands, and its allies from foreign aggression.

One of the major ways the threat is presented is by comparing U.S. - U.S.S.R. and NATO-Warsaw Pact military capabilities, i.e., what weapon systems their military investment has allowed each side to produce. DOD says, for example, that an alliance-to-alliance comparison of weapons production for the last 9 years shows 2,000 ICBMs for the Warsaw Pact versus 350 for NATO; nearly 67,000 Pact tanks and other armored vehicles versus 24,000 for NATO and 6,900 Pact tactical combat aircraft versus 5,700 for NATO. DOD says the Soviet Union and the Warsaw Pact have outproduced the West in every category of major weapons except general purpose naval warships: 211 NATO surface combatants and attack submarines versus 156 for the Pact. These presentations of the threat versus our capabilities, as we pointed out earlier, are subject to interpretation.

The following table shows this type of analysis.

Note: The critics who say, for example, that a more relevant comparison would be tanks versus antitank weapons do not agree fully with this analysis.

Our treaties with other nations comprise another factor in determining the size and type of investment Defense will make. (A DOD map illustrating this is shown in Appendix II.) The United States has defense treaties all over the world which commit it to assist these nations when called. The threat and our treaties are translated into decisions about overcoming the threat and modernizing our forces. Current defense plans invest heavily in developing and procuring new weapons systems and modernizing current systems.

The Navy's modernization plan also consists of many major systems other than ships. The following chart demonstrates the current administration's emphasis on modernizing the Navy.

Current Force Restructuring Plans

Naval

The centerpiece of Defense's plan is to expand to a 600-ship fleet to diversify its global combat power. Defense has set the following force structure goals for combatants:

- 15 carrier battle groups
- 4 battleship-led surface groups
- 17 other surface groups
- 100 attack submarines
- 31 oceangoing mine warfare ships
- capacity to sealift a marine division.

The chart below displays the number of combatants needed to meet the force structure goals. The chart compares this projected force to the Navy's actual combatant strength in Fiscal year 1963, 1973, and 1981. These projections were made in a March 1982 Congressional Budget Office (CBO) study. (A detailed listing on future ship acquisitions can be found in the O&M section.)

Table 8

	Needed to Meet Force Goals	Actual			Projected		
		FY 63	FY 73	FY 81	Opt. I FY92	Opt. II FY92	Opt. III FY92
Aircraft carriers	15	24	16	12	15	15	15
Battleships	4	--	--	--	4	4	4
Cruisers and destroyers	137	240	137	112	134	120	107
Frigates	101	40	67	81	113	113	113
Attack submarines	100	107	84	91	100	100	95
Amphibious warfare	75	134	66	65	75	74	68
Mine warfare	31	87	35	25	31	31	19
	<u>463</u>	<u>632</u>	<u>405</u>	<u>386</u>	<u>472</u>	<u>457</u>	<u>420</u>

Sources: DOD Defense Management Summary (U); Building a 600-ship Navy: Costs, Timing, and Alternative Approaches (CBO, March 1982).

Table 9 (Continued)

<u>Category</u>	<u>Fiscal year</u>			<u>Total</u>
	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1981-1983</u>
Weapons:				
Phalanx (Close-in Weapons System)	52	49	39	140
M-46 Torpedo	253	253	440	946
M-48 Torpedo	100	144	96	340
M-60 Captor Mine	280	400	500	1,180
Light Armored Vehicle	--	60	134	194
Landing Vehicle Tracked	--	34	140	174
Total	685	940	1,349	2,974
Shipbuilding and Conversion:				
CG-47 Aegis Cruiser	2	3	3	8
CV Life Extension	1	--	1	2
BB Reactivation	--	1	1	2
CVN Nuclear Aircraft Carrier	--	--	2	2
FFG Guided Missile Frigate	6	3	2	11
SSN-688 Attack Submarine	2	2	2	6
Trident Submarine	1	--	1	2
LSD-41 Landing Ship Deck	1	1	1	3
ARS Salvage	1	2	1	4
MCM Mine Countermeasures Ship	--	1	4	5
T-AO Oiler	--	1	1	2
TAGOS	5	4	--	9
TAHX Hospital Ship	--	--	1	1
TAKRX Fast Logistics Ships	--	4	--	4
TAK Resupply	1	--	--	1
TAKX, Maritime Prepo Ship	--	--	--	--
TAH (Conv.)	--	--	--	--
T-AFS Lyness (Conv.)	--	--	--	--
Total	20	22	20	62

SOURCE: GAO developed from DOD P-1 (procurement annex) to the President's Budget, 1981, 1982, and 1983.

Table 9

DEPARTMENT OF NAVY				
MAJOR SYSTEMS EITHER PROPOSED OR UNDER CONTRACT				
BY FISCAL YEAR FUNDING				
Category	Fiscal year			Total 1981-1983
	1981	1982	1983	
Aircraft:				
A-6E	12	12	8	32
AV-8B	--	12	21	33
F-14A	30	30	24	84
F/A-18	60	63	84	207
C-9B	2	--	--	2
C-2	--	--	8	8
CH-53E	14	14	11	39
E-2C	6	6	6	18
EA 6B	6	6	6	18
EC-130Q	1	2	--	3
P-3C	12	12	6	30
SH-60B Lamps	--	18	27	45
SH-2F	--	18	18	36
T-34C	60	60	30	150
TH-57 Sea Ranger	32	30	21	83
Total	235	283	270	788
Missiles:				
Trident	72	72	60	210
HARM	80	118	208	406
LASER				
Maverick	--	--	90	90
Phoenix	210	72	108	390
Sidewinder	220	700	500	1,420
Sparrow	625	585	670	1,880
Harpoon	240	240	231	711
Standard Missile (ER)-2	275	375	375	1,025
Standard Missile (MR)-1	500	600	650	1,750
Standard Missile (MR)-2	70	120	150	340
Tomahawk	50	88	120	258
Stinger	271	488	1,560	2,319
TOW	--	2,666	1,000	3,666
HAWK	--	388	213	601
Total	2,613	6,512	5,941	15,066

Table 12

<u>Department of the Army</u>				
<u>Major systems under contract by fiscal year funding</u>				
<u>Category</u>	<u>Fiscal year</u>			<u>Total</u>
	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1981-83</u>
Aircraft:				
AH-1S	15	12	11	38
AH-64	-	11	48	59
C-12	6	6	6	18
UH-60				
Black-hawk	80	96	96	272
Total	101	125	161	387
Tracked vehicles:				
IFV/CFV	400	600	600	1,600
M-1	569	665	855	2,089
DIVAD	-	50	96	146
M-88 Recovery vehicle	166	150	180	496
M-113 Armored personnel carrier	-	-	520	520
Total	1,135	1,465	2,251	4,851
Missiles:				
Hellfire	-	680	3,971	4,651
Patriot	130	176	310	616
Multiple Rocket System	2,240	2,496	23,640	28,476
Pershing II	-	21	-	21
Stinger	1,144	2,544	2,256	5,944
TOW anti-tank	12,000	12,000	12,000	36,000
Roland	110	-	-	110
Total	<u>15,724</u>	<u>17,917</u>	<u>42,117</u>	<u>75,818</u>

Source: GAO developed from DOD P-1 (procurement annex) to the President's Budget, 1981, 1982, & 1983.

Ground Forces

The Army plans to reorganize its forces by 1990 and simultaneously field an entirely new generation of weapons and other hardware. The movement is toward fighting organizations that are larger, of heavier firepower, and more centralized points of command and control. Division size will expand from the current 17,000 troops to 20,000 or more.

The table below shows the key changes. The division will grow much heavier in logistics. According to DOD, the M-1 tank will require a doubling of daily fuel supplies and need increased logistics support over the current M-60A1 and A3. This impact will be felt in the need for increased O&M outlays as discussed in the O&M section.

Table 10

Battalions	1965	1970	1975	1980*	1990*
Armor	50	46	45	50	54
Armored Cavalry	27	33	19	20	24
					12**
Infantry (regular)	34	73	36	40	32
Infantry (mechanized)	63	61	48	55	46
Infantry (other)	31	31	32	30	25
Artillery (field)	147	180	96	105	138
Artillery (anti-aircraft)	<u>67</u>	<u>56</u>	<u>38</u>	<u>40</u>	<u>46</u>
Total***	419	480	314	340	377

*1980 estimates based on building program of late 1970s. 1990 estimates derived from published descriptions of planning for Army 90 (which are subject to change). A few independent battalions may not be included.

**These are a new battalion type, the "mobile protected gun" battalion, which resembles a light tank destroyer.

***Attack helicopter battalions are omitted, since 1965-80 counts were not discernible. Army 90 envisions about 48 battalions.

To achieve this plan, systems in production are being procured at faster rates, and new systems are being procured where development efforts were sufficiently advanced to allow a rapid transition to production.

Four new systems--the AH-64 helicopter, the Division Air Defense (DIVAD) gun, the Hellfire missile, and the Pershing II missile--are currently moving into production.

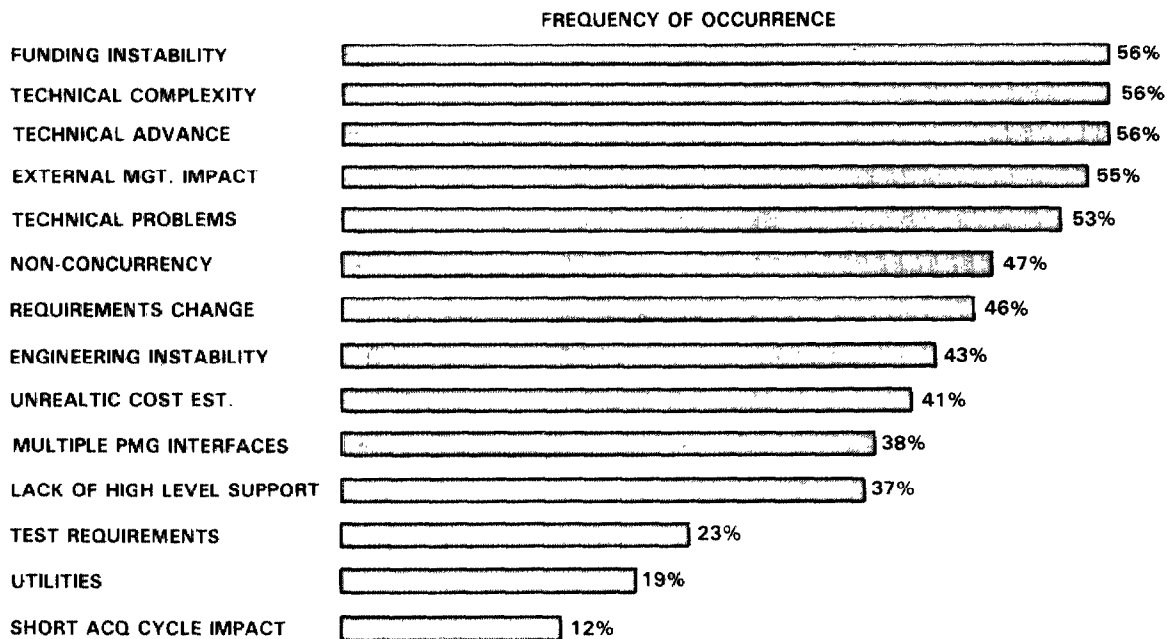
Restructuring the Forces

Because of proposed defense procurement is expanding, the Congress is looking carefully at the persistent problem of weapon system cost growth. Although this is not a new problem, it became more visible due to the high inflation rates of the 1970's and early 1980's, which were greater for many types of defense systems than for the economy as a whole. Other factors which have been identified as contributing to cost growth are as follows:

- inflation estimates
- cost estimates
- specifically high-risk system design
- program stretch-out
- changes in specifications
- budgeting for future cost
- leadtimes
- competition
- defense industrial base.

The following table shows cost and scheduling growth factors as determined by the Air Force in an Affordable Acquisition Approach report.

**TABLE 14
COST AND SCHEDULE GROWTH FACTORS**



SOURCE: AIR FORCE A³ REPORT "AFFORDABLE, ACQUISITION, APPROACH

Air Force

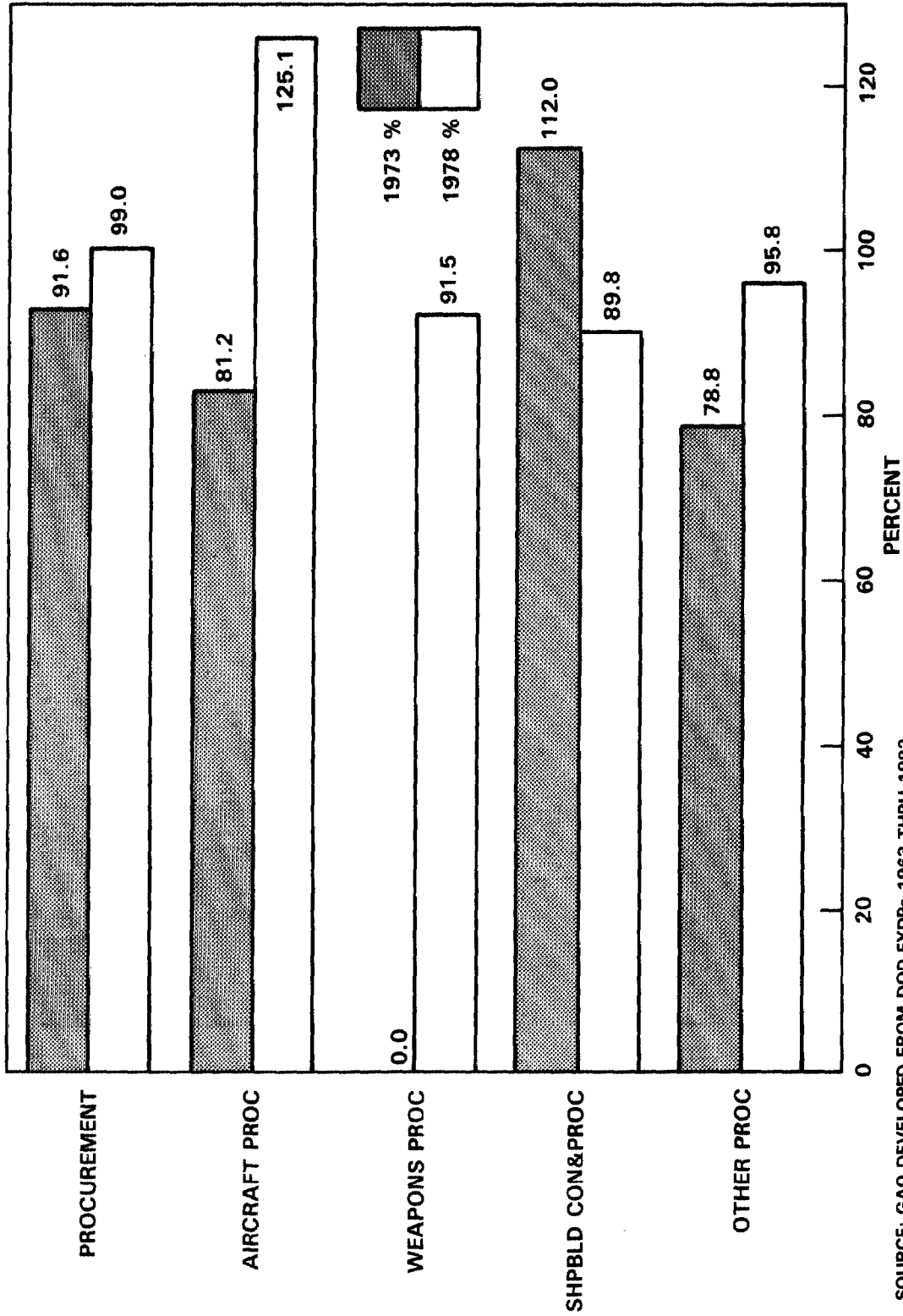
The Air Force's will increase the number of tactical aircraft between 1980 and 1986. This is demonstrated by the following procurement actions during fiscal years 1981, 1982, and 1983.

Table 13

<u>DEPARTMENT OF AIR FORCE</u>				
<u>MAJOR STUDIES EITHER PROPOSED OR UNDER CONTRACT</u>				
<u>BY FISCAL YEAR FUNDING</u>				
<u>Category</u>	<u>Fiscal Year</u>			<u>Total 1981-1983</u>
	<u>1981</u>	<u>1982</u>	<u>1983</u>	
Aircraft:				
A-10	60	20	20	100
B-1B	--	1	7	8
F-15	42	36	39	117
F-16	180	120	120	420
A-7k	6	--	--	6
KC-10A	6	6	8	20
C-5	--	--	2	2
TR-1	5	5	4	13
E-3A	2	2	2	6
UH-60	6	6	--	11
F-5F	--	3	3	6
Total	<u>305</u>	<u>199</u>	<u>205</u>	<u>709</u>
Missiles:				
ALCM	480	440	330	1,250
MX	--	--	--	--
GLCM	11	54	120	185
HARM	--	136	120	256
IR Maverick	--	490	2,560	3,050
Sidewinder	1,280	1,800	1,920	5,000
Sparrow	1,050	1,025	1,300	3,375
Total	<u>2,821</u>	<u>3,945</u>	<u>6,350</u>	<u>13,116</u>

Source: GAO developed data from DOD P-1 (procurement annex) to the President's Budget, 1981, 1982, 1983.

CHART 8
NAVY TOTAL ACTUAL OBLIGATIONAL AUTHORITY FOR PROCUREMENT
AS A PERCENT OF FIVE YEAR DEFENSE PROGRAM
PROJECTIONS (CURRENT \$)



Inflation Estimates

Historically, inflation forecasts in the Five Year Defense Program have been optimistic by predicting less inflation in the outyears, when, in fact, the rate of inflation has increased in most recent years through 1981. In 1982, the inflation rate dropped and, as a result, defense dollars acquired more real purchasing power. Reaching long-term readiness and modernization goals depends, in part, on whether lower inflation can be sustained in future years.

Table 15

<u>Estimated Versus Actual Inflation Rates</u>										
Five-Year Defense Program Forecast	Fiscal year									
	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Jan. 1979	7.1	6.4	5.8	5.0	4.2	3.5				
Jan. 1980		8.6	8.4	8.6	7.7	7.0	6.5			
Jan. 1981			11.8	9.5	9.1	8.0	7.3	6.6		
Mar. 1981				9.7	7.5	6.5	5.8	5.3		
Jan. 1982					6.9	5.9	5.5	5.1	5.0	
Jan. 1983						3.6	6.1	5.2	5.0	5.0
Actual Rate	7.5	11.3	12.9	8.9 ^a /4.4	n/a	n/a	n/a	n/a	n/a	n/a

^a/Jan. 1983 reestimate

Source: DOD budget records and DRI actual inflation report for 1983.

quantities projected in the 1966, 1967, 1968, and 1969 FYDPs. In the 1970's, they exceeded their projections only in the 1970 and 1972 FYDPs. (See chart 5.)

A similar trend exists in projecting the number of aircraft. When looking at the total 5-year actual compared to the FYDP projections, one sees that actual exceeded projected except in the 1970 FYDP. (See chart 6.)

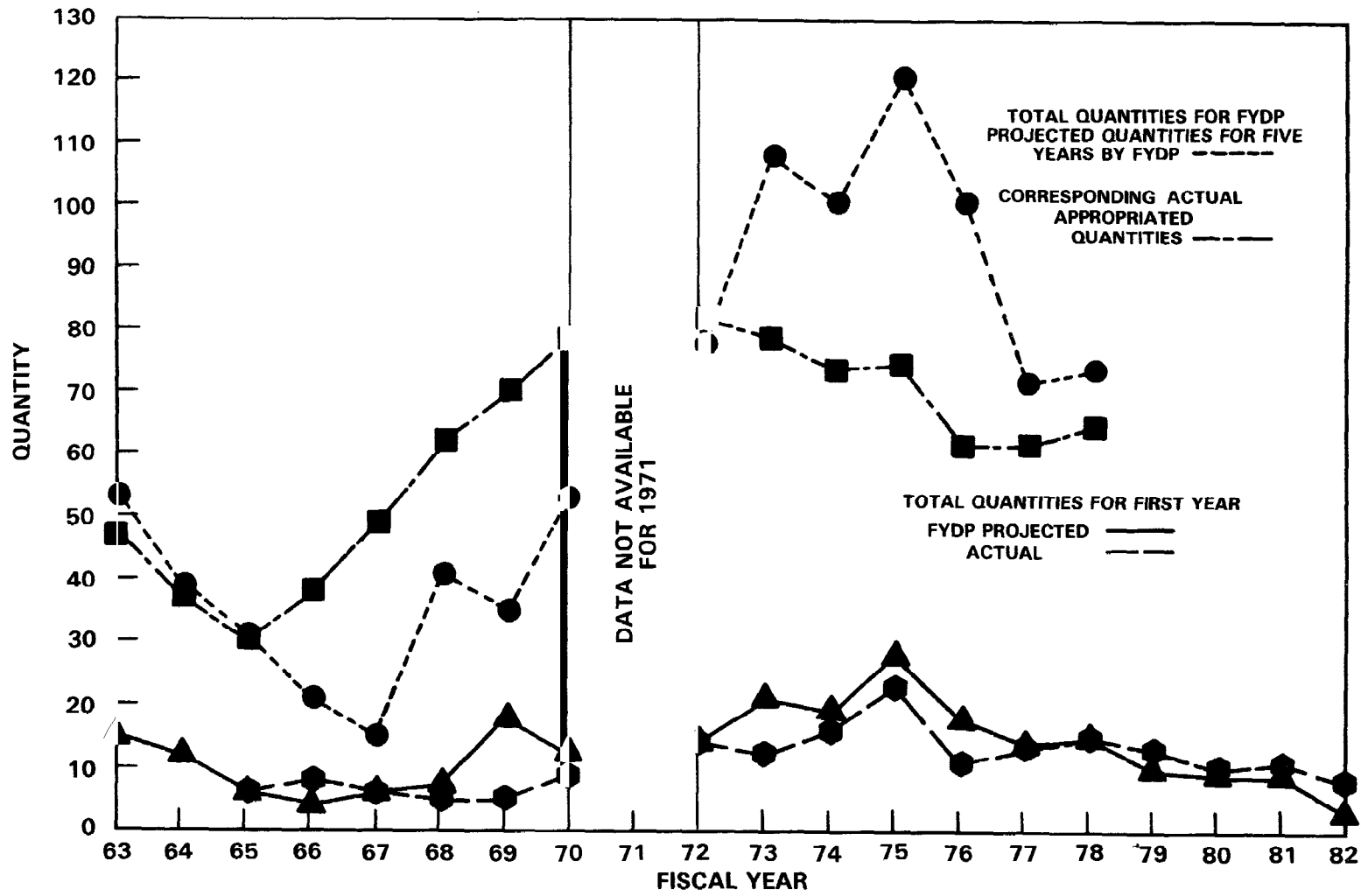
A look at the Navy's actual appropriated TOA for procurement for the FYDP periods 1973 and 1978 (see charts 7 and 8) shows what percentage the actual appropriated TOA is of the projected TOA for this period.

Modifications May Increase Costs

Weapon system modifications result from changing the definition of a system's operational requirements. This happens for a variety of reasons, such as to meet an increasing threat or to improve the system. Operational requirements designated for a weapon system are those approved characteristics considered necessary for that system to meet a needed defense capability. These requirements are often defined before beginning development work but frequently may be modified due to test results or from the need to extend the operational life of current systems. In a number of instances, per-unit costs and technical risks have increased as a consequence of modifying the design or questioning the system's precise role or proposed requirements. This process has affected prior and current weapon systems, and has, in some instances, reduced weapons procured below anticipated levels because of the increased per-unit cost and consequent budgetary pressure. In certain cases, modifying a weapon system has increased technical risks and has reduced the number of weapons deployed.

The trend for modifications to increase the cost of weapon systems is a direct consequence of technology improvements which upgrade and improve the system's capacity to meet redefined mission objectives. Examples of modifications include the M-60 tank, the AH-1 helicopter, the Maverick missile, the F-15 and F-4 fighters, and the FFG-7 warship. For example, the unit costs of the M-60 tank steadily increased from fiscal year 1962 through fiscal year 1981, doubling during the 1970's. In fiscal year 1982 dollars, the unit cost of the basic M-60 was \$580,000 compared with \$1,292,000 for the M60A3. The increase in cost of the later M-60 series models is attributed to new technology product improvements. The following chart displays the evaluation of the M60 series tank, improvements added, and their representative unit costs.

CHART 5
SHIP PROCUREMENT HISTORY 1963-1982 QUANTITIES
YEAR 1 AND YEARS 1-5 PROJECTED COMPARED TO
YEAR 1 AND YEARS 1-5 ACTUAL



SOURCE: GAO DEVELOPED FROM DOD FYDPs 1963 THRU 1982.

increased because of inflation and the inclusion of added capabilities. The cost variance of \$120 million over planned cost, according to our analysis, could be accounted for as follows:

--Underestimated inflation.	\$ 67 million
--Training hardware not planned for.	7 million
--Change in Cost Accounting Rule 410 allowing higher overhead rate charged by contractor.	5 million
--Reduced aircraft quantity by eight.	(7) million
--Added requirements not originally planned for, e.g., new cockpit and canopy, improved main rotor blade, fire control system, and survivability equipment.	48 million

SOURCE: GAO developed using Army AH-1 Helicopter Program Manager's records, data confirmed by Program Manager.

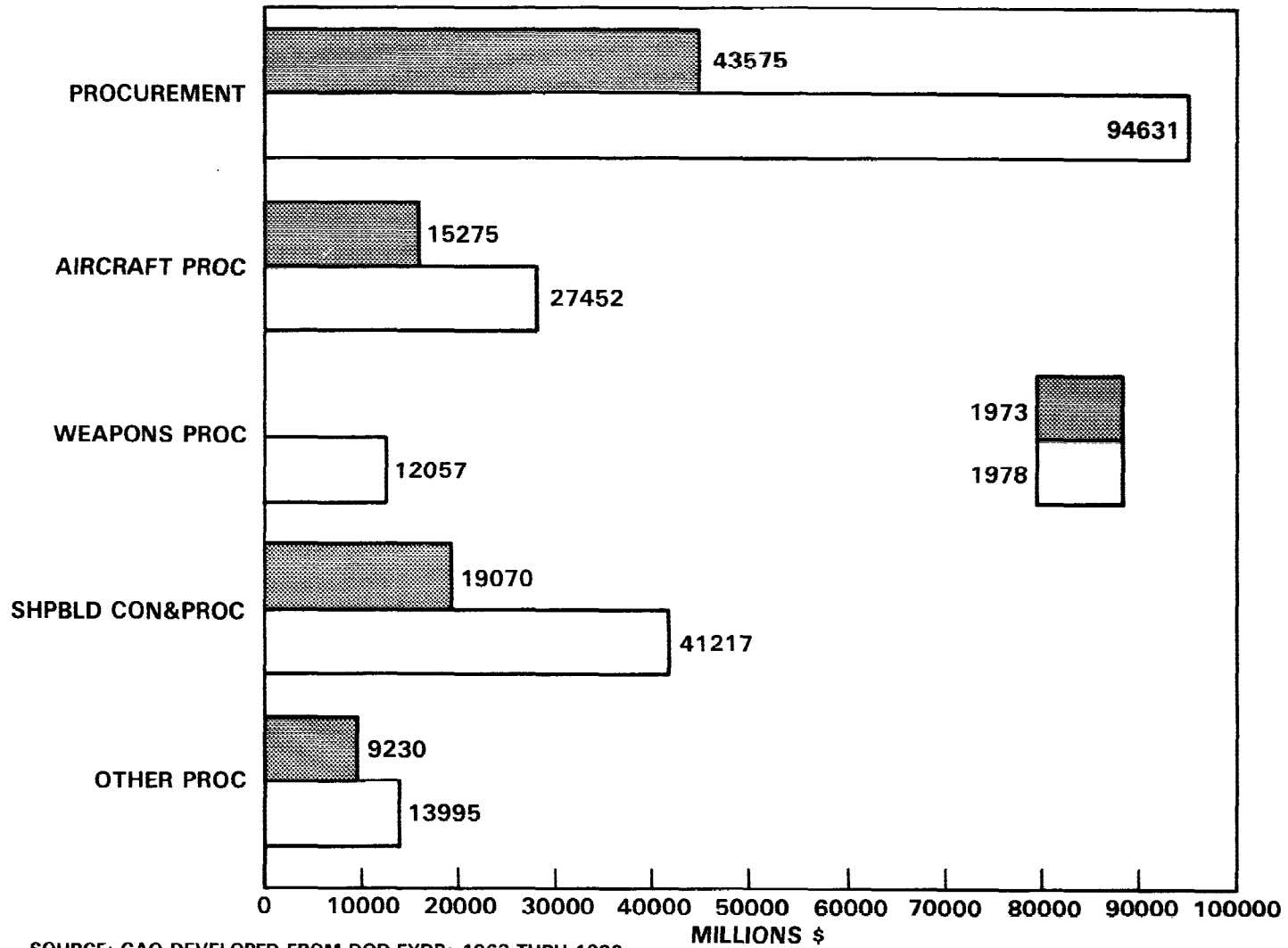
Weapon system modifications may also increase the technological risks associated with deployed systems and may reduce the numbers procured. Examples of weapon systems where modification increased the technical risks include the M60 program and the AH-64 helicopter. The M-60-42 program was initiated on a "crash basis" to field a missile-firing tank using a newly designed turret. However, it proved unsatisfactory because of durability, reliability, and maintainability problems. The prior decision to modify the M-60-A1 and field the M-60A2 reduced M-60A1 procurements as the Army struggled with technical problems in producing 540 M60A2 tanks during this period. The unit cost for the M60 A2, including retrofit costs, eventually amounted to \$2,067 million (fiscal year 1982 constant dollar) per tank. This makes the M-60A2 the most expensive tank the Army has ever bought.

A more recent example of technical risk includes the decision to fit the AH-64 helicopters with the target acquisition designation sight and an upgraded engine to provide it with additional mission capability. The configuration of these two subsystems does not represent the final production design, and performance and reliability characteristics will not be known until the subsystem configurations are adequately tested and evaluated.

Program Stretch-Out

DOD funded selected major weapon systems in an effort to modernize the services. DOD did this with two objectives in mind: to increase the quantity procured and to decrease the cost per item procured.

CHART 7
NAVY ACTUAL TOTAL OBLIGATIONAL AUTHORITY FOR PROCUREMENT
FOR SELECTED FIVE YEAR PERIODS
(CURRENT DOLLARS)



SOURCE: GAO DEVELOPED FROM DOD FYDPs 1963 THRU 1982.

CHART 9

Program	Cost Growth as % of Real Dollar D.E. ¹					Percent Current Program Completed ⁵		Procurement Unit Costs ⁶ (\$ in K, M and B)					
	Base Year	Actual to Date (C.E. ¹)				Total ⁴	Approp'd Spending	Quantity Procured	Future Projected Average	Estimate for FY83	% Growth Projected (over FY83)	Quantity	
		Originally Projected Inflation	Inflation	Program Changes ²	P.C.R. ³ Escalation							D.E. ¹	C.E. ¹
		1	2	3	4							5	6
Hellfire	75	45	85	81	136	303	22	3	42K	67K	-37	24,841	35,985
Patriot (FCS)	72	24	76	11	80	167	32	22	90.6M	73.4M	23	240	108
UH-60A	71	19	127	24	147	298	36	40	7.6M	6.1M	25	1,123	1,117
AH-64	72	100	155	31	108	293	24	4	11.8M	20.1M	-41	545	455
FVS	72	53	220	713	1790	2722	20	16	1.86M	1.68M	11	1,205	6,903
M-1 Tank	72	100	187	140	389	716	27	23	2.53M	2.68M	-6	3,325	7,071
Copperhead	75	47	60	5	27	92	34	20	31K	24K	29*	133,058	44,986
DIVAD Gun	78	44	54	5	32	92	19	9	5.7M	7.76M	-27	622	622
MLRS	78	55	90	-2	-3	85	17	36	NA**	6.17M	NA**	183	343
F-14	69	14	43	148	374	565	31	57	69.7M	49.1M	42	469	845
F-18	75	61	192	77	127	395	21	12	25.1M	33.9M	-26	811	1,377
CAPTOR	71	9	53	123	243	418	40	38	370K	319K	6	6,077	4,197
AIM-9M	76	86	108	20	26	154	28	19	76K	86K	-12	4,089	5,327
AIM-7M	78	41	72	16	29	117	26	18	163K	202K	-19	7,349	7,384
Harpoon	70	30	71	70	200	341	46	53	1.17M	1.15M	43	2,922	3,405
Tomahawk	77	34	41	189	322	552	14	5	5.16M	3.62M	5	1,163	4,068
Trident	74	10	58	31	62	152	61	60	1.94B	1.68B	-2***	10	15
SSN-688	71	12	62	80	232	373	48	70	729M	743M***	20	32	56
CG-47	78	56	84	57	65	206	25	29	1.26B	1.05B	21	16	24
FFG-7	73	24	138	111	192	442	63	80	453M	375M	-4	50	60
F-15	70	23	84	125	368	577	34	52	38.4M	40M	36	749	1,415
F-16	75	38	141	268	450	859	24	37	25.3M	18.6M	13	658	1,997
AIM-9M	76	83	88	71	76	235	50	44	68K	60K	-9	3,430	7,060
AIM-7M	78	30	4	231	273	507	29	23	145K	160K	78	3,790	10,635
E-3A	70	24	52	40	100	192	64	70	157M	88.4M	0	42	46
EF-111A	73	53	89	69	98	256	73	79	23M	23M	14	42	42
ALCM	77	34	67	45	60	172	35	28	1.67M	1.47M	13	3,459	4,372
GLCM	77	45	89	85	86	260	24	12	4.99M	4.42M		702	565

¹Development Estimate (DE) as of the Base Year; Current Estimate (CE) as of June 30, 1982.

²The real dollar costs of program changes.

³Program Change Related (PCR) Escalation denotes the inflation costs of program changes measured at the time any change is implemented.

⁴Totals do not reflect rounding in Columns 2 to 4.

⁵Appropriated Spending and Quantity Procured (of C.E.) as of June 30, 1982.

⁶Derived from SAR program cost and quantity figures (June 30, 1982), includes advanced procurement, development and any other costs peculiar to program.

*Cancelled by Congress in August 1982.

**Impossible to determine future unit costs because system includes both vehicle launcher (of which 36 percent were procured) and missiles (of which less than 2 percent were procured as of June 30, 1982).

***This single estimate is taken from the SAR of December 31, 1981, as adjusted by the Navy for advanced procurement. The FY83 estimate in the SAR of June 30, 1982, was \$866 million, a jump that may be due to funds for the Vertical Launch System.

Source: Agenda '83 by The Heritage Foundation

Cost Estimates

The explanation usually offered for cost escalation is inflation. Inflation as addressed above is a serious problem, but inflation is not the central cause of cost escalation. A large portion of the cost escalation is due to

- The policy of focusing almost exclusively on the high end of all complex weapons, and
- estimating for costs.

Complexity inherently magnifies most problems involved in budgeting:

- Estimating costs becomes harder.
- Engineering and support changes are increasingly needed to ensure system performance.
- Production increases are more costly.
- Quantity increases are likely.
- Unit costs rise further.

Aside from system design characteristics, budgeting practices are unrealistic in their attempts to plan for and manage cost escalation. Cost projections are consistently understated. During a program's acquisition, limited reference is made to the actual cost escalation experience of other similar programs. Even the program's own history of cost change is seldom taken as a guide. Finally, defense budgets are assumed to increase at steady rates, which has not been the case.

Unrealistic cost and budget projections result in an upward pressure on budgets from ongoing programs. Moreover, the overall budget gets more pressure every time a new program is added.

One way to show the effect of cost increases on defense acquisition efforts is to contrast each year's actual budget request with the quantity forecast to be procured that year in prior FYDPs. A look at the historical 5-year defense program generally shows that DOD projects a larger TOA than is actually appropriated in the procurement accounts. The exception is the 1974 and the 1975 FYDP. Those underprojections occurred when additional money was spent to replace equipment left in Vietnam or shipped to Israel. (See chart 4.)

The procurement history of ships shows that Defense is fairly accurate in projecting quantities in the first year or budget year of the FYDP but in reviewing the 5 years of a FYDP, a large gap appears between what is projected and what is actually appropriated. In the 1960's, the Navy exceeded the

He spoke of the increase in production time for his own company's military jet engines, which in 1978 took 19 months between order and delivery, but by 1980 required 41 months. General Alton D. Slay, Commander of the Air Force Systems Command, cited other examples. He noted that the leadtime for the procurement of large steel forgings had increased in the last 2 years from 36 weeks to 82 weeks and for the procurement of large titanium forgings from 38 weeks to 119 weeks. In another illustration, General Slay said that the leadtime for integrated circuits had stretched from 26 weeks to 56 weeks. A major consequence of delayed production schedules caused by long leadtimes, he pointed out, has sharply increased costs. Some analysts argue that these problems are natural results of a peacetime procurement policy, which stresses increasing sophistication of the products and lower production rates. Others, however, suggest that they reflect significant deterioration in industrial base capacity.

Quality/Reliability

A third major symptom of defense industrial unpreparedness often cited is widespread quality and reliability problems. Critics point to frequent reports in newspapers and congressional hearings about such things as defective gas-turbine engine parts, tubing, engine bearings and traces, and aircraft structure.

The Trident contract with General Dynamics' Electric Boat Company is one of the most dramatic stories of this kind in recent times. In March 1981, Secretary of the Navy John F. Lehman threatened to cancel plans to purchase 19 Trident submarines from that defense contractor. The workmanship on the nuclear submarines has been a frequent target of criticism by Navy inspectors. Because of a breakdown in quality control, welds have had to be replaced, the wrong variety of steel was used in places, and a faulty turbine had to be removed and replaced at great expense. Indeed, the Trident project appears to demonstrate all three categories of symptoms mentioned above: delay, severe cost overruns, and poor workmanship. One question is whether examples, such as the Trident contract, reflect problems throughout the defense industrial base or only in special components of it. A second question is whether such examples reflect problems deriving from increasing product complexity and declining production rates or from a deteriorating capacity to control quality in defense industries.

Macro analyses conducted regularly by DRI look at the industrial capacity. The charts below show this type of analyses and examine industrial production, capacity utilization, and inflation.

Table 16

<u>M60 SERIES TANK EVOLUTION</u>	
M60+ Commander's and Gunneic Passive Sight-1977	(FY82 Constant \$)
M60 - 1962	\$ 580,000
M60A1 + Improved Turrest-1963	\$ 564,000 ^{3/}
M60A1 (AOS) + Top-Loading Air Cleaner-1971 + Add-On Stabilization (AOS)-1972 + Improved Track-1974	\$ 657,000
M60A1 (RISE) + Reliability Improved Engine (RISE)-1975 + Improved Electrical System-1975	\$ 854,000
M60A1 (RISE) (PASSIVE) + Commander's and Gunneic Passive Sight-1977 + Driver's Viewer-1977 + Deep Water Fording Kit-1977 + Smoke Grenade Launcher-1978 + Coaxial Machine Gun, M2YO-1978 + Engine Smoke Generator-1980	\$ 946,000
M60A3 + Laser Range Finder-1978 + Solid State computer-1978	\$1,124,000
M60A3 M60A3	
M60A3 (TTS) + Tank Thermal Sight-1979	\$1,292,000

SOURCE: GAO developed using Army M-60 Tank Program Manager's records, data confirmed by Program Manager.

In addition, cost growth due to technological improvements can be further illustrated by comparing the unit costs of the latest model M60 and the new M1 tank. For example, the fiscal year 1983 unit cost of the M1 tank is \$1,460,000, compared with \$1,393,000 for the latest M60A3 tank, according to Army research.

The effect of technological modifications can also be illustrated by the AH-1 helicopter, which was upgraded to meet the threat of the European Theatre. The unit cost of the AH-1G, both in current dollars and constant 1982 dollars, decreased steadily from fiscal year 1966 to fiscal year 1970 and then increased slightly in fiscal year 1971. The cost of the AH-1s

Chart 12

IMPLICATIONS FOR INFLATION
(Annual Percentage Rates of Change)

	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
All Commodities	9.1	2.4	6.1	9.2	12.2	11.9	10.2
Industrial Commodities	10.7	2.8	6.3	9.5	12.6	12.2	10.4
Industrial Commodities Except Energy	8.0	3.6	5.9	9.2	12.2	11.9	9.3
Crude Materials	8.0	-0.1	6.6	8.8	12.1	11.4	11.0
Intrmediate Goods	9.2	2.2	6.2	9.8	13.3	12.4	10.2
Finished Goods	9.3	3.5	5.2	7.7	10.3	10.5	9.6
Producers' Finished Goods	10.2	5.7	5.7	8.3	10.3	11.0	9.8

Source: Data Resources, Inc.

Inefficient production rates result in higher unit costs, in program instability, and reduced DOD's purchasing power. However, because of the many competing requirements for defense dollars, DOD cannot fund all weapons systems at the most efficient rates. Trade-offs need to be considered: Is it desirable to procure some systems at the most efficient rate and to fund others with significant potential at lower levels? Knowledge of what economies can be achieved by using the most economic order quantity allows trade-offs of this type to be more precise.

Budgeting for Future Costs

Unfortunately, our analysis of the Five Year Defense Program and a multitude of studies conducted by the GAO question the current defense procurement projections for the future. For example, the chart below shows the cost growth of current over development and planning estimates for fiscal years 1969 through 1982. A second chart--for selected systems --shows the average future unit cost for each unit to be purchased after June 30, 1982, if the projected buy is to be made with projected funds. To complete the procurement, each future Hellfire missile must cost an average of \$42,000 in future inflated dollars. Column 9 shows that the current price of a Hellfire missile is estimated to be \$67,000 in 1983 dollars. All figures in columns 8 and 9 are taken directly from the June 30, 1982 Selected Acquisition Reports.

--What investment do we need?

--Are the right weapon systems being developed and procured?

--How many systems and items do we need?

--Do we need all the weapon systems being developed and procured? What is the appropriate level of war reserves?

--Are the current weapon systems under development appropriate to current and/or future battelfield needs? Do they represent the lowest cost alternative that will do the job? Are they taking leaps that increase the lead-time, whereas increments could provide some improvement in a shorter time and cumulative improvements could provide the leap?

--Should contracting procedures be amended to include some consideration of other factors, including life-cycle and repair costs?

If history is an accurate barometer, growth of the Defense budget at present rates will not be sustained for long.

--Has a fall-back strategy been considered?

--What kind of trade-offs is DOD planning to make if growth in the budget does not keep pace with planned support strategy?

--What is the effect of reducing quantities?

--What would be the long-range effect of program stretch-out?

--Can the procured weapon systems be properly maintained?

--Are we optimizing the technology so that it helps rather than hinders?

If history is an accurate barometer, weapon systems costs will far outstretch DOD projected costs.

--Have we adequately costed out the FYDP?

--Can we afford the quantities DOD says we need?

--For planning systems with long leadtimes, are the periods of usefulness projected and costs versus benefits assessed?

Defense officials often claim that cost escalation is commonly due to forces beyond their control such as inflation. The above chart shows that the majority of the cost increases is due to factors other than inflation. Only 85 of the 303 percent increases in the Hellfire cost is due to inflation.

Inadequate planning for future cost is further amplified in our analysis of Five Year Defense Program in the Defense Policy section of this study.

Defense Industrial Base

Following are the events that focused attention on the issue:

--A 1976 report by the Defense Science Board Task Force on Industrial Readiness concluded that the country's defense industrial base was seriously deficient in its ability to respond to a wide range of contingencies.

--The House Committee on Armed Services issued a report entitled "The Ailing Defense Industrial Base: Unready for Crisis." The report depicted an industrial capacity crippled by "declining productivity growth, aging facilities and machinery, shortages in critical materials, increasing lead time, skilled labor shortages, inflexible government contracting procedures, and inadequate defense budgets.

Concern over the state of defense industrial preparedness was intensified in early 1981 by President Reagan's decision to increase substantially defense spending over the next 5 years. What concerns many defense experts, according to the CRS briefing, "U.S. Defense Individual Preparedness," is that the decline in defense production levels of the past 10 years has resulted in the apparent reduction of certain industries serving the defense establishment.

In supporting the view of a deteriorating and inadequate U.S. defense industrial base, critics have most often cited three general categories of concerns: (1) increasing lead/delivery times, (2) rising costs, and (3) quality/reliability problems. Rising costs have already been discussed in this section.

Lead/Delivery Time

Testifying before the House Armed Services Committee in late 1980, many witnesses pointed to long leadtimes as evidence of a major production problem. Harry J. Gray, Chairman of United Technologies Corporation, stated that:

"Long lead time is an industry-wide problem. Our competitors feel it. Our suppliers feel it, and ultimately our customers feel it. Our ability to respond to national emergency suffers from it."

SECTION IV

DISCUSSION ON OPERATIONS AND MAINTENANCE

O&M appropriations finance the costs of operating and maintaining the Armed Forces, including the reserve components and related support activities of the DOD, except military personnel costs. Included are amounts for pay of civilians: contract services for maintenance of equipment and facilities; fuel; supplies; and repair parts for weapons and equipment. Financial requirements are influenced by many factors, including the number of aircraft squadrons, Army or Marine Corps divisions, installations, military strength and deployments, rates of operational activity, and quantity and complexity of major equipment--aircraft, ships, missiles, tanks, etc.--in operations.

As shown in the following tables, the distribution has been relatively stable. O&M is diversified among many programs, and each service establishes its own priorities.

According to Defense officials, a large portion (perhaps 75 percent) is "core" or fixed cost. These are costs to

- operate military installations, i.e., electricity, fuel, water and sewage, and maintenance;
- support the level of training needed to maintain unit readiness with the presently issued equipment, i.e., flying hour, steaming hour, etc.;
- perform scheduled maintenance on weapons and support equipment, i.e., oil, lubricate, and tune engines, do scheduled depot maintenance;
- pay civilian and military transportation and training costs discussed in the personnel section of this paper; and
- pay health care costs.

The portion which is not considered core is that related to force structure change and the phasing in of new equipment. Because new weapon systems coming on line often result in force structure changes as well as support system changes, the services are hit with multiple unknowns at once. Some questions raised are as follows:

- How much will the new systems cost to maintain, for every hour of operation? (Historically the new systems don't achieve the low ratio of maintenance to operations the engineers plan for.)
- What are the projected cost increases associated with the complexity of the new systems, i.e., parts, time to

Chart 10
INDUSTRIAL PRODUCTION
(Annual Percentage Rates of Change)

<u>Vietnam Period</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Industrial Production -- Total	6.7	9.9	8.8	2.3	6.3	4.6	-3.1
Defense & Space Equipment	-3.2	10.7	17.6	13.5	8.2	-3.9	14.9
All Manufacturing	6.9	10.7	9.1	2.1	6.4	4.4	-4.1
Advanced Processing Industries	5.8	11.3	10.2	3.1	5.7	3.4	-5.1
Materials	8.1	11.4	9.0	-0.7	6.6	5.6	-2.9
Durables Manufacturing	7.2	13.6	11.1	1.1	6.5	3.9	-7.5
Primary Processing Industries	8.6	9.0	6.8	-0.5	7.7	6.2	-2.2
<u>Simulation Period</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	
Industrial Production -- Total	-6.3	12.7	13.4	6.9	1.8	-2.2	
Defense & Space Equipment	4.7	28.7	23.0	11.7	1.5	-10.0	
All Manufacturing	-6.7	14.1	14.6	7.4	1.7	-2.5	
Advanced Processing Industries	-4.3	13.4	14.1	7.6	2.1	-2.6	
Materials	-9.3	16.3	16.7	6.1	0.7	-3.3	
Durable Manufacturing	-9.2	17.7	18.6	9.2	1.8	-3.9	
Primary Processing Industries	-10.7	15.2	15.4	7.0	0.9	-2.2	

Source: Data Resources, Inc.

Chart 11
CAPACITY UTILIZATION
(Percent)

<u>Vietnam Period</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Manufacturing	85.6	89.5	91.1	86.9	87.0	86.2	79.4
Advanced Processing Industries	84.6	88.8	91.1	87.6	86.8	85.0	77.4
Primary Processing Industries	87.8	91.0	91.4	85.7	87.6	88.6	83.0
Materials Industries	87.0	89.6	90.8	86.0	87.4	88.3	82.5
<u>Simulation Period</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	
Manufacturing	71.1	79.3	88.1	91.3	89.7	84.4	
Advanced Processing Industries	72.7	80.5	89.1	92.5	91.2	85.7	
Primary Processing Industries	68.3	77.0	86.3	89.3	87.2	82.4	
Materials Industries	70.7	80.5	90.3	92.6	89.8	83.5	

Source: Data Resources, Inc.

TABLE 18
O&M APPROPRIATIONS ACCOUNTS
BUDGET AUTHORITY

<u>Budget Activity</u>	<u>FY 1980</u>		<u>FY 1981</u>		<u>FY 1982</u>		<u>FY 1983</u>	
	<u>Amount</u> <u>(millions)</u>	<u>Percent</u> <u>of</u> <u>Budget</u>	<u>Amount</u> <u>(millions)</u>	<u>Percent</u> <u>of</u> <u>Budget</u>	<u>Amount</u> <u>(millions)</u>	<u>Percent</u> <u>of</u> <u>Budget</u>	<u>Amount</u> <u>(millions)</u>	<u>Percent</u> <u>of</u> <u>Budget</u>
Strategic forces	\$ 3,727	8	\$ 4,357	8	\$ 4,609	7	\$ 4,766	7
General purpose forces	13,730	29	16,662	30	19,240	31	20,721	31
Intelligence and Communications	1,995	4	2,401	4	2,809	5	3,235	5
Airlift forces	866	2	1,045	2	1,188	2	1,160	2
Reserve and National Guard	3,526	8	4,194	8	3,741	6	5,171	8
Central Supply and maintenance	12,495	27	14,202	26	15,116	25	16,101	24
Training, medical, and other personnel activities	5,063	11	6,165	11	7,032	11	7,494	11
Administration and associated activities	1,348	3	1,620	3	1,786	3	1,992	3
Support to other nations	89	.2	115	.2	113	.2	106	.2
Subtotal	42,839		50,761		55,634		60,746	
Other	3,800		4,774		5,617		6,003	
Total	\$ 46,639		\$ 55,535		\$ 61,251		\$ 66,749	

O&M funding is projected to comprise from 32.8 to 24.3 percent of defense total obligational authority during 1980-1987. During the same period, O&M outlays are projected to range from 33.7 to 27.7 percent.

Competition

The Congress has historically required that Government purchases of goods and services be accomplished using as much full and free competition as possible. Offering all qualified firms the opportunity to compete helps to minimize favoritism and collusion and assures that acceptable products and services are obtained at the lowest prices.

In October 1979 testimony before the House Budget Committee, GAO stated that the trend has been toward less competition and less price competition in DOD's negotiated awards. The value of negotiated price competitive awards (which includes small business and labor surplus area set-asides) decreased from 25 percent in fiscal year 1971 to 19 percent in fiscal year 1978. During the same period, the value of all contract awards negotiated competitively (including price as well as design, technical, or other competition) fell from 31 to 29 percent. Concurrently, the value of noncompetitive (or sole-source) contract awards rose from 58 percent to 64 percent and remained at that level in fiscal year 1979.

GAO believes that DOD could better obtain acceptable products and services at the lowest prices by decreasing the dollar value of noncompetitive awards and increasing the amount of awards based on competition. This is also likely to reduce procurement costs. GAO has reported on various improvements needed in this area.

Spend-Out Rates

Complicating the defense budget is the length of time it takes to translate additional budget authority into additional military capability. Unlike the operations and personnel accounts, which have a 1-year obligation period and are spent very rapidly, the investment accounts have multiyear obligational periods and are spent more slowly. For example, the shipbuilding and conversion accounts have a 5-year obligational period and are spent even more slowly. The remaining procurement accounts have a 3-year obligational period. This means it is difficult to know exactly how current year budget authority is going to be translated into outlays. Their spend-out rates can affect current trade-offs since, in this area, a large cut in budget authority can translate into a much less significant cut in outlays.

Questions for Use when Considering Public Policy and Corresponding Budget Decisions

As the investment budget is reviewed in conjunction with long-range factors affecting it, questions emerge, and the answers to them affect future finding requirements. Some of these questions follow:

TABLE 20 (A)

TOTAL OBLIGATION AUTHORITY
AS A % OF TOTAL DOD BUDGET OF
BUDGET OUTLAYS AS A % OF
TOTAL DOD OUTLAYS

	<u>FY 83</u>		<u>FY 84</u>		<u>FY 85</u>	
	<u>TOA^{2/}</u>	<u>Outlays^{3/}</u>	<u>TOA^{4/}</u>	<u>Outlays^{3/}</u>	<u>TOA^{4/}</u>	<u>Outlays^{3/}</u>
Military Personnel	18.9	21.7	16.1	20.0	14.4	17.9
Retirement Pay	6.7	7.7	6.2	7.0	5.7	6.3
O&M	27.8	30.9	25.6	30.0	24.7	28.5
Procurement	33.4	26.4	35.3	28.6	37.5	31.0
RDT&E	9.5	10.3	9.6	11.0	9.6	10.8
Other	3.7	3.0	7.2	3.4	8.1	5.5

^{2/}Financial Summary Tables, DOD Budget For Fiscal Year 1984,
Jan. 31, 1983, Table 2.

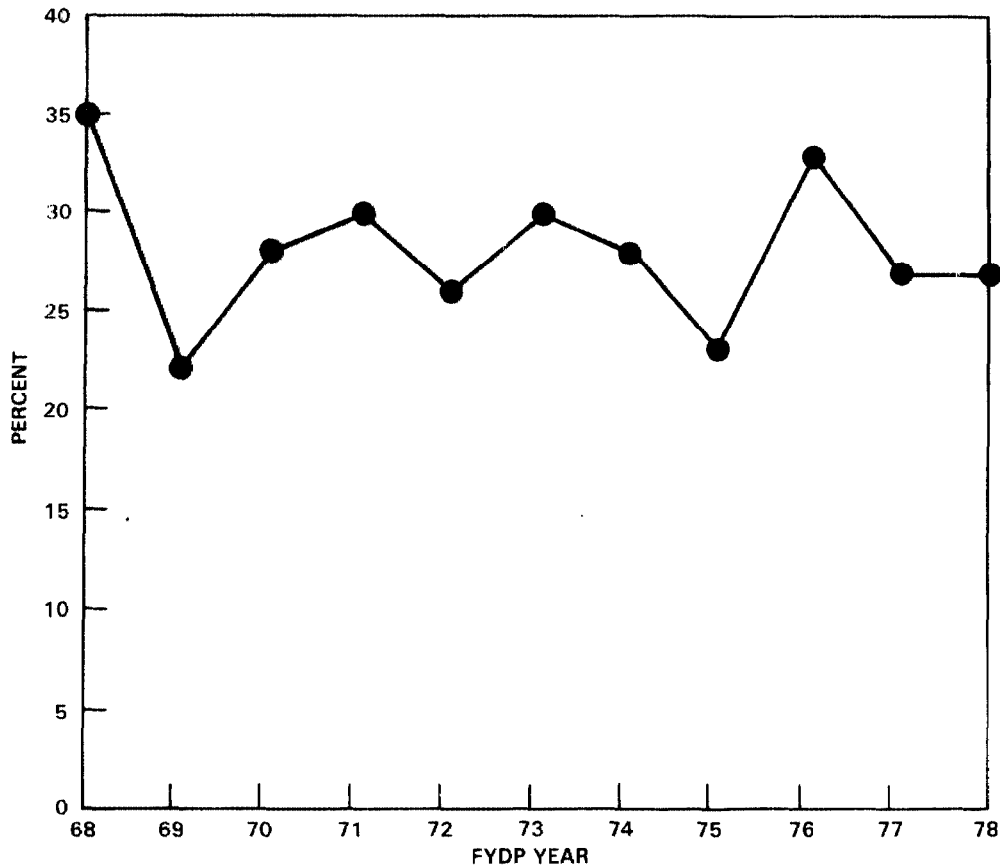
^{3/}Federal Government Finances, 1984 Budget Data, Office of
Management & Budget, February 1983.

^{4/}5-Yr. Defense Program Financial Summary, 8 Feb. 1982, pg. 1
Table 1.

--When planning systems that use high technology, is the availability of O&M compared with the costs and benefits of using lower technology systems?

O&M has consistently been underestimated by Defense in the Five Year Defense Program. As shown below, O&M's actual appropriated TOA has exceeded the projected TOA in each FYDP since 1968. Actual appropriated TOA has exceeded projections by an average of 28 percent each FYDP.

**CHART 13
 OVERALL PERCENTAGE IN FIVE YEAR DEFENSE PLAN (FYDP)
 FORECASTS COMPARED TO ACTUAL DOD TOTAL OBLIGATIONAL
 AUTHORITY 1968-1978 OPERATIONS AND MAINTENANCE**



SOURCE: GAO DEVELOP DATA USING DOD FYDPs 1963-1983

Critics of the DOD budget question whether the projected O&M outlays associated with new weapon systems being fielded have been fully reflected. The projected new weapon systems are generally more complex and in many instances more expensive to operate and maintain. However, the O&M budget supports so many activities that it is difficult to discern whether the projected increase has fully considered these factors.

The amount of funding required is roughly proportional to (1) the number of people, equipment, and facilities shown on the DOD balance sheet at any given time and (2) the level of support required to keep the inventory operational. As the composition of the inventory changes, the O&M required also changes. The

replace, delays in waiting for parts, additional fuel consumption, housing facilities for new weapons?

--How is the force structure going to change to implement its new weapons, i.e., increase/decrease troop strength required to operate or support the weapons, new support equipment required for the weapon systems, facilities required for the units to work and live in?

O&M funding comprises about 30 percent of the \$240 billion available to DOD in fiscal year 1983. Between fiscal years 1980 and 1983, the O&M appropriation increased by approximately \$20 billion--from \$46.6 billion to \$67.3 billion. As illustrated in the table below, this is approximately a 44-percent increase over a 3-year period.

TABLE 17

Title	OPERATIONS AND MAINTENANCE BUDGET AUTHORITY (Millions)				Change
	FY 80	FY 81	FY 82	FY 83	FY 80-83
Air Force					
Active	\$ 12.4	\$ 14.8	\$ 16.2	\$ 16.9	\$ 4.5
Reserve	.5	.6	.7	.8	.3
Guard	1.3	1.5	1.7	1.8	.5
Army					
Active	11.0	13.0	15.2	15.8	4.8
Reserve	.4	.5	.6	.7	.3
Guard	.8	1.0	1.1	1.2	.4
Navy					
Active	14.8	17.7	19.6	21.1	6.3
Reserve	.4	.6	.6	.6	.2
Marine Corps					
Active	.8	1.1	1.2	1.5	.7
Reserve	.02	.03	.04	.05	.03
Other DOD	3.8	4.8	5.4	6.8	3.0
Total	<u>\$ 46.2</u>	<u>\$ 55.6</u>	<u>\$ 62.3</u>	<u>\$ 67.3</u>	<u>\$ 21.1</u>

Although the O&M appropriations have increased substantially in the past 3 years, the distribution of the dollars between budget activities has not appreciably changed. The following table illustrates the relative distribution of funds among the budget activities used in the O&M appropriations accounts.

CHART 14

DEPARTMENT OF DEFENSE
STRATEGIC FORCES HIGHLIGHTS

	<u>FY 64</u>	<u>FY 68</u>	<u>FY 75</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>
STRATEGIC OFFENSIVE:						
Land Based ICBM's						
Titan	108	54	54	54	54	54
Minuteman I	600	570	-	-	-	-
Minuteman II	-	394	450	450	450	450
Minuteman III	-	-	550	550	550	550
Bomber Squadrons:						
B-47, B-58	36	-	-	-	-	-
B-52C-F/D	25	17	5	5	5	5
B-52G/H	17	17	18	16	16	16
FB-111	-	-	4	4	4	4
Fleet Ballistic Launchers:						
Polaris	336	656	288	80	-	-
Poseidon (C-3 and C-4)	-	-	368	496	496	496
Trident	-	-	-	-	-	48
STRATEGIC DEFENSIVE:						
Fighter Interceptor SQDNS:						
Active:						
F-101, F-102, F-104	27	15	-	-	-	-
F-106	13	11	6	7	7	5
F-15	-	-	-	-	-	1
Air National Guard						
F-4	-	-	-	2	3	5
F-86, F-89, F-100	19	2	-	-	-	-
F-101	-	-	6	3	2	-
F-102	10	20	2	-	-	-
F-106	-	-	6	5	5	5
Air Defense Batteries:						
Nike-Hercules	147	123	-	-	-	-

Source: Department of Defense
Fiscal Year 1982
Annual Report

TABLE 19

TOTAL OBLIGATIONAL AUTHORITY
AS A % TOTAL DOD BUDGET OF
BUDGET OUTLAYS AS A % OF
TOTAL DOD OUTLAYS

	<u>FY 80</u>		<u>FY 81</u>		<u>FY 82</u>	
	<u>TOA¹/</u>	<u>Outlays</u>	<u>TOA¹/</u>	<u>Outlays</u>	<u>TOA²/</u>	<u>Outlays³/</u>
Military						
Personnel	21.8	23.2	20.9	23.3	20.2	23.2
Retirement						
Pay	8.4	9.0	7.8	8.8	7.1	8.2
O&M	32.8	33.7	31.4	33.3	29.3	32.6
Procurement	24.8	21.8	27.1	22.5	30.3	23.7
RDT&E	9.5	9.9	9.4	9.8	9.5	9.7
Other	2.7	2.4	3.4	2.3	3.6	2.6

¹/National Defense Budget Estimates for FY 1983, Office of Assistant Secretary of Defense (Comptroller) March 1982.

²/Financial Summary Tables, DOD Budget For Fiscal Year 1984, Jan. 31, 1983, Table 2.

³/Federal Government Finances, 1984 Budget Data, Office of Management & Budget, February 1983.

Chart 16
DEPARTMENT OF DEFENSE
AIRLIFT AND SEALIFT FORCE HIGHLIGHTS

	<u>FY 64</u>	<u>FY 68</u>	<u>FY 75</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>
<u>Strategic Airlift:</u>						
C-5 Aircraft	-	-	76	77	77	77
C-141 Aircraft	6	266	275	275	275	275
<u>Tactical Aircraft:</u>						
Air Force Active:						
C-130 Aircraft	506	502	320	272	272	272
Other Aircraft	684	352	-	-	-	-
Air Force Reserve and National Guard:						
C-130 Aircraft	-	8	247	292	310	319
C-123 Aircraft	53	-	70	70	52	18
C-7A Aircraft	-	-	53	49	35	35
Other	802	638	-	-	-	-
Active Navy & Marine Corps						
Tactical Support Aircraft	120	116	86	59	61	61
Navy & Marine Corps Reserve						
Tactical Support Aircraft	72	72	30	24	18	19
<u>Sealift:</u>						
Ships Active						
Tanker	25	26	7	6	6	6
Cargo & Stores Ships	38	41	11	10	8	8
Other	38	63	-	-	-	-
Controlled Fleet Charters						
Tanker	-	-	12	14	14	14
Cargo	-	-	1	22	23	23
National Defense Reserve Fleet						
	255	490	139	159	162	165

Source: Department of Defense
Fiscal Year 1982
Annual Report

TABLE 20 (B)

TOTAL OBLIGATION AUTHORITY
AS A % OF TOTAL DOD BUDGET OF
BUDGET OUTLAYS AS A % OF
TOTAL DOD OUTLAYS

	<u>FY 86</u>		<u>FY 87</u>	
	<u>TOA^{2/}</u>	<u>Outlays^{3/}</u>	<u>TOA^{4/}</u>	<u>Outlays^{3/}</u>
Military Personnel	13.3	16.2	12.3	15.1
Retirement Pay	5.4	5.9	5.2	5.6
O&M	24.7	27.7	24.3	27.7
Procurement	38.5	32.9	39.1	34.0
RDT&E	9.0	10.4	9.1	9.5
Other	9.1	6.9	10.0	8.1

^{3/}Federal Government Finances, 1984 Budget Data, Office of Management & Budget, February 1983.

^{4/}4-Yr. Defense Program Financial Summary, 8 Feb. 1982, pg. 1 Table 1.

Current and Future Investment Acquisitions

Defense investment is discussed separately in the investment section, but as we point out, the mix and "maintainability" of the inventory affects O&M costs, as does the life cycle of the inventory. It is important, therefore, to look at these costs in light of the changes planned in the inventory of weapon systems and how the changes will affect the O&M budget. We do not have trend data on the life of the weapon systems inventory.

As the Defense Department modernizes its investment, several changes are programmed for the near future which will change the composition of the mix among the investment assigned to the various forces.

For example, the Army plans to continue

- procuring the M1 Abrams tank to replace the various M60 configuration tanks,
- building up its new armored personnel carrier (Bradley Fighting Vehicle Systems) from an inventory of 1,700 at the end of fiscal year 1983 to 6,882 by the end of fiscal year 1992,
- replacing its UH-1 helicopter (Huey) with the UH-60 Blackhawk, and
- replacing its Vulcan 20 mm anti-air defense gun with the twin 40 mm Division Air Defense Gun.

Selected planned Air Force procurement in the near future includes

- buying 408 additional F-15 fighter aircraft through fiscal year 1988,
- increasing its inventory of F-16 aircraft by 360 during fiscal year 1983-85 and increasing production to 180 per year in 1986, and
- procuring 9,229 IIR Maverick anti-armor air-to-surface missiles during fiscal years 1983-85.

The following table shows how the Navy is projecting its future ship force structure for fiscal years 1983, 1986, 1989, and 1992. As the table indicates, the mix of the ships will vary considerably during this period as some are phased out, new ones are brought onboard, and additional ships are procured for ships in the fleet at the end of the fiscal year 1983.

economy affects the prices of goods and services and the salaries of the civilian employees. These factors are discussed below. Inflation trends are discussed in the investment section where we present historical trend data. Health care costs are a personnel-related item that are funded in this area. We will only discuss health costs briefly, as we are preparing a separate staff study on health expenditures. Other activities funded in O&M that are related to military personnel will be covered in the personnel section of this study.

Military Forces Highlights

The following table highlights the composition of strategic, general purpose, airlift, and sealift forces for selected years. As the investment and personnel mix within the forces changes over the years, the requirements for operations and maintenance support will also change. Some changes since fiscal year 1980 include the phase-out of the Polaris and deployment of the Trident fleet ballistic launchers, a 10-percent increase in active fleet ships, and a change in the mix of tactical airlift planes assigned to the Air Force Reserve and Air National Guard.

Supplies and Spare Parts

The capability of the services to maintain and operate the facilities, equipment, and investment also depends on the cost and availability of supplies and spare parts. This necessitates that the supplies and logistics activities plan for and stock the depots, installations, investment, and facilities to avoid bottlenecks and other problems.

The current DOD plan is to emphasize sustainability. The 1984 budget request reflects a 10-percent increase in war reserves. This elevates the importance of the logistics plans and increases the funds directed to stockpiling. Two key factors in this area are the amount of reserves and stocks being kept on hand and the amount of supplies and spare parts required for day-to-day operations/training.

DOD recognizes the need to plan for supplies, spare parts, and maintenance dollars to support the new weapon systems scheduled for procurement between 1984 and 1988. However, projections for weapons systems support have been extremely optimistic in the past and, according to numerous defense analysts, are still optimistic. If this is true, DOD will have underestimated the O&M costs in the FYDP by approximately 25 percent. (See historical analysis of FYDP O&M.)

Depending on the type of system, operations and support costs for major systems can run twice the amount of procurement costs. Also, these costs will be sustained as long as those systems remain in the field, contrasted with procurement costs which are nonrecurring and do not span nearly as many years.

Life-cycle cost estimates are prepared on each major weapon to determine its affordability as it proceeds through the acquisition process. However, life-cycle cost estimates do not give enough attention to the aggregate operation and support resources that fielding all major systems will require. The main reason for this is that the mechanism for determining the availability and affordability of resources at the aggregate level, the Five-Year defense program, pays attention only to costs in the current budget year and the 4 years beyond. For example, for systems included in the plan covering the years 1982-86, operations and support costs do not start to rise significantly until the late 1980's, so these costs do not represent a major consideration in the plan as yet. Instead, procurement costs will receive the most attention. Even the 1983-87 defense plan will not capture the operations and support repercussions of the procurement bow wave. Thus, the adequacy of resources to operate and support major weapon systems is uncertain.

The current and previous administration have made a commitment to raise funding levels for readiness. However a

Chart 15
DEPARTMENT OF DEFENSE
GENERAL PURPOSE FORCES HIGHLIGHTS

	<u>FY 64</u>	<u>FY 68</u>	<u>FY 75</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>
<u>Land Forces:</u>						
<u>Army Divisions:</u>						
Active	16	19	14	16	16	16
Reserve	23	8	8	8	8	8
 <u>Marine Corps Divisions:</u>						
Active	3	4	3	3	3	3
Reserve	1	1	1	1	1	1
 <u>Tactical Air Forces:</u>						
<u>Air Force Wings:</u>						
Active (Full Strength Equiv)	21	25	26 (22)	26 (23)	26 (24)	26 (24)
Reserve	7	8	11	11	11	12
<u>Marine Corps Wings:</u>						
Active	3	3	3	3	3	3
Reserve	1	1	1	1	1	1
<u>Navy Attack Wings:</u>						
Active	15	15	13	12	12	12
Reserve	2	2	2	2	2	2
 <u>Naval Forces:</u>						
Active Fleet	721	826	416	391	409	429
Carriers	24	23	15	13	12	13
Other Ships (Active & NRF)	82	49	10	6	7	6
Reserve Ships	62	54	63	49	45	45
Fleet Auxiliary Force Ships	1	16	30	34	33	

Source: Department of Defense
Fiscal Year 1982
Annual Report

Real and Personal Property

Another factor which influences operations and maintenance outlays is the amount of real and personal property that is owned and/or leased by the Department of Defense. The following tables summarize selected statistics for fiscal years 1973, 1975, 1978, and 1981. The first figure represents the cost of the property when it was purchased, not current value. The most useful measure when looking at inventory is its size in terms of square footage, etc. Also of importance is the condition, age, and "maintainability" of the property.

TABLE 24
SUMMARY OF PROPERTY HOLDINGS
DEPARTMENT OF DEFENSE

(Millions of Dollars)

Type and Class of Property	1973	1975	1978	1981
<u>Real Property Inventory - Total</u>	\$ 41,334	\$ 43,023	\$ 47,175	\$ 52,255
<u>Construction In Progress (Cost of Work In Place) - Total</u>	2,408	4,180	4,353	7,243
<u>Personal Property Inventory - Total</u>	176,561	190,120	226,525	312,562
Equipment and Supplies in Supply System	45,702	56,839	58,837	88,286
Weapons and Other Military Equipment in Use	112,273	115,523	146,896	192,457
Plant Equipment	12,828	12,773	14,996	26,288
Industrial Fund Inventories ^{1/}	563	634	915	1,152
Excess, Surplus, and Foreign Excess Property Inventories	<u>5,195</u>	<u>4,350</u>	<u>4,882</u>	<u>4,379</u>
All Types - Total	<u>\$220,303</u>	<u>\$237,323</u>	<u>\$278,053</u>	<u>\$372,060</u>

^{1/} Consists of materials, supplies, and (unbilled) work in process.

Source: Real and Personal Property of the Department of Defense, Annual Reports for years 1973, 1975, 1978, and 1981. Table 1.

Investment Complexity

There appears to be a relationship between investment complexity, readiness and costs in which the more complex the weapon, the more adverse the affect on costs and readiness. The following table shows, for selected Air Force aircraft, that those planes with high complexity had a lower operational availability and a higher hourly operation and maintenance cost.

TABLE 21

RELATIONSHIP BETWEEN COMPLEXITY, READINESS, AND COSTS

	Com- Plexity	FY80 Operational Availability	Spares	FY83 Cost per Operate and SSD*	Flying Hour to Operate and GSD*	Maintain POL*	Maint.	Total	Procurement Unit Cost (in millions) of FY835
F111**	High	44%	2729	350	230	2870	930	6100	20.3
F15	High	54%	2070	350	180	1800	1400	5800	25.3
F4**	Medium	63%	530	300	230	2030	410	3500	14.9
A16	Medium	68%	1100	250	150	900	100	3400	16.4
A10	Low	72%	305	170	115	705	305	1600	9.3
F5**	Low	N/A	315	130	120	680	155	1400	N/A

* Maintenance funding accounts (System Support Division; General Support Division; Petroleum-Oil-Lubricants).

** The F4 program began in the 1950's; the F111 and F5 began in the 1960s; the F5 is a training aircraft (though combat capable) used in small numbers.

Sources: Operational availability data as shown in "1981 Summer Study Panel in Operational Readiness with High Performance Systems." DOD Defense Science Board (April 1982); flying hour costs from current service data; unit cost data are "flyaway" costs for first 200 production units (averaged) as stated in "An Analysis of Weapon System Acquisition Intervals, Past and Present," RAND (R-2605 DR&E/AF, November 1980) translated into FY83 dollars.

High operation and maintenance costs not only apply to investment used by active forces but also while used by others (Guard & Reserve) during its life cycle.

Source: A Mandate For Leadership Report
Agenda '83
The Heritage Foundation

As mentioned, the property's maintainability is an important factor. It affects decisions on replacement versus rehabilitation or repair to determine spending in the real property inventory. Certainly, proper repair is essential to keep the forces ready, to sustain missions capability, and to provide a desirable quality of life for the troops. However, despite huge funding increases--more than \$1.5 billion since 1980--the reported backlog of maintenance and repair (BMAR) levels remains high: about \$3.3 billion at the end of fiscal year 1983. A question about the BMAR level is one of credibility. In three prior reports, GAO has pointed out that the BMAR levels reported by the services were not reliable as a basis for budget allocations and, more recently, each of the services internal reviews reported the same. There are inconsistent definitions being used across the services, and the backlog's size is also affected by the disincentives to enlarge the backlog and the currency of inspections.

TABLE 27

MAINTENANCE AND REPAIR BACKLOG (millions)			
<u>Fiscal Year</u>	<u>Army</u>	<u>Navy</u>	<u>Air Force</u>
1980	\$1,853	\$ 587	\$ 489
1981	2,288	640	529
1982	2,039	714	507

Energy Consumption

One indicator of the resources needed for operation and maintenance is the energy consumed to operate equipment, investment, and facilities. Energy consumption can be measured in several ways, but two which we commonly use are barrels of oil equivalent and British thermal units (Btu's). The following chart compares the barrels of oil equivalent consumed by the Department of Defense during fiscal years 1977 and 1982. Although this shows a reduction of 7 million barrel equivalents (2.7 percent), the ratio remains relatively the same by fuel source. Future budget outlays could be affected by changes in share of energy source and/or by changes in costs for energy. For example, the Secretary of Defense announced in January 1983 that the fiscal year outlays had been reduced by \$11.3 billion from the amount originally prepared in 1982. Part of the reduction was attributed to reduced costs for fuel. Over the 5-year period 1984-88, the Department of Defense expects to save \$5.5 billion resulting from lower fuel costs.

Chart 17 looks at energy consumption using the other mode (Btu's) for fiscal years 1975-82. Notice a steady increase in Btu consumption since fiscal year 1978 for equipment and investment and a decrease in Btu consumption for facilities.

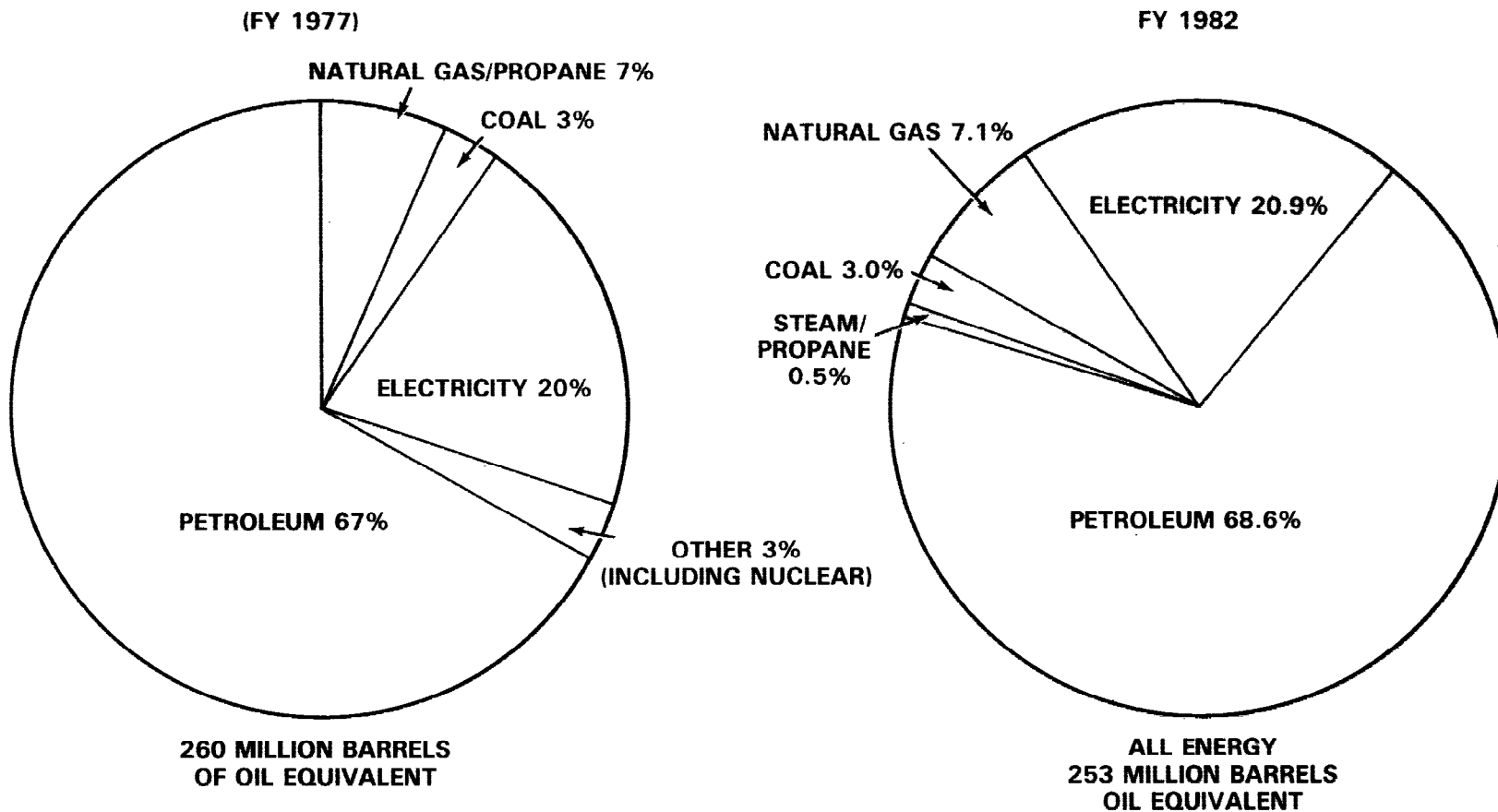
TABLE 22

PROJECTED NAVAL SHIP
FORCE STRUCTURE
FISCAL YEARS ENDING
1983, 1986, 1989, 1992

Ship Type	1983	1986	1989	1992	Percentage increase (decrease) from FY 1983 to 1992
Strategic					
SSBN (Poseidon)	31	31	31	31	-0-
SSBN (Trident)	3	7	10	13	333
Total, Strategic	34	38	41	44	29
General Purpose					
Combatants					
Aircraft carrier (CVN)	4	4	5	6	50
Aircraft carrier (CV)	9	9	9	9	-0-
Battleship (BB)	1	4	4	4	300
Cruiser (CGN)	9	9	10	14	56
Cruiser (CG)	19	25	35	44	132
Destroyer (DDG)	41	40	39	39	(5)
Destroyer (DD)	45	43	37	37	(18)
Frigate (FFG)	40	54	54	54	35
Frigate (FF)	59	59	59	59	-0-
Submarine (SSN)	97	107	108	100	3
Submarine (SS)	5	5	1	0	(500)
Small combat (PG/PHM)	6	6	6	6	0
Subtotal, Combatants	335	365	367	372	11
Amphibious Ships					
Helo assault ship (LHA/LHD)	5	5	5	8	60
Dock transport (LPD)	13	13	13	13	-0-
Helo transport ship (LPH)	7	7	7	5	29
Landing ship dock (LSD)	13	9	20	20	54
Landing ship tank (LST)	20	20	20	20	-0-
Command ship (LCC)	2	2	2	2	-0-
Assault transport (LKA)	5	5	5	5	-0-
Subtotal, Amphibious	65	61	72	73	12
Mine Warfare Ships					
Ocean minesweeper (MSO)	21	2	0	0	(2100)
Mine warfare ship (MCM)	0	1	18	18	1800
Mine warfare ship (MSH)	0	0	4	13	1300
Subtotal, Mine Warfare	21	3	22	31	48
Replenishment Ships					
Station ship (AOE)	4	4	4	8	100
Station ship (AOR)	7	7	7	29	-0-
Oiler (AO/TAO)	20	12	24	29	45
Ammo. ship (AE/TAE)	13	13	13	16	23
Stores ship (AFS/TAFS)	10	9	9	9	(10)
Subtotal, Replenishment	54	45	57	69	28
Material Support Ships					
Destroyer tender (AD)	8	6	11	14	75
Submarine tender (AS)	12	9	12	13	8
Repair ship (AR)	3	0	0	0	(300)
Subtotal, Material Sup.	23	15	23	27	17
Fleet Support Ships					
Surveillance ship (TAGOS)	3	12	12	14	367
Salvage ship (ARS)	7	7	7	7	-0-
Rescue ship (ASR)	5	3	2	2	(60)
Salvage/rescue ship (ATS)	3	3	3	3	-0-
Fleet tug (ATF/TATF)	14	7	7	7	(50)
Subtotal, Fleet Sup.	32	32	31	33	3
Total, General Purpose	530	521	572	605	14
Total, All Ships	564	559	613	649	15

Source: Building a 600-ship Navy Costs, Timing, and Alternative Approaches March 1982
Congressional Budget Office

CHART 18 DOD ENERGY CONSUMPTION BY FUEL TYPE



SOURCE: FISCAL YEAR 1977 STATISTICS—DEPARTMENT OF DEFENSE
 FISCAL YEAR 1979 ANNUAL REPORT
 FISCAL YEAR 1982 STATISTICS—OFFICE OF ASSISTANT
 SECRETARY OF DEFENSE (MANPOWER, RESERVE AFFAIRS AND LOGISTICS)

recent look at the O&M funding for fiscal years 1982 and 1983 indicates that the Air Force may have reduced readiness funding in favor of major new weapons, notably aircraft and strategic missiles. Although the Air Force has experienced significant improvements in spare parts and support equipment between 1981 and 1982, data reflect a real decline of 15 percent for these items between 1982 and 1983. The Air Force also will experience a 24.8 percent decline in munitions funding in these years. The growth in Army and Navy spare parts and support equipment is primarily the result of a one-time investment in prepositioned ammunition.

TABLE 23

PROPOSED FUNDING AND PERCENT OF REAL GROWTH FOR READINESS ITEMS, BY SERVICE (By fiscal years, in billions of dollars, and in percents)			
	1982	1983	Percent of Real Growth
Spare Parts and Support equipment			
Army	0.7	1.0	39.3
Navy/Marine Corps	3.2	3.8	12.1
Air Force	<u>6.1</u>	<u>5.7</u>	<u>(15.8)</u>
Subtotal	10.0	10.6	(2.8)
Munitions			
Army	2.3	2.6	0.3
Navy/Marine Corps	1.1	1.4	14.9
Air Force	<u>1.1</u>	<u>0.9</u>	<u>(24.8)</u>
Subtotal	4.5	4.9	(1.8)
Total	<u>14.5</u>	<u>15.5</u>	<u>(2.5)</u>

Source: Compiled by CBO from data supplied by the Department of Defense.

TABLE 28

Total Funds For
Individual Training By
Selected Fiscal Years

<u>Service</u>	<u>1977</u>	<u>Fiscal Years</u>		<u>1982</u>
		<u>1980</u>	<u>1981</u>	
		(\$ millions)		
Army	2,227	2,322	3,811	4,247
Navy	1,695	2,215	2,776	2,960
Marine Corps	425	555	635	654
Air Force	<u>1,631</u>	<u>1,991</u>	<u>2,343</u>	<u>2,661</u>
Total	<u>\$ 5,978</u>	<u>\$ 8,082</u>	<u>\$9,565</u>	<u>\$10,521</u>

Note: Calculations are affected by rounding.

Source: Military Manpower Training Reports for FY 1977, 1980, and 1982 Department of Defense

TABLE 29

Active and Reserve Training Load Trends by Training Category
FY 1973 - 82
(Thousands)

	<u>FY 73</u>	<u>FY 77</u>	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>	<u>Percent Change</u>	
							<u>FY 73-82</u>	<u>FY 80-82</u>
Recruit	94	67	46	51	52	52	-45	+ 2
Officer Acquisition	20	17	17	17	17	18	-10	+ 6
Specialized Skill	157	126	108	115	125	124	-21	+ 8
Flight	9	5	5	5	6	7	-22	+40
Professional Development	19	10	9	8	8	9	-53	+13
One-Station Unit Training	<u>-</u>	<u>8</u>	<u>24</u>	<u>29</u>	<u>24</u>	<u>27</u>	<u>-</u>	<u>- 7</u>
Total	299	233	209	226	232	236	-21	+ 4

Note: Calculations are affected by rounding.

Source: Military Manpower Training Report for FY 1982
Department of Defense

TABLE 25

Summary of Real Property Owned and Leased
For Selected Years

		1973 ^{1/}	1975 ^{1/}	1978 ^{1/}
Acreage				
Owned	(thousands) ^{1/}	23,079	22,877	25,653
Leased	(thousands)	1,326	1,045	1,184
Square Footage				
Owned	(thousands)	1,819,615	1,790,436	1,854,858
Leased	(thousands)	9,087	12,635	11,547
Installations		4,105	4,038	3,800
Number of Buildings Owned		302,526	304,337	304,965
Leases		11,152	10,611	9,449
Rental Cost (thousands)	\$	52,543	\$ 64,107	\$ 71,710

Notes:

^{1/} Statistic in acreage owned, square footage used, number of installations and number of buildings owned are not available in foreign and outlying areas of the United States.

Source: Summary Report of Real Property Owned by the United States throughout the World

Summary Report of Real Property leased to the United States throughout the World for the years 1973, 1975 and 1978.

TABLE 26

DOD FAMILY HOUSING
INVENTORY

	<u>1973</u>	<u>1975</u>	<u>1978</u>	<u>1981</u>
Continental United States	261,412	268,083	275,658	268,738
U.S. Overseas	36,160	36,782	38,817	39,380
Foreign	82,165	83,507	87,894	94,209
	<hr/>	<hr/>	<hr/>	<hr/>
Total Owned and Leased Units	<u>379,737</u>	<u>388,372</u>	<u>402,361</u>	<u>402,327</u>

Source: Office of the Assistant Secretary of Defense
(Manpower, Reserve Affairs and Logistics)

Health Care Costs

The Department of Defense spent \$5.6 billion for medical care costs in 1981. In the same year, it employed 151,000 staff and operated 161 hospitals and 310 clinics worldwide to meet two primary health-care functions: maintaining the peacetime health of active duty forces and ensuring that a system exists to attend the sick and wounded in wartime. Most of Defense's health care resources are spent on direct care, with lesser amounts available for dependent or retiree care under the Civilian Health and Medical Program of the Uniform Services (CHAMPUS) or research, training, or occupational safety (see table 32).

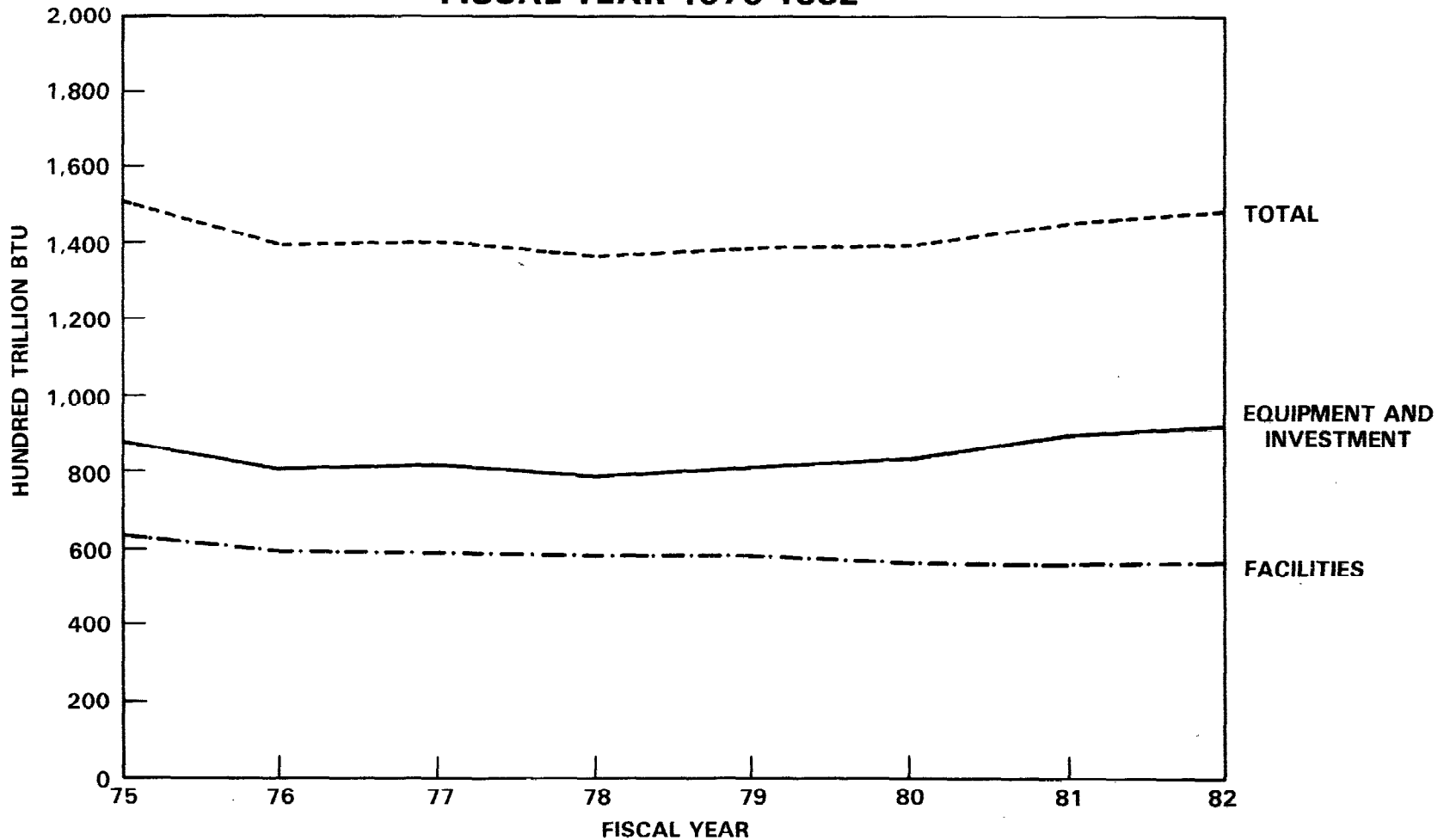
TABLE 32
Department of Defense Outlays for
Medical & Health-Related Activities
(\$ in millions)

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Direct								
(note b)	\$2,148	\$2,256	\$2,252	\$2,738	\$2,887	\$3,153	\$3,264	\$3,953
Indirect								
(note c)	475	26	36	57	44	48	93	88
CHAMPUS	(a)	567	523	582	599	644	736	850
(note d)	311	357	40	457	489	497	580	686
Total	<u>\$2,934</u>	<u>\$3,300</u>	<u>\$3,490</u>	<u>\$3,826</u>	<u>\$4,018</u>	<u>\$4,342</u>	<u>\$4,673</u>	<u>\$5,577</u>
CHAMPUS as percent of total	(a)	17	15	15	15	15	16	15

- a/ CHAMPUS is not broken out in fiscal year 1974.
- b/ Direct costs include construction breakout in fiscal year 1974-1977, include TRIMIS
- c/ Indirect costs include health planning and organization and delivery categories in period fiscal year 1974-1977.
- d/ Other costs include research training and education and occupational safety (prevention and control in fiscal year 1974-1976).

SOURCE: Office of Assistant Secretary of Defense (Health Affairs).

**CHART 17
DOD ENERGY CONSUMPTION
(HUNDRED TRILLION BTU)
FISCAL YEAR 1975-1982**



SOURCE: OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
(MANPOWER, RESERVE AFFAIRS AND LOGISTICS)

Health care costs have been fast outstripping the growth of other costs. A separate study is being prepared on health expenditures, consequently, the factors pushing their growth will not be discussed in this study.

Spend-Out Rates

The increasing outlays in the 1984 and 1985 budgets and the increasing concern over Federal budget deficits could result in curtailing operations and maintenance accounts because of pressure to reduce defense outlays rapidly. On average, according to the CBO, only 12 percent of budget authority granted by the Congress for procurement is spent in the year the authority is granted. Another 37 percent is spent in the second year, and 30 percent is not spent until the third year. In contrast, 98 percent of the budget authority for personnel and 83 percent of the budget authority for operations and maintenance are spent in the first year. (This has been decreasing slightly as a larger portion of the account has been used for supplies versus pay.)

Questions for Use when Considering Public Policy and Corresponding Budget Decisions

As the O&M budget is reviewed in conjunction with long-range factors affecting it, some questions emerge, and their answers affect future funding requirements. Some of these questions follow:

1. The recent effort to modernize the forces has resulted in new weapon systems being introduced into the inventory. The old inventory is sometimes relegated to other uses, such as guard and reserve units.
 - Have the services adequately planned the integration of replaced systems into guard and reserve units in terms of maintenance and support?
2. Simulators are used in addition to hands-on equipment training. This method is not only expensive in operations and maintenance costs but also shortens the life of the equipment.
 - Have the services considered increased simulator use in their training programs to reduce O&M costs and extend the life of equipment?
3. The individual services provide both recruit and advanced technical training.
 - To what extent can duplication of training facilities be minimized by having joint service training centers?
4. Although the number of installations and buildings has dropped in recent years, the cost to operate and maintain these facilities is substantial.

Depot Maintenance

Depot-level maintenance, which is overhauling and repairing aircraft, combat vehicles, ships and equipment, is a key component of DOD's effort to increase the materiel readiness of the U.S. forces. The Defense Department currently spends about \$12.4 billion and uses over 170,000 people in its depots to maintain weapons systems and equipment.

A key indicator used in this area is the backlog. The backlog is a problematic number. It is a function of many things, such as the numbers and types of systems in the inventory, and their maintainability, their usage rates, the availability of parts and skilled repair personnel, and the efficiency of the maintenance and repair system. In addition, the services use different definitions of backlogs, including the "zero" backlog definition. The services often use the "zero" backlog (using their individual definitions) as a goal. GAO questions whether a zero backlog is achievable or economical.

For example, the Army's definition of a "zero backlog" simply means requirements have been funded, not necessarily accomplished. The work that is funded but not completed in that fiscal year is called "carryover." To illustrate this point, let's look at Corpus Christi Army depot, which had a work years-end "carryover" of \$50.5 million in fiscal year 1981 and a \$82.6 billion "carryover" in fiscal year 1982. This amounts to a 64-percent increase in "carryover" work.

Military Training

A large part of the O&M costs is dedicated to training military personnel. Training is costly: \$10.5 billion during fiscal year 1982, with 236,000 students and 191,000 staff to support these activities. (See tables 28-30). The training is categorized into six areas: recruit, officer acquisition, specialized skills, flight, professional development, and one-station unit training. Each service conducts separate recruit and flight training. At the end of fiscal year 1982, recruit training was conducted at 13 military installations, specialized skill training at 80 locations, flight training at 17 sites, professional development education at 12 schools, and one-station unit training at 7 locations.

One important trade-off which affects the cost of training is using automated training devices in lieu of actual situation training. For example, using simulators can save on weapon system fuel. Also affected, however, would be the numbers and types of training personnel, weapon systems, and training facilities.

SECTION V

DISCUSSION ON MILITARY PERSONNEL

The military personnel appropriations contain the following funds for active and reserve personnel and cadets:

- Pay and allowances.
- Relocation expenses, including household goods shipment and transportation costs.
- Targeted pays and bonuses to attract and retain personnel with special skills.
- The Government's contributions for social security tax payments.
- Other personnel costs, including, in 1984, the costs for unemployment benefits provided to States for unemployed service personnel who are honorably discharged.

These appropriations are for payments which will be made to military personnel or on their behalf by the Government in its role as employer.

The following table shows military manpower outlays for selected fiscal years. Notice the large increases since fiscal year 1979. These increases are due to (1) the increased number of active duty, reserve, and retired personnel and (1) the pay and retirement annuity increases.

TABLE 34
Military Manpower Outlays
In Current Dollars For
Selected Fiscal Years
(\$ billions)

	<u>FY 64</u>	<u>FY 74</u>	<u>FY 76</u>	<u>FY 78</u>	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>	<u>Estimated</u> <u>FY 83</u>	<u>FY 84</u>
Military Personnel Appropriations	12.3	22.1	23.3	25.1	26.3	28.5	33.6	38.5	40.7	42.6
Military Retired Pay Appropriations	1.2	5.1	7.3	9.2	10.3	11.9	13.8	14.9	16.1	17.1
Reserve/Guard Personnel Appropriations	.7	1.6	1.8	2.0	2.1	2.4	3.2	3.8	4.6	5.1

SOURCE: Fiscal years 1980, 1981 and 1982 Annual Reports of the Department of Defense and fiscal year 1974 budget.

TABLE 30
Trends, Manpower in Support of Training, FY 1977-82
 (Combined Military and Civilian End Strengths, Thousands)

	<u>FY 77</u>	<u>FY 79</u>	<u>FY 80</u>	<u>FY 81</u>	<u>FY 82</u>
Training and Direct Training Support	130	109	111	115	115
Base Operating Support	81	71	76	73	71
Major Training Headquarters	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
Total	215	184	191	191	191

Source: Military Manpower Training Reports FY 1980 and 1982
 Department of Defense

Civilian Personnel

Another factor which influences O&M outlays is the cost of civilian personnel. The following table shows, for selected years, the number of civilians employed by the Department of Defense and their support costs.

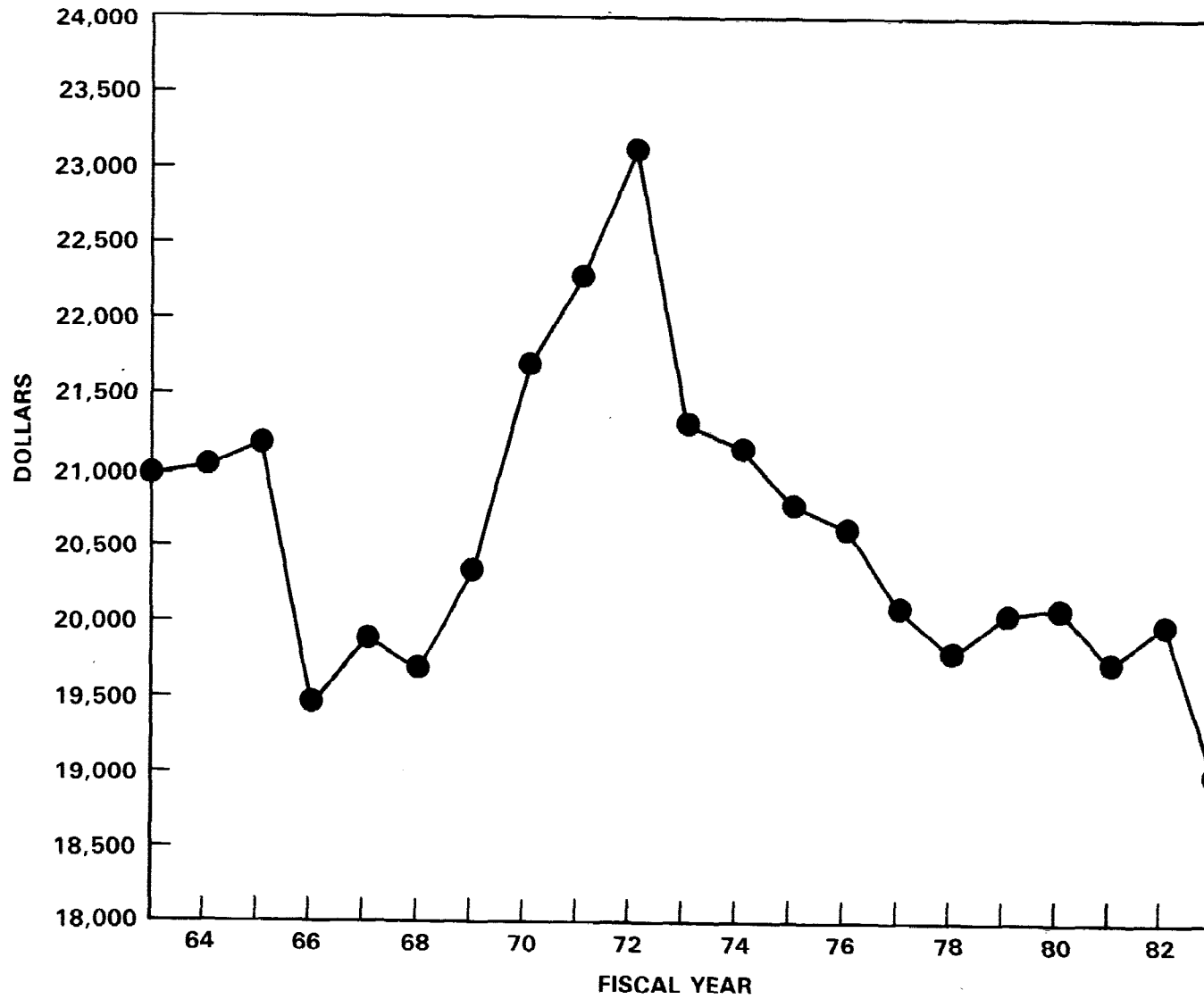
TABLE 31
 DEPARTMENT OF DEFENSE
 CIVILIAN STATISTICS FOR
 SELECTED FISCAL YEARS

<u>Fiscal Year</u>	<u>End Strengths</u> (000)	<u>Costs</u> (\$ billions)
1964	1,175	7.5
1974	1,109	14.1
1976	1,047	16.4
1978	1,017	18.9
1980	985	20.8

Source: Department of Defense
 Fiscal Year 1980
 Annual Report

A key point here is that the mix and cost of civilian personnel are influenced by the general economic condition and by demographics. For example, because trained active duty naval personnel are not available, the Defense Department is competing for and using civilian technical equipment specialists to help maintain some of its active fleet. The Government is also contracting for civilian pilots to support some of its basic flight training. In both of these examples, civilian personnel are being used in lieu of military, thus O&M costs are affected rather than military personnel costs. Demographic trends are discussed in the personnel section.

CHART 19
ACTIVE MILITARY PERSONNEL PER CAPITA COSTS
(CONSTANT DOLLARS)



All active and retired military personnel and their dependents, and U.S. civilians employed overseas and their dependents, are eligible for medical treatment and outpatient care at any DOD medical facility. In addition, DOD administers CHAMPUS, which serves as a third-party payer for civilian-provided medical care given to retired military personnel and to the spouses and children of active, retired, or deceased personnel.

A substantial portion of DOD's health care facilities and resources is used to treat retired personnel and their dependents. A breakdown of fiscal year 1980 average daily patient load for hospitals in the continental United States indicated that active duty personnel and their dependents constituted 40.8 and 23.4 percent, respectively, of the average daily patient load, while retirees, their dependents, and others constituted 16.8, 15.7, and 3.3 percent, respectively.

The 125 hospital and clinics located in the continental United States have an average daily patient load of about 15,000 inpatients and 130,000 outpatients. They provide hospital care to about 900,000 annually (see table 33). The level of care provided varies among DOD facilities, since some Defense installations lack associated hospitals, and most hospitals are small and may be able to provide only primary care. In fiscal year 1980, 16 hospitals located in the United States provided 49 percent of DOD's inhouse hospital care.

TABLE 33

Inpatient and Outpatient Statistics
Department of Defense
(Continental United States)

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
Hospital admissions (in thousands)	874	911	886	884	879
Outpatient visits (in millions)	49.8	46.4	46.2	47.4	47.4
Inpatient ADPL (note a)	15,961	15,663	15,303	15,052	14,734
Outpatient ADPL (note b)	<u>135,438</u>	<u>127,123</u>	<u>126,575</u>	<u>129,863</u>	<u>129,863</u>
Total (note b)	<u>152,399</u>	<u>142,786</u>	<u>141,878</u>	<u>144,915</u>	<u>144,597</u>
Inpatient ADPL as percent of Total	10.5	11.0	10.8	10.4	10.2

SOURCE: Office of Assistant Secretary of Defense (Health Affairs)

NOTES: ^a/ADPL--represents average daily patient load.
^b/Outpatient ADPL is an estimate derived by dividing
outpatient visits by 365.

The large increases occurring in reserve appropriations since 1980 are probably the result of several factors, including

--the 1981 and 1982 pay raises,

--the targeted bonuses and education incentives authorized in 1979 to aid recruiting and retention, and

--the increase since 1980 in the number of full-time active duty personnel supporting the reserve units.

All of these factors have combined to increase per capita costs for the last 4 years. While these costs are increasing, the reserve end-strengths are projected to be higher in 1983 than at any other time in the period.

The services have begun to place more reliance on their reserve units. The Army has about 19,000 reserve troops assigned to the Rapid Deployment Force. It also has begun a program to provide the newest equipment to the earliest deploying units. Thus, early deploying reserve components will get newer equipment than later deploying active units. The Navy has provided additional, more advanced ships in which its reservists train. The Air Force's reserve modernization program has reservists working alongside their active counterparts in flying and maintaining more modern equipment. Thus, the reserves are used to supplement active component missions, and per capita costs show this is done at about one-fourth the active component costs.

Retired Pay Appropriations

After allowing for inflation, the retired pay per capita costs have increased gradually, growing only about 5.7 percent over the 20-year period. (See chart 21.) However, the 1981 and 1982 cost-of-living increases and these years' pay raises for new retirees have driven the costs higher than the inflation rate. Costs are also affected by the length of service at the time of retirement. If the retirees' average length of service declines and the life expectancy retirement costs will increase, these per capita costs have grown from about \$10,800 in 1963 to about \$11,400 in 1981. While most of these costs are not within DOD's control, it can control the number of new retirees with less than 30 years of service.

--Do we need all the facilities? Are we making the correct choice when we decide to repair, renovate, or replace buildings? Do we consider the building's life-cycle costs when decisions are made to extend or end its use?

5. Within each service, more major items have been budgeted for procurement during fiscal years 1981-83 than under the previous administration.

--Have changes in support costs been related to the force structure changes made from 1980 through 1983?

--Have the full consequences for the out-years been projected?

6. The new weapon systems being fielded during the 1980's are sophisticated, of a high technology, and cannot be used effectively without adequate numbers of highly educated and/or skilled people to operate and maintain them. Today's economy has been an acknowledged contributor to Defense's being able to hire and contract for the skilled civilians needed.

--Will the services be able to compete with a growing private sector to obtain and retain adequate numbers of highly educated and skilled people? What alternatives are being considered, i.e., increased use of automation, products of a lower technology, increased recruitment of women, etc.?

7. The investment's expansion has resulted not only in upgrading existing weapons systems but also in introducing many new investments into the supply and maintenance systems. It appears now that depot-level maintenance is experiencing large backlogs in maintaining today's investment.

--What is being done to reduce the level of depot maintenance backlog for today's investment and to plan for the expected depot-level maintenance that the new investment will impose?

recall members of the Fleet Reserve for 2 months of active duty training every 4 years. However, the Navy currently does not require this active duty training for its Fleet Reserve.

Because retired pay per capita costs have risen to their highest levels in the 20-year period, the services may need to reexamine their use of 20-year retirement. Retired pay per capita costs are more than 60 percent of what the active personnel per capita costs are. DOD is now reexamining the military retirement system as part of its Fifth Quadrennial Review of Military Compensation.

Military Personnel End-Strengths

Chart 22 illustrates active duty military personnel strength-level trends by service from 1949 through 1984. The largest strength levels for all the services occurred during the Korean Conflict and the Vietnam War. Recently, the trends are increasing for all the services from 1981 through 1983, and 1984 projections indicate that the increase will continue.

Table 35 shows military manpower trends and also the planned increases in active duty and reserve military strengths projected in fiscal years 1983 and 1984. For example, fiscal year end-strengths for 1984 are projected higher than the actual strength levels for 1980. However, these totals are generally lower than the strength in 1968 when we were engaged in the Vietnam War.

Active Personnel Appropriations

Chart 19 shows the per capita costs for active duty military personnel over the last 20 years in constant 1983 dollars. In 1963, these costs were about \$21,000. Initially, as our involvement in the Vietnam War increased, the per capita costs declined. This decline was caused, perhaps, by the large number of draftees needed to support the war. However, as the war continued, the per capita costs increased, which might have been the result of the incentive and hazardous duty pays, family separation, and change of station allowances needed to support a large number of troops overseas.

The per capita costs reached their peak in 1972 after the Congress authorized large comparability pay raises in anticipation of the all-volunteer forces. As the Vietnam War closed, per capita personnel costs--in constant dollars--declined gradually to their lowest point in the 20-year period in 1978. This occurred at the same time that end-strength reached its lowest point in the 20-year period.

For almost the entire all-volunteer forces period, constant personnel per capita costs have been less than the 1963 per capita cost. Yet, from 1977 thru 1982, these costs have remained relatively stable, even in light of the pay increases authorized in 1981 and 1982. It appears that, with the capped 1983 pay raise, these costs have declined to their lowest point in the 20-year period at about \$19,000.

Table 35

DEFENSE MANPOWER TRENDS: SELECTED YEARS
(END OF FISCAL YEAR STRENGTHS IN THOUSANDS)

	<u>FY 64</u>	<u>FY 68</u>	<u>FY 78</u>	<u>FY 80</u>	<u>FY 82</u>	<u>a/</u> <u>Program Planned</u> <u>FY 83</u>	<u>FY 84</u>	<u>% Increase</u> <u>from FY 80</u> <u>to 84</u>
Active Military Selected	2,687	3,547	2,061	2,050	2,109	2,127	2,165	5.6%
Reserve Individual Ready	953	992	788	851	964	1,002	1,030	21.0
Reserve ^{b/}	845	1,571	356	413	396	427	458	10.9

Source: Assistant Secretary of Defense
 Manpower, Reserve Affairs and Logistics

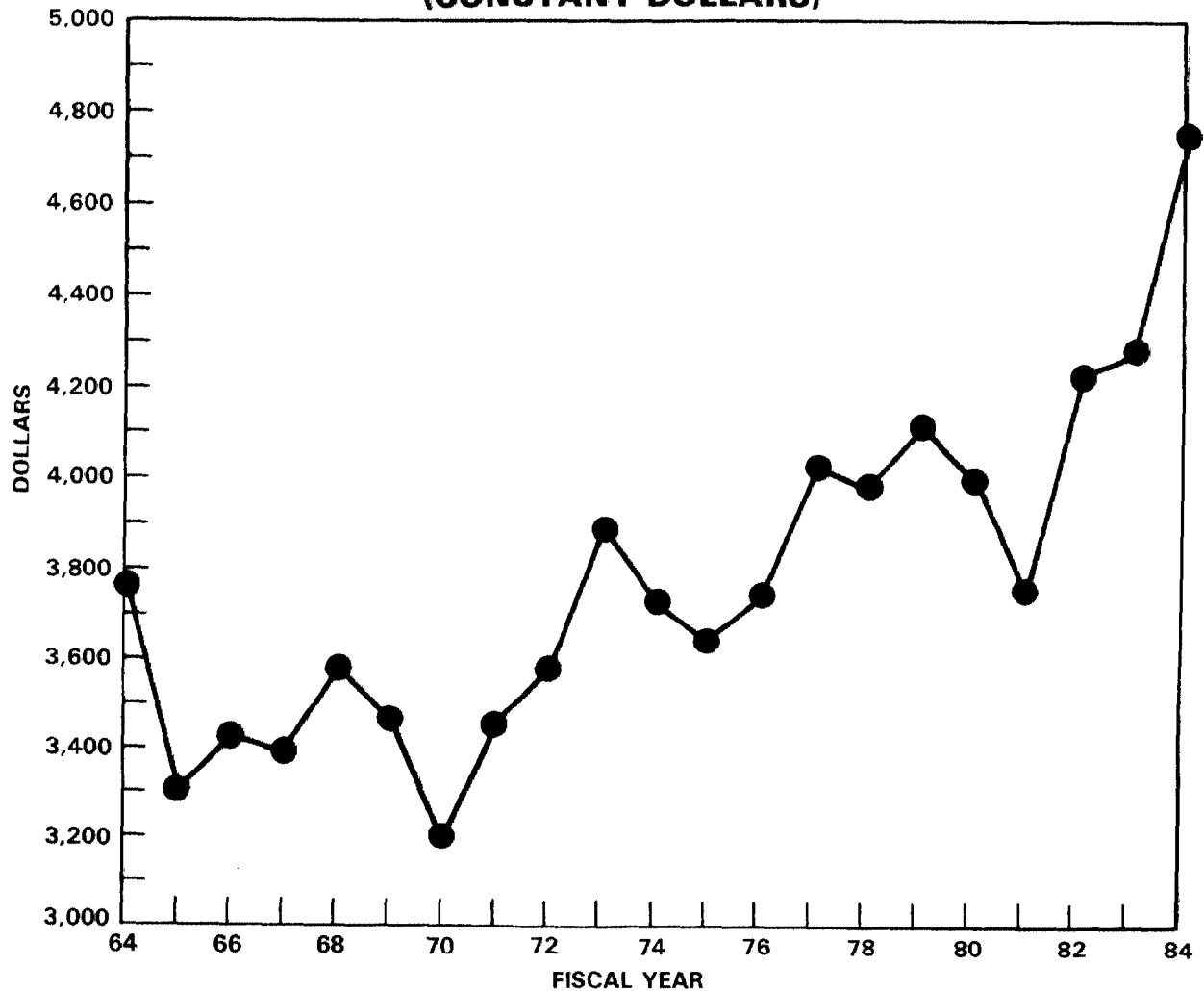
a/Beginning fiscal year 1983, reserve personnel on active duty for training and administration of reserves (TARs) are categorized as selected reservists; prior to fiscal year 1983, TARs were included in active military strengths. Fiscal year 1982 TAR strength was 11,000.

b/Includes Inactive National Guard.

Reserve Personnel Appropriations

The reserve personnel appropriations indicate the opposite trend. (See chart 20.) Over the 20-year period, these costs have tended to increase. As this trend continued, the constant-dollar costs increased from about \$3,800 per capita in 1963 to about \$4,750 in 1983, a 26-percent growth.

CHART 20
RESERVE PERSONNEL PER CAPITA COSTS
(CONSTANT DOLLARS)



- continued below-natural replacement birth rates since 1972;
- changes in family structure, composition, and life-style, i.e., late marriages/fewer children and higher divorce rates/rise in one-parent families;
- continued increase in number of women entering the workforce; and
- declining male population through year 2,000 (by 1980 the pool will shrink by 20 percent).

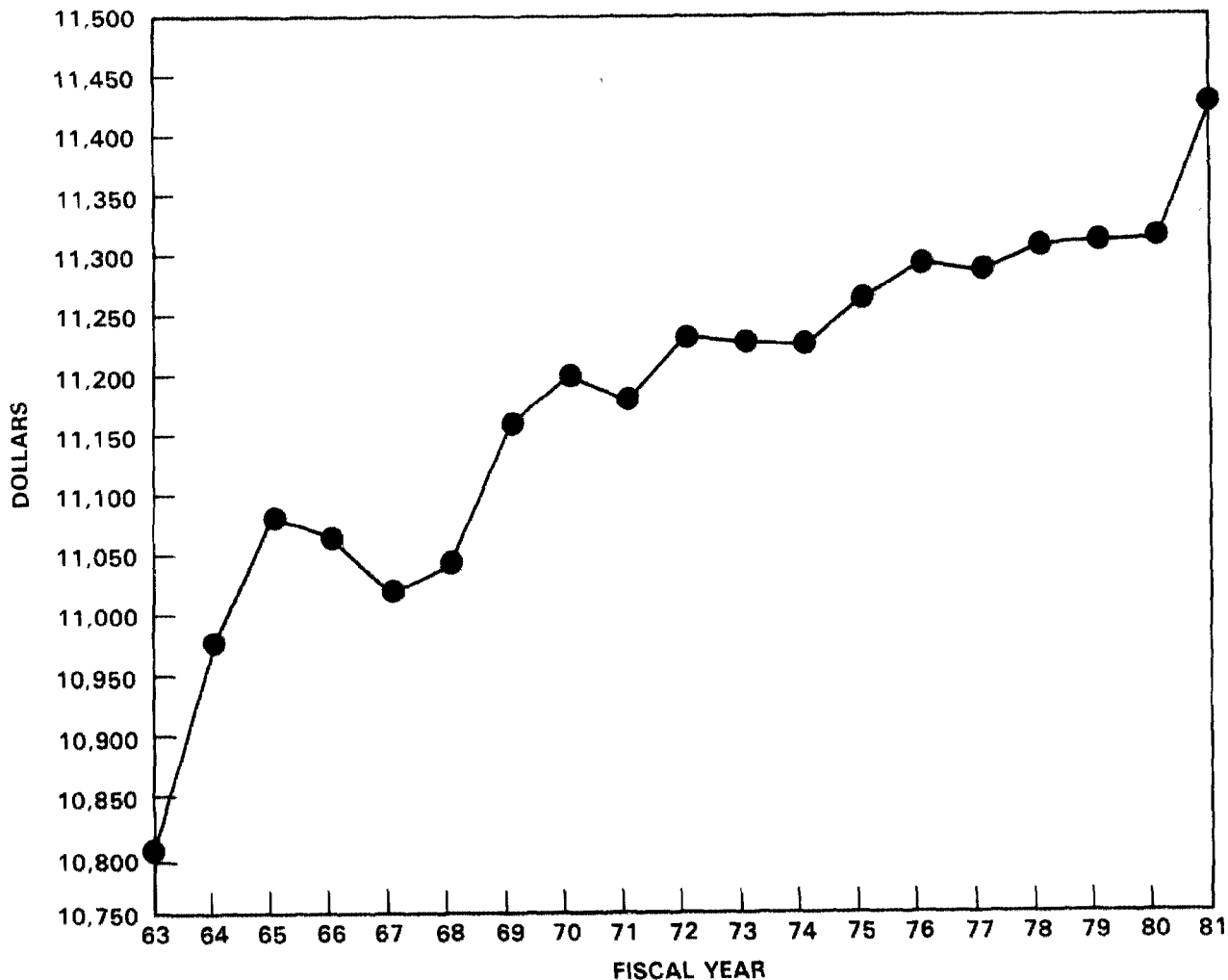
A number of "value" changes have also occurred in society, including more emphasis on the quality of life, allegiance to family values, reluctance to move, more numbers of military wives working, and the technician's increasing allegiance to craft/skill (professional identification).

Recruitment, retention, and retirement are three important stages in obtaining and maintaining a quality military personnel system. The services ability to recruit sufficient quantities of qualified personnel is dependent on such factors as general economic conditions, public attitudes toward the military, the rewards of military life, and the extent to which the retired military need to be replaced. In the last few years, as compared to the middle 1970's the services have been able to obtain a higher number of recruits with high school diplomas. (See table 37 and chart 24).

A changing attitude toward the military and poor economic conditions are among the reasons cited for the higher number of recruits with high school diplomas. At the same time, the number of female recruits who are almost entirely high school graduates has increased. In fiscal year 1971, the female enlisted strength was 32,000, or 1.6 percent of enlisted strength. By 1981, the enlisted female strength had risen to 160,000 (9.0 percent), and by 1987 the totals are expected to be 188,000, or 9.6 percent of enlisted strength. (See table 38). These figures are important because the long-term demographic trends show a decreasing number of 18-year-old males in the 1900s. (See table 36).

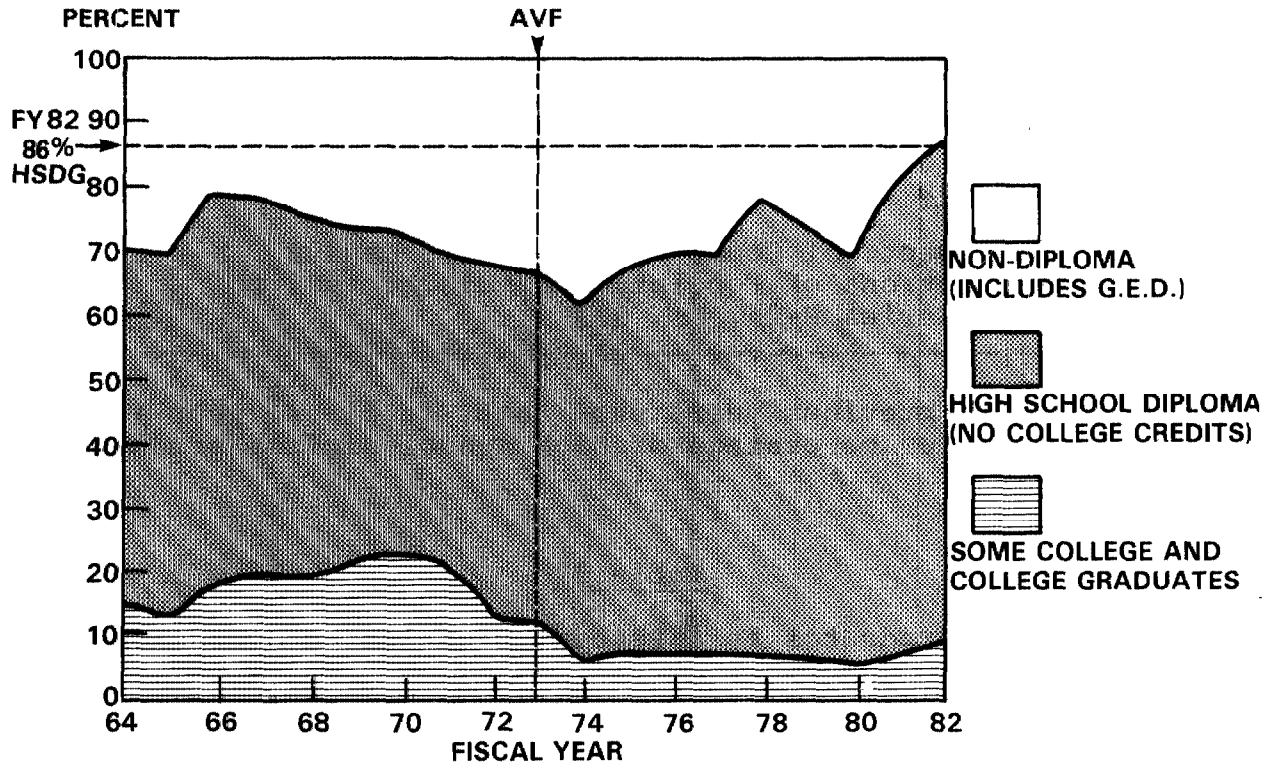
A third factor which affects both quality and quantity of military personnel is the extent to which military personnel re-enlist and make the services a career. As we have discussed in the O&M section, the military spends a large portion of funds on training. For example, in fiscal year 1982, about 22 percent of the students were recruit trainees. The following tables show that both re-enlistments and numbers of enlisted in career status has risen significantly, starting in fiscal year 1981. This has been attributed to such factors as changing attitudes toward the military and the current unemployment rates.

CHART 21
RETIRED PAY PER CAPITA COSTS



The original retirement legislation envisioned 30-year retirement for active duty personnel. Following World War II, the Congress enacted legislation allowing service members to retire after 20 years at the discretion of the Secretary of the Service. In the Army, no further service was required from the retirees except the potential for recall in the event of a national emergency. In the Navy and Marine Corps, a special reserve unit was established, called the Fleet Reserve. All Navy and Marine Corps retirees with more than 20 but less than 30 years of creditable service were required to serve in the Fleet Reserve until completion of a total of 30 years of service. The Fleet Reserve legislation allows the Navy to

**CHART 24
DISTRIBUTION OF DOD NPS ACCESSIONS*
BY EDUCATIONAL ATTAINMENT
FY 1964 THRU 1982**



*INCLUDES NPS MALES AND FEMALES INDUCTEES, REGULARS, AND RESERVES WITH 2 OR MORE YEARS ACTIVE COMMITMENT.

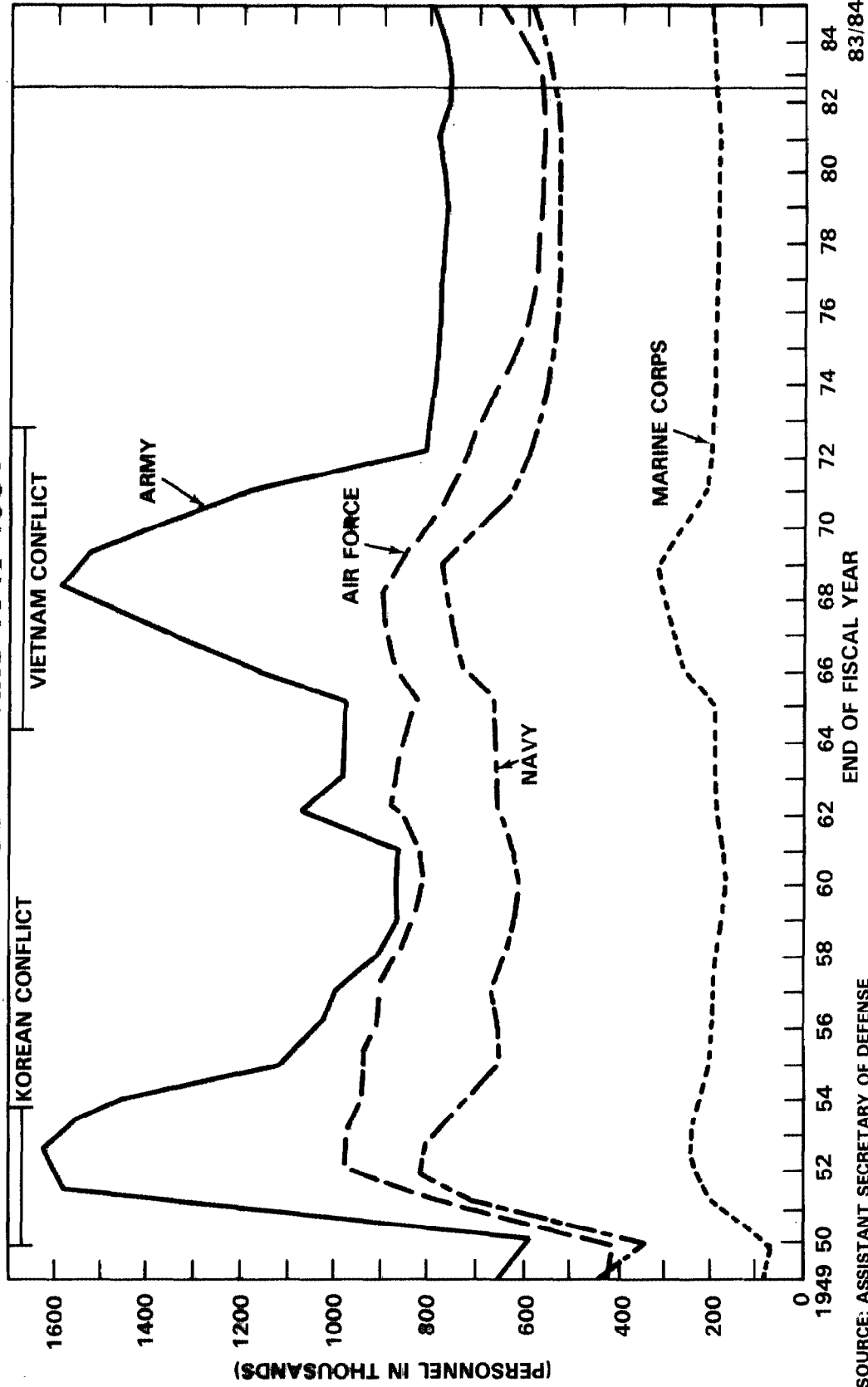
SOURCE: OFFICE OF ASSISTANT SECRETARY OF DEFENSE
MANPOWER, RESERVE AFFAIRS AND LOGISTICS

**TABLE 38
FEMALE ENLISTED STRENGTH**

SERVICE	STRENGTH (THOUSANDS)			PERCENT OF TOTAL ACTIVE ENLISTED STRENGTH		
	FY 1972	FY 1981	FY 1987	FY 1972	FY 1981	FY 1987
ARMY	12.3	64.9	70.0	1.8	9.6	10.1
NAVY	5.7	34.3	45.6	1.1	7.3	8.7
MARINE CORPS	2.1	7.1	9.1	2.1	4.1	5.0
AIR FORCE	11.7	53.8	63.4	2.0	11.5	11.5
DOD	31.8	160.1	188.1	1.6	9.0	9.6

SOURCE: MILITARY MANPOWER TASK FORCE REPORT (EXCERPT P. II-25) A REPORT TO PRESIDENT ON THE STATUS AND PROSPECTS OF THE AVF

CHART 22
DEPARTMENT OF DEFENSE
ACTIVE DUTY MILITARY PERSONNEL STRENGTH LEVELS
TRENDS BY SERVICE
FISCAL YEARS 1949-1984



SOURCE: ASSISTANT SECRETARY OF DEFENSE
 MANPOWER, RESERVE AFFAIRS AND LOGISTICS

83/84
 PROJECTED

Table 41

DOD Re-enlistment Rates, FY 1975-82*
(Percent)

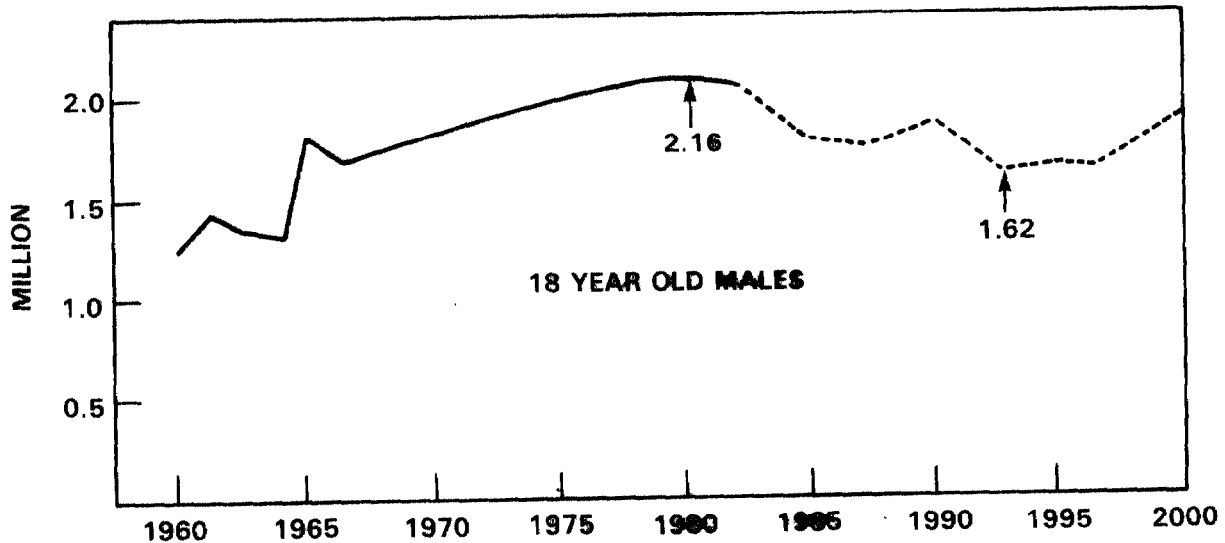
CATEGORY	FY 1975	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982
First Term	37	37	37	39	43	52
Career	81	71	68	70	76	82

*Re-enlistments as a percentage of those eligible to re-enlist.

Career force includes all enlisted personnel who have more than 4 years of service.

Source: Military Manpower Task Force Report (excerpt III-13)
A Report to President on Status and Prospects of the AVF
October 1982

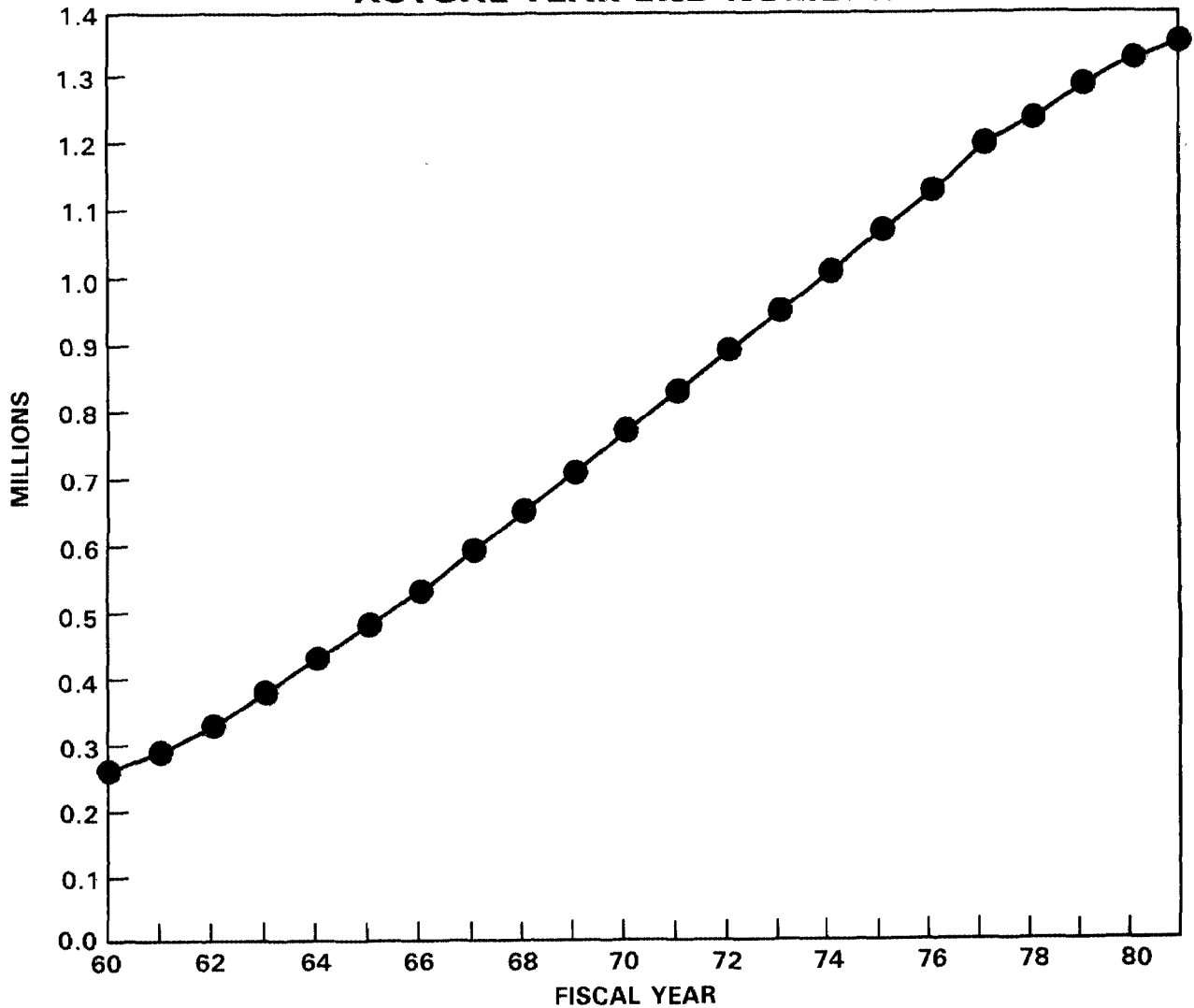
CHART 25
18 YEAR OLD MALE POPULATION



SOURCE: AIR FORCE 2000—CHARTS 1982
AIR POWER ENTERING THE 21ST CENTURY
AIR FORCE 2,000—BRIEFING PAPER 1982

Chart 23 shows the steady increase in the number of military retirees since 1960. This increasing number of retired military will require not only increased annuitant pay but also could contribute to the strain that older veterans are expected to have on the Veterans Administration's health care system.

CHART 23
DEPARTMENT OF DEFENSE
RETIRED MILITARY ANNUITANTS
ACTUAL YEAR-END NUMBER



SOURCE: SELECTED MANPOWER STATISTICS
FISCAL YEAR 1981 & OFFICE OF ASSISTANT SECRETARY OF
DEFENSE—MANPOWER, RESERVE AFFAIRS & LOGISTICS

Recruitment and Retention

Some general demographic trends can help identify the quality and quantity issues associated with armed forces staffing. Some of these trends are

The permanent-change-of-station account is influenced by many factors, including transportation costs, the number of troops deployed overseas, household goods weight allowances, and the services' personnel rotation policies. Costs vary among the services for airline fares, dependent travel, and household goods shipments.

Accession travel appropriations provide funds to relocate recruits from their place of entry in service to their first duty station. The services requested a \$73-million increase, or 18 percent over 1982, for almost 40,000 additional trips. Yet, recent enlistment trends indicate that the number of non-prior-service enlistments have declined since 1980 while re-enlistment rates have increased. In addition, enlisted accession travel estimates may not appear to be consistent among the services. For example, Army's ratio of enlisted dependent accession travelers is almost twice as high as the next closest ratio in the Air Force and four times higher than either the Navy or Marine Corps. We did not determine the validity of these ratios.

Separation travel appropriations provide funds to relocate personnel when they are released or separated from the service. In this category, the 1983 request has increased by \$70 million, or 18 percent over the 1982 appropriation, for 15,000 additional trips. This increase was requested while the services were experiencing record-high retention rates and were projecting even higher retention rates for fiscal year 1983.

In the rotational travel request--travel to, from, or between overseas points involving transoceanic travel--the projected number of trips decreases. However, even though the 1983 funding request estimated a decline of over 8,000 trips, it projected costs to increase more than \$157 million, or 12 percent over 1982 appropriations.

Table 36

DEMOGRAPHIC TRENDS (millions)				
<u>Middle Series</u>				
<u>Census Projections</u> (Oct. 82)	<u>1981</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
<u>18 & 19 year olds</u> (men & women)	8.5	7.2	6.5	7.5
<u>18 year old males</u>	2.16	1.75	1.70	1.92
<u>Source:</u>	U.S. Dept. of Commerce, Bureau of Census Projections of Population of U.S.A. 1982 to 2050 Series P-25, No. 922			

Comparisons with previous years show that, in fiscal year 1982, DOD brought in a higher percentage of high school diploma graduates than ever before.

Table 37

High School Graduates as a Percent of Enlisted Accessions *

Service	Draft Years			AVF Years					1st quarter FY83
	FY64	FY68	FY72	FY74	FY76	FY80	FY81	FY82	
ARMY	70	71	61	50	59	54	80	86	86
NAVY	57	82	71	64	77	75	76	79	83
MARINE CORPS	61	58	52	50	62	78	80	85	83
AIR FORCE	84	93	83	92	89	83	88	94	97
DOD	69	74	67	61	69	68	81	86	87

* High School Graduates includes those with post-secondary education.

Excludes non-diploma graduates with high school equivalency certificates.

Source: Military Manpower Task Force Report
October 1982
(excerpt from p. II-s)

Table 43

Population (In thousands)

<u>Year</u>	<u>Military</u> <u>Wives</u>	<u>Civilian</u> <u>Wives</u>
1970	1,005	43,749
1971	990	43,747
1972	1,013	44,740
1973	846	45,468
1974	910	45,900
1975	920	46,150
1976	769	46,549
1977	785	46,712
1978	729	46,656
1979	659	47,033
1980	707	48,425
1981	617	48,699
1982	655	48,350

Source: "The Employment Situation for Military Wives"
Allison Sherman Grossman
Monthly Labor Review pp. 60-64 Feb. 1981

Table 39

DOD Re-enlistment Rates, FY 1975-82*
(Percent)

CATEGORY	FY 1975	FY 1978	FY 1979	FY 1980	FY 1981	FY 1982
First Term	37	37	37	39	43	52
Career	81	71	68	70	76	82

*Re-enlistments as a percentage of those eligible to re-enlist.

Source: Military Manpower Task Force Report (excerpt III.4)
A Report to President on the Status and Prospects of
AVF.

Table 40

Career Force as a Percent of Total Enlisted Strength, FY 1971-87

Service	FY 1971	FY 1976	FY 1981	FY 1987 (Projected)
Army	24	36	42	43
Navy	36	42	43	49
Marine Corps	23	26	30	30
Air Force	48	53	51	51
DOD	33	41	44	46
Number (Thousands)	765	735	781	898

Source: Military Manpower Task Force Report (excerpt III-13)
A Report to President on Status and Prospects of the
AVF
October 1982

The officer table regarding permanent change of station reveals a somewhat different pattern of moves versus years of service. For example, the highest percentage of personnel occurs in the 1, 2, 3 and over 9 move categories. For enlisted personnel it was 16.1 percent, while officers only had a representation of 3.5 percent in the 0 moves category. The highest representation occurs in the over 9 moves for officers, while it occurs in the 0 moves category for enlisted personnel.

Competition for Skills

Competition for skills with the civilian sector has left the military short of personnel with critical skills. These shortages may be driven by the services' desire to have an enlisted career progression starting at the lowest grade rather than allowing lateral entry for critical occupations. As we have mentioned in the O&M section, the Navy is using civilian technicians to maintain equipment on a portion of its ships. The services are also using civilian aircraft and pilots in conducting some of their basic military in-flight training. Although this study does not measure the magnitude of skill shortages in the services, the Army has identified its 10 most critical occupational shortages for fiscal year 1983. Eight of the 10 occupations are in the communications area, an area which is also in demand in the civilian sector.

Permanent Change of Station

The permanent-change-of-station category in the military personnel appropriations is divided into the following funding areas:

Table 42

Permanent-Change-of-Station Appropriation				
<u>Travel</u>	<u>Fy 1980</u>	<u>FY 1981</u>	<u>FY 1982</u>	<u>FY 1983</u>
	----- (millions) -----			
Rotational	\$ 880	\$ 1,097	\$ 1,330	\$ 1,487
Accession	236	341	410	483
Separation	280	361	391	461
Operational	208	280	315	355
Training	95	108	123	137
Nontemporary Storage	51	58	61	61
Organized unit	30	38	43	47
Temporary lodging			72	122
Total	\$ 1,781	\$ 2,283	\$ 2,746	\$ 3,154

NOTE: Totals may not add due to rounding.

In fiscal year 1983, the services requested \$3.1 billion for permanent-change-of-station travel, a 77-percent increase over 1980 and a 15 percent increase over 1982. The services ascribe most of the increase to costs for accession, separation, and rotational travel; these costs account for \$300 million of the increase.

Table 45

1978 - 1979 SURVEY ON

LABOR FORCE PARTICIPATION OF SPOUSES^a OF OFFICERS
BY NUMBER OF DEPENDENTS
(Percentages)

	Number of Dependents Other Than Spouses			Total
	None	1 to 3	Over 3	
In Armed Forces	22.9 51.6	6.5 46.2	3.0 2.2	9.9
Working Full Time	27.6 24.2	24.4 67.4	29.0 8.4	25.4
Other Working ^b	11.8 18.6	14.9 74.0	14.4 7.5	14.2
Unemployed	7.4 30.8	4.9 63.8	4.0 5.4	5.4
Other Not Working ^c	30.3 14.9	49.4 77.0	49.8 8.1	45.2
Total Personnel	192,859 22.3	609,478 70.4	63,675 7.4	866,013

NOTE: See Survey Form 3, question 79.

^a Spouses of respondents married at time of survey are included in this table.

^b Other working includes part time and self-employed spouses.

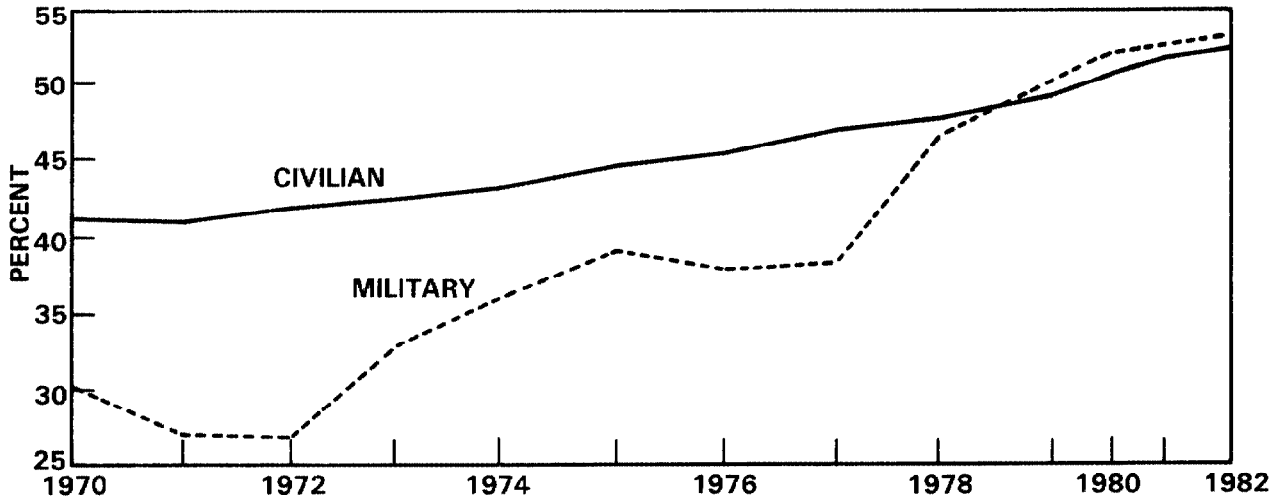
^c Other not working includes spouses who were in school, at home, or have retired.

Source: "Description of Officers and Enlisted Personnel in the U.S. Armed Forces:" (A Reference for Military Manpower Analysis)
Rand Study March 1982

Effects of Dependents on Military Personnel

Military wives made particular strides into the labor force in 1978-1982, which brought them up to comparability with the civilian rates. The following plotted figures show the general comparative trends explicitly:

CHART 26
LABOR FORCE PARTICIPATION RATES OF WIVES BY MILITARY OR CIVILIAN STATUS OF THEIR HUSBANDS, MARCH 1970-MARCH 1979



SOURCE: THE EMPLOYMENT SITUATION FOR MILITARY WIVES
ALLYSON SHERMAN GROSSMAN/MONTHLY LABOR REVIEW pp. 60-64 FEB. 81

Additionally, the following table and chart provide comparative population figures for military wives and civilian wives as well as unemployment rates experienced by the two groups. It is evident from these two rates that military wives experience higher unemployment than civilian wives, although there is a trend toward an escalation of these figures for civilian wives.

Table 46

1978-1979 SURVEY

ON

NUMBER OF TIMES SPOUSE OR DEPENDENTS OF ENLISTED PERSONNEL
MOVED TO A NEW LOCATION

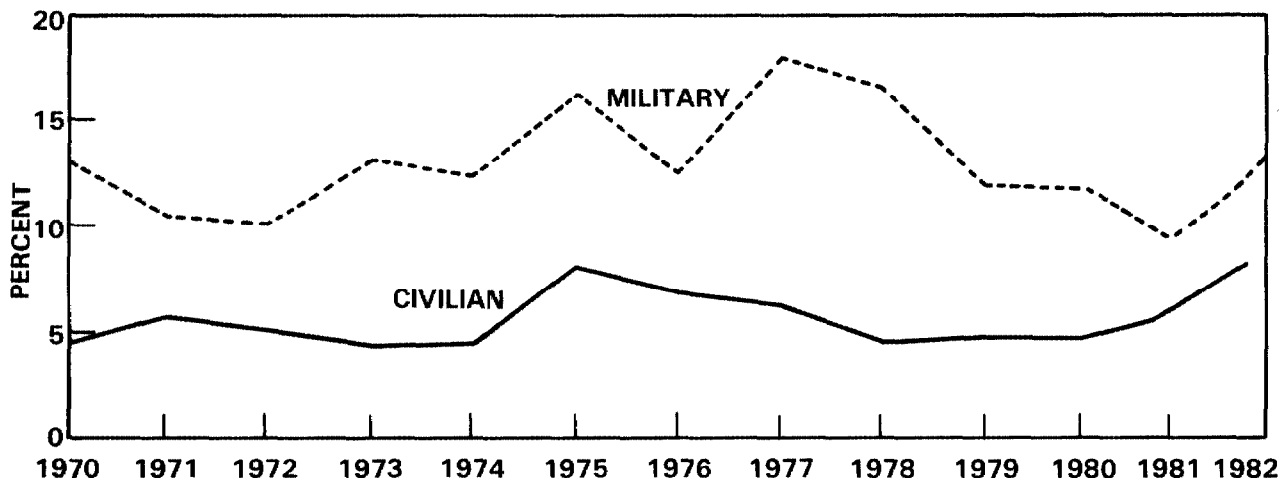
(Percentages)

Number of Moves	Year of Service				Total
	1 to 6	7 to 10	11 to 14	Over 14	
0	38.5	11.3	5.4	3.3	19.8
	80.0	12.6	3.5	3.9	
1	30.2	23.5	11.0	5.2	20.3
	61.4	25.6	6.9	6.1	
2	18.1	24.8	18.3	7.4	17.1
	43.8	32.2	13.7	10.4	
3	7.9	19.6	22.1	11.3	13.1
	24.9	33.1	21.5	20.5	
4	3.5	10.5	18.0	12.7	9.1
	15.7	25.6	25.3	33.4	
5	1.0	5.5	12.1	14.7	6.6
	5.9	18.2	23.2	52.6	
6	0.6	2.7	6.5	12.9	4.7
	4.8	12.7	17.6	64.9	
7	0.2	1.1	2.8	9.8	3.0
	2.4	7.9	11.8	78.0	
8	0.0	0.5	1.6	9.0	2.5
	0.3	4.7	8.1	86.9	
9	0.0	0.2	0.6	4.7	1.3
	0.9	3.1	6.4	89.6	
Over 9	0.1	0.5	1.5	9.0	2.5
	2.0	4.1	7.8	86.1	
Total Personnel	423,003	227,168	130,797	244,455	1,025,423
	41.3	22.2	12.8	23.8	

NOTE: See Survey Form 2, Question 62.

Source: "Description of Officers and Enlisted Personnel
in the U.S. Armed Forces"
Rand Study March 1982
Zahava D. Doering and William P. Hutzler

CHART 27
UNEMPLOYMENT RATES OF WIVES BY MILITARY OR CIVILIAN
STATUS OF THEIR HUSBANDS, MARCH 1970-MARCH 1979



SOURCE: "THE EMPLOYMENT SITUATION FOR MILITARY WIVES"
 ALLYSON SHERMAN GROSSMAN—MONTHLY LABOR REVIEW pp. 60-64 FEB. 1981

The new status of military working wives can have profound implications for military personnel policies. Judging from present trends, employment for the spouses will become a factor when military personnel decide whether to stay with or leave military service. This is compounded by the increasing number of women entering the military service, many of whom are married. As with the men, occupational decisions of their spouses (whether civilian or military) may affect the re-enlistment decisions of these military women. However, the military compensation system provides additional and higher allowances for personnel with dependents than provided for singles.

The change-of-station table for enlisted personnel shows the number of moves in relation to the number of years of service with the military. The total column reveals that the highest percentages of personnel fell into the categories of 0, 1, 2, 3, and 4 moves. Further interpretation of the first column of 1 to 6 years moves reveals that 25.8 percent of those who are in the 1 to 6 year category had 0 number of moves. Additionally, 94.9 percent of those who had 0 moves fell into the 1 to 6 years of service category.

Table 47

1978-1979 SURVEY ON

LABOR FORCE PARTICIPATION OF SPOUSES^a OF
ENLISTED PERSONNEL BY NUMBER
OF DEPENDENTS

	Number of Dependents Other Than Spouses			Total
	None	1 to 3	Over 3	
In Armed Forces	11.9 67.2	1.8 31.5	0.6 1.3	3.9
Working Full Time	38.8 41.7	15.2 52.1	14.3 6.2	20.2
Other Working ^b	16.6 22.6	15.4 67.2	18.6 10.3	16.0
Unemployed	6.0 44.8	2.1 50.7	1.5 4.5	2.9
Other Not Working ^c	26.7 10.2	65.6 79.8	65.1 10.0	57.1
Total Personnel	41,128 21.7	131,597 69.5	16,689 8.8	189,414

NOTE: See Survey Form 1, Question 88

^aSpouses of respondents married at time of survey are included in this table.

^bOther working includes part time and self-employed spouses.

^cOther not working includes spouses who were in school, at home, or have retired.

Source: "Description of Officers and Enlisted Personnel In The U.S. Armed Forces" (A reference for Military Manpower Analysis)
Rand Study March 1982

Table 44

NUMBER OF PERMANENT CHANGES OF STATION FOR ENLISTED PERSONNEL
(Percentages)

Number of Moves	Year of Service				Total
	1 to 6	7 to 10	11 to 14	Over 14	
0	25.8 94.9	3.4 3.5	1.4 0.7	0.9 0.9	16.1
1	22.2 90.2	7.1 8.1	1.2 0.7	0.9 0.9	14.5
2	22.3 82.4	13.8 14.3	4.5 2.5	0.9 0.9	16.0
3	17.3 68.4	21.1 23.3	10.1 5.9	2.3 2.4	14.9
4	7.4 45.1	19.6 33.5	14.3 13.0	5.2 8.4	9.7
5	2.8 25.9	14.0 35.9	14.8 20.0	7.5 18.2	6.5
6	1.1 12.5	9.9 31.6	15.6 26.4	9.8 29.6	5.2
7	0.5 7.3	5.4 22.6	13.9 31.2	9.8 38.9	3.9
8	0.2 3.8	2.9 14.3	10.0 25.7	12.3 56.3	3.4
9	0.1 2.3	1.0 7.3	5.4 20.9	10.1 69.5	2.3
Over 9	0.3 2.3	1.9 4.1	9.1 10.5	40.4 83.2	7.6
Total Personnel	925,697 59.0	259,606 16.6	137,803 8.8	245,169 15.6	1,568,274

NOTE: See Survey Form 2, question 61.

Source: "Description of Officers & Enlisted Personnel in the U.S. Armed Forces."
Rand Study March 1982 (A Reference for Military Manpower Analysis)
Zahava D. Doering and William P. Hutzler

Questions for Use when Considering Public Policy and
Corresponding Budget Decisions

As the military personnel budget is reviewed in conjunction with long-range factors affecting it, some questions emerge, and their answers affect future funding requirements. Some of these questions follow:

1. DOD expects to increase active duty end-strength by 130,000 between 1983 and 1987 to operate and maintain new, high technology weapon systems. There are different estimates as to what increasing end-strengths will cost. The Congressional Budget Office (CBO) estimates in its study on Army ground force modernization for the 1980's^{2/} that adding 100,000 more troops to the Army would cost \$6.7 billion over the next 5 years, assuming that the increases are phased in at steady annual rates. This covers pay and allowances and additional recruiting incentives needed to get more recruits while keeping recruit quality high. Should an economic recovery materialize, there would be tough competition for needed Army personnel. When the economy becomes more vigorous, the skills DOD needs are the ones that will be most in demand. In addition, the demographic trend reveals fewer young males will be in the labor pool in the future.

--In light of these new requirements and the possible competition for skills DOD will likely face, to what extent have you fully considered the personnel requirements for the new systems being fielded in planning and estimating bonus structures and costs?

--What do your studies show the differences in costs will be under the different possible situations? Have you considered using a larger number of women versus men in highly skilled positions? If increasing numbers of women are recruited, what up-front commitments are being planned? Do these commitments consider the needs of single head of families, dual service members, or other quality-of-life factors? To what extent are plans made to use civilian personnel if sufficient qualified military personnel cannot be obtained and retained? What happens to civilians if war breaks out, and they are in a combat zone?

2. The increasing need for highly trained military personnel and the resulting need to compensate them adequately for retention has led to the point where skilled personnel are promoted to positions which do not use their skills. An example of this is the military pilots.

^{2/}Military Manpower Task Force Report (excerpt III-13) A Report to President on Status and Prospects of the AVF, October 1982.

Table 46 reveals that most of the spouse/dependents fall into the categories of 0, 1, 2, 3, and 4 moves. The least representative occurs in the 9 moves category. If we examine the over 9 moves category in conjunction with the over 14 years service column, it reveals that 2.0 percent of those with over 9 moves fall into the 1 to 6 year category of service, while 86 percent of those who made over 9 moves fall into the over 14 years of service category.

This chart illustrates that most of the spouse/dependents fall into the category of 1, 2, 3, 4, and over 9 moves. This differs substantially from enlisted personnel, who have the highest representation in the 1 year move category (20.3 percent) and a very low representation in the over 9 category (2.5 percent). This compares officers with an over 9 moves percentage for officers of 13.2 percent, which is much higher. In terms of highest percentage of numbers, the officers fall into the over 9 moves and over 14 years categories. For enlisted personnel, the 0 moves, 1 move, and 1 to 6 years of service categories had the highest representation in personnel percentages.

TABLE 49
BUDGET OUTLAYS AS A PERCENT OF GROSS NATIONAL PRODUCT: 1962-1988

YEAR	TOTAL BUDGET OUTLAYS	NATIONAL DEFENSE	NON-DEFENSE				TOTAL NON-DEFENSE	GNP ^{1/} (\$ BILLIONS)
			PAYMENTS FOR INDIVIDUALS	ALL OTHER GRANTS	NET INTEREST	ALL OTHER		
1962	19.5%	8.9	5.2	0.9	1.3	3.2	10.5	\$548.2
1963	19.3%	8.7	5.3	0.9	1.3	3.1	10.6	578.0
1964	19.2%	8.3	5.1	1.0	1.3	3.4	10.8	618.2
1965	18.0%	7.2	4.9	1.1	1.3	3.5	10.8	659.5
1966	18.6%	7.6	5.0	1.2	1.3	3.6	11.0	724.1
1976	20.3%	8.6	5.5	1.3	1.3	3.3	11.5	777.3
1968	21.4%	9.5	5.9	1.5	1.3	3.3	12.0	831.3
1969	20.2%	8.7	6.1	1.4	1.4	2.6	11.4	910.6
1970	20.2%	8.1	6.5	1.5	1.5	2.5	12.1	968.8
1971	20.4%	7.3	7.6	1.7	1.4	2.3	13.0	1031.5
1972	20.4%	6.8	8.0	1.8	1.4	2.5	13.7	1128.8
1973	19.6%	6.0	8.2	2.2	1.4	1.9	13.7	1252.0
1974	19.4%	5.6	8.5	2.0	1.6	1.7	13.8	1379.4
1975	21.9%	5.8	10.2	2.2	1.6	2.2	16.1	1479.9
1976	22.2%	5.5	10.8	2.3	1.6	2.1	16.8	1640.1
TQ	21.9%	5.2	10.4	2.5	1.6	2.2	16.7	430.8
1977	21.5%	5.2	10.3	2.4	1.6	1.9	16.3	1864.1
1978	21.4%	5.0	9.9	2.5	1.7	2.4	16.4	2083.8
1979	20.8%	5.0	9.6	2.3	1.8	2.1	15.8	2353.3
1980	22.4%	5.3	10.5	2.2	2.0	2.3	17.1	2567.5
1981	22.9%	5.6	11.0	1.9	2.4	2.0	17.4	2858.6
1982	24.0%	6.2	11.5	1.6	2.8	2.0	17.8	3033.0
1983(est)	25.2%	6.7	12.3	1.5	2.8	1.9	18.5	3193.7
1984(est)	24.3%	7.0	11.5	1.4	3.0	1.4	17.3	3488.7
1985(est)	24.1%	7.5	11.2	1.3	3.0	1.1	16.6	3806.7
1986(est)	23.9%	7.8	10.9	1.2	3.0	0.9	16.1	4144.6
1987(est)	23.5%	7.9	10.7	1.1	2.9	0.8	15.6	4504.5
1988(est)	23.0%	7.9	10.6	1.1	2.7	0.8	15.1	4893.6

Source: Federal Government Finances
1984 Budget Data
February 1983
Office of Management and Budget

^{1/}Does not include off-budget Federal entities.

Studies conducted with Army and Air Force members reveal that most working military wives give economic benefits as their primary reason for employment.^{1/} In light of these findings, policy considerations which may need more emphasis are those pertaining to working military wives and dual career marriages. Additionally, another area for consideration is single heads of households. This warrants attention due to increasing changes in societal family patterns, such as higher divorce rates. For example, in 1980, single parents in the Air Force comprised over 1 percent of the total force. This brings up questions of family stability, work performance, child care arrangements, and general service commitments.

With regard to child care, a 1980 study conducted by the Air Force showed that, among married Air Force parents, two out of three use base child care facilities, while 75 percent of single parents find child care elsewhere. Two-thirds of married parents consider base child care satisfactory, but single parents who use it are less likely to be satisfied (44 percent). Indications are that military support systems tend to cater more to marrieds than to singles in general. The areas of most concern regarding child care are hours of attendance and quality of care. However, the study showed that, to single parents, their quality of life in the Air Force is more dependent on security and benefits provided than on the lifestyle offered. Essentially, single parents rely more on military support systems for themselves and their children. The study concluded that pay and benefits are of greatest importance, while other benefits take on lesser importance.

Even though the above figures and findings are peculiar to the Air Force, it is a reasonable assumption that many of the same considerations may affect the other services as well.

The following tables depict the labor force participation of spouses of officers and enlisted personnel. Comparing the two tables reveals a greater labor force participation on the part of the spouses of enlisted personnel than on the part of officers' spouses. Additionally, the tables show a higher incidence of full-time labor force participation by enlisted personnel spouses than part-time or self-employment.

^{1/}(See study "Families in Blue--A Study of Married and Single Parent Families in U.S. Air Force"--Dennis K. Orthner, Ph.D., 1980) (Employed Wives of U.S. Army Services in Germany Fare Better than Those Unemployed--Manning and DeRovin, Military Medicare, Vol. 146, October 1981), p. 326.

Table 48

1978-1979 SURVEY ON
LABOR FORCE PARTICIPATION OF SPOUSES^a OF OFFICERS
BY NUMBER OF DEPENDENTS

	Number of Dependents Other Than Spouses			Total
	None	1 to 3	Over 3	
In Armed Forces	22.9	6.5	3.0	9.9
	51.6	46.2	2.2	
Working Full Time	27.6	24.4	29.0	25.4
	24.2	67.4	8.4	
Other Working ^b	11.8	14.9	14.4	14.2
	18.6	74.0	7.5	
Unemployed	7.4	4.9	4.0	5.4
	30.8	63.8	5.4	
Other Not Working ^c	30.3	49.4	49.8	45.2
	14.9	77.0	8.1	
Total Personnel	192,859	609,478	63,675	866,013
	22.3	70.4	7.4	

NOTE: See Survey Form 3, Question 79.

^aSpouses of respondents married at time of survey are included in this table.

^bOther working includes part time and self-employed spouses.

^cOther not working includes spouses who were in school, at home, or have retired.

Source: "Description of Officers and Enlisted Personnel In The U.S. Armed Forces" (A reference for Military Manpower Analysis)
Rand Study March 1982

--Is there a way to compensate skilled military people without moving them out of their skill area? Do we need a specialist career path? Has a skill progression pay system been considered?

3. DOD officials have expressed concern about the number of moves being made by service personnel and the effect this has on transportation costs, military continuity, and families. In 1983, DOD experienced over 8,000 fewer rotational trips, but costs increased 12 percent from \$138 million in 1983 to \$157 million.

--Should the services increase their tour lengths, thereby providing more stability and continuity, and concomitantly reduce change of station travel costs?

4. As longevity increases, the cost of the military retirement system increases. In addition, the early retirement policy produces retirement incentives to experienced personnel at a time when the services claim to have a serious NCO shortage. Also, there are high costs associated with training personnel to replace this loss. However, the retirement system does provide a recruiting and retention incentive which should be considered.

--Should the services change their retirement policy to retain the highly trained enlisted and officers beyond the 20-year retirement limit?

--Given increased longevity and the increasing numbers of "technicians and managers" versus "warriors" needed, should the retirement policy be reconsidered?

TABLE 52
ANALYSIS OF DEFENSE BUDGET OUTLAYS BY SUBFUNCTION: 1962-1988
NATIONAL DEFENSE

YEAR	051 Department of Defense-Military										053			TOTAL
	Military Personnel	Retired Military Personnel	Operation and Maintenance	Procurement	Research and Development	Military Construction and Other	Allowances, Civ. & Mil. Pay Raises	Other Allowances	Deductions for Offset Receipts	Subtotal 051	Atomic Energy Defense Activities	054 Defense Related Activities	Deductions for Offsetting Receipts	
1962	\$12,138	\$894	\$11,594	\$14,532	\$6,319	\$1,512	\$0	\$0	(163)	\$46,826	\$2,074	\$140	\$0	\$49,040
1963	11,985	1,015	11,874	16,632	6,376	311	0	0	(251)	47,942	2,041	161	0	50,144
1964	12,986	1,209	11,932	15,351	7,021	1,129	0	0	(159)	49,469	1,902	157	0	51,528
1965	13,387	1,384	12,349	11,839	6,236	835	0	0	(150)	45,880	1,620	(44)	0	47,456
1966	15,162	1,591	14,710	14,339	6,259	2,191	0	0	(160)	54,092	1,466	(706)	0	54,852
1967	17,956	1,830	19,000	19,012	7,160	2,536	0	0	(130)	67,364	1,277	(391)	0	68,250
1968	19,859	2,095	20,578	23,283	7,747	3,868	0	0	(165)	77,265	1,336	158	(4)	78,755
1969	21,374	2,444	22,227	23,988	7,457	439	0	0	(143)	77,785	1,389	248	(5)	79,417
1970	23,031	2,849	21,609	21,584	7,166	978	0	0	(148)	76,261	1,415	72	(3)	77,745
1971	22,633	3,386	20,941	18,858	7,303	1,477	0	0	(126)	74,472	1,385	(45)	(3)	75,809
1972	23,036	3,885	21,675	17,131	7,881	1,581	0	0	(113)	74,116	1,373	103	(2)	75,590
1973	23,246	4,390	21,069	15,654	8,157	821	0	0	(113)	73,224	1,409	(88)	(4)	74,541
1974	23,728	5,128	22,478	15,241	8,582	2,552	0	0	(159)	77,550	1,486	(1,242)	(13)	77,781
1975	24,968	6,242	26,297	16,042	8,866	2,668	0	0	(182)	84,901	1,506	(850)	(4)	85,553
1976	25,430	7,326	28,731	20,991	9,451	3,735	0	0	(155)	95,508	1,682	(16)	(3)	97,172
TQ	6,585	1,943	7,591	4,135	2,406	358	0	0	5	23,022	459	(32)	1	23,449
1977	26,118	8,238	32,108	27,922	10,439	3,696	0	0	(183)	108,338	2,089	6	0	110,432
1978	27,246	9,180	34,732	29,529	11,371	3,425	0	0	(160)	115,322	2,514	93	(2)	117,926
1979	28,703	10,283	38,023	31,428	12,437	4,634	0	0	(503)	125,004	2,668	140	(3)	127,809
1980	31,014	11,965	46,365	35,283	13,561	5,174	0	0	(740)	142,621	2,991	156	(4)	145,764
1981	36,930	13,840	55,548	48,025	16,069	8,098	0	0	(665)	178,386	3,651	373	(4)	182,405
1982	42,875	14,986	62,466	64,462	20,060	9,636	0	0	(733)	213,751	4,737	219	(4)	218,704
1983(est)	45,485	16,155	66,259	80,303	22,805	7,976	0	958	(532)	239,407	5,700	371	(4)	245,474
1984(est)	47,927	16,806	74,002	94,088	29,622	11,477	0	22	(44)	273,400	6,778	329	(4)	280,503
1985(est)	49,741	17,413	82,366	119,647	32,206	15,133	5,890	25	(821)	321,600	8,037	395	(4)	330,028
1986(est)	51,165	18,476	90,657	136,383	34,145	16,495	9,904	18	(844)	356,400	7,962	468	(4)	364,826
1987(est)	52,275	19,314	99,450	150,430	34,280	19,076	14,324	16	(865)	388,300	8,147	570	(4)	397,013
1988(est)	53,153	20,160	106,619	170,268	35,712	20,207	19,054	12	(886)	424,300	7,768	678	(4)	432,741

Source: Federal Government Finances, 1984 Budget Data February 1983, Office of Management and Budget.

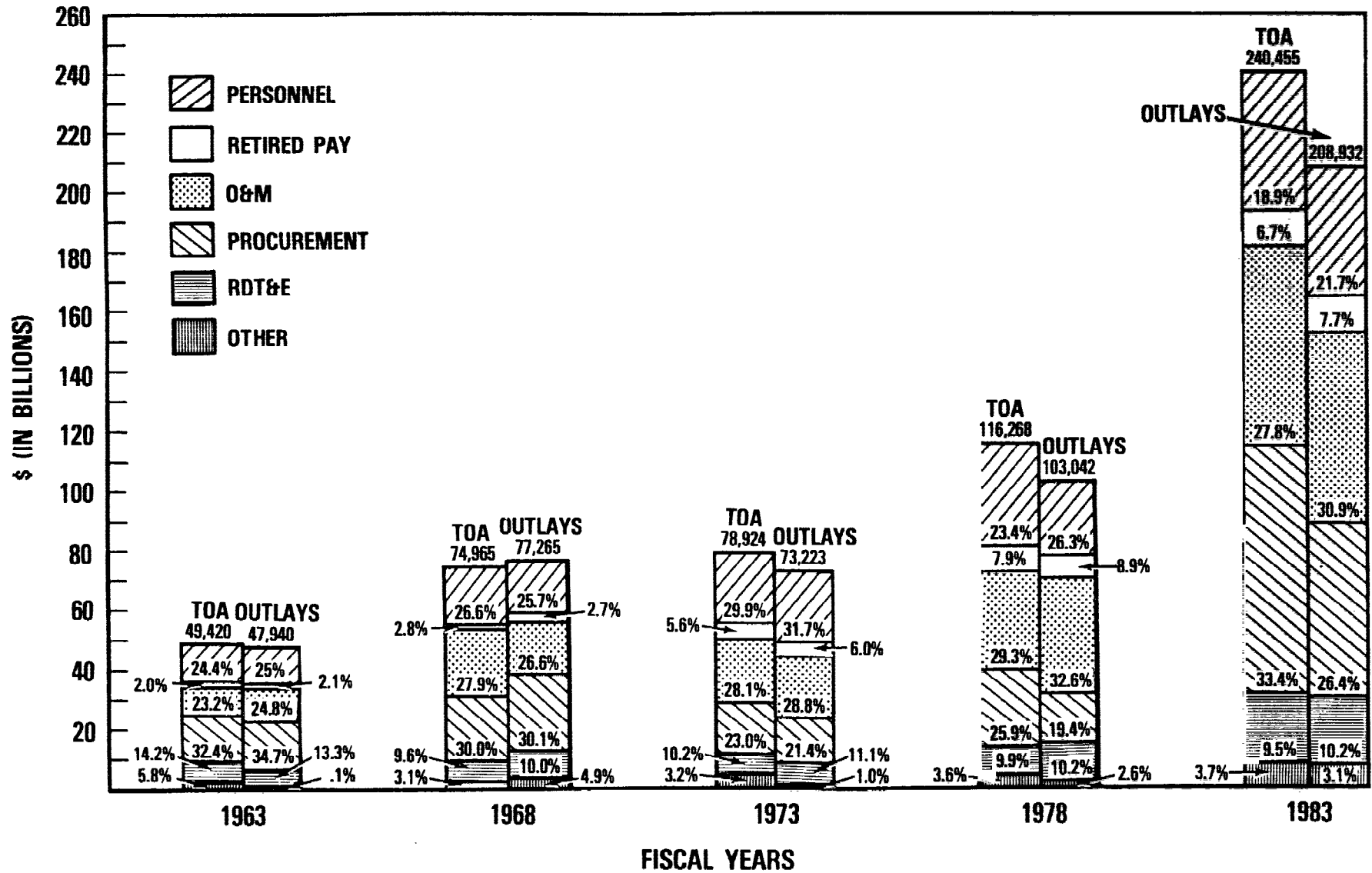
APPENDIX I

BUDGET OUTLAYS
1962

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
National defense.....	49,040	50,142	51,528	47,456	54,852	68,243	78,755	79,417	78,553	75,808	76,550	74,541	77,781
International affairs.....	5,601	5,270	4,916	5,245	5,557	5,554	5,267	4,573	4,297	4,097	4,693	4,066	5,681
General science, space, and technology.....	1,722	3,050	4,897	5,821	6,712	6,230	5,519	5,014	4,507	4,180	4,173	4,030	3,977
Energy.....	576	498	543	669	579	746	1,006	1,000	990	1,031	1,270	1,179	837
Natural resources and environment.....	2,038	2,249	2,360	2,532	2,721	2,895	2,996	2,890	3,061	3,909	4,235	4,763	5,670
Agriculture.....	3,553	4,376	4,601	3,947	2,439	2,981	4,539	5,780	5,161	4,288	5,280	4,852	2,227
Commerce and housing credit.....	1,424	62	418	1,151	3,245	3,276	4,331	563	2,108	2,358	2,216	924	3,925
Transportation.....	4,276	4,579	5,223	5,746	5,717	5,924	6,301	6,528	7,006	8,050	8,388	9,065	9,172
Community and regional development.....	468	576	937	1,114	1,113	1,150	1,381	1,551	2,391	2,916	3,422	4,595	4,134
Education, training, employment, and social services.....	1,241	1,460	1,558	2,139	4,365	6,449	7,632	7,540	8,625	9,839	12,519	12,735	12,344
Health.....	1,195	1,449	1,787	1,790	2,638	6,112	9,010	10,855	12,115	13,463	16,127	17,405	20,364
Income Security.....	22,666	24,075	25,120	25,744	28,900	30,823	33,683	37,285	43,073	55,426	63,913	72,965	84,437
Veterans benefits and services.....	5,625	5,519	5,680	5,721	5,921	6,899	6,882	7,640	8,677	9,776	10,730	12,013	13,386
Administration of justice.....	424	458	483	529	554	610	650	761	952	1,299	1,650	2,131	2,462
General government.....	951	1,114	1,375	1,390	1,397	1,448	1,552	1,569	1,857	2,020	2,415	2,568	3,243
General purpose fiscal assistance.....	216	230	241	238	268	308	340	430	536	535	673	7,351	6,890
Interest.....	8,321	9,216	9,810	10,359	11,286	12,533	13,751	15,793	18,309	19,602	20,563	22,782	28,032
Allowances.....	—	—	—	—	—	—	—	—	—	—	—	—	—
Undistributed offsetting receipts.....	-2,252	-3,011	-2,893	-3,162	-3,613	-4,573	-5,460	-5,545	-6,567	-8,427	-8,137	-12,318	-16,651
Total budget outlays.....	106,812	111,312	118,584	118,429	134,651	157,608	178,135	183,644	195,651	210,170	230,680	245,647	267,911

Source: Federal Government
1984 Budget Data
February 1983
Office of Management and Budget

SELECTED DOD ACTUAL APPROPRIATED DOLLARS TOA & OUTLAYS



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TABLE 50

GET OUTLAYS BY FUNCTION

1962-1988

															Estimates	
1973	1974	1975	1976	TQ	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
74,541	77,781	85,552	89,430	22,307	97,501	105,186	117,681	135,856	159,765	187,418	214,769	245,305	285,268	323,035	354,277	385,591
4,066	5,681	6,922	5,554	2,191	4,819	5,922	6,091	10,733	11,130	9,982	11,939	13,250	12,992	12,920	12,626	12,585
4,030	3,977	3,989	4,370	1,161	4,677	4,742	5,041	5,722	6,359	7,070	7,759	8,250	8,401	7,871	7,701	7,062
1,179	837	2,169	3,127	794	4,172	5,861	6,856	6,313	10,277	4,674	4,506	3,306	2,657	2,827	2,798	3,169
4,763	5,670	7,336	8,124	2,532	10,000	10,925	12,091	13,812	13,525	12,934	12,087	9,832	9,348	8,739	8,282	8,025
4,852	2,227	1,659	2,502	504	5,526	7,731	6,238	4,762	5,572	14,875	21,075	12,150	10,681	9,513	9,839	10,018
924	3,925	5,607	3,792	1,392	98	3,331	2,579	7,708	3,946	3,865	1,928	413	-2,292	-2,758	-2,324	-2,985
9,065	9,172	10,388	13,435	3,304	14,636	15,445	17,459	21,120	23,381	20,560	21,876	25,145	26,207	27,027	27,844	28,250
4,595	4,134	3,738	4,767	1,340	6,348	11,070	9,542	10,068	9,394	7,165	7,373	6,951	6,990	6,784	6,706	6,695
12,735	12,344	15,870	18,737	5,162	20,985	26,463	29,685	30,767	31,402	26,300	26,676	25,256	25,068	24,809	24,835	25,125
17,405	20,364	25,742	31,503	8,181	36,582	41,232	46,962	55,220	65,982	74,017	82,362	90,647	100,525	109,577	120,968	133,483
72,965	84,437	108,576	127,390	32,797	137,900	146,180	160,159	193,100	225,099	248,343	282,472	282,422	294,579	311,443	327,686	346,308
12,013	13,386	16,597	18,432	3,962	18,038	18,974	19,928	21,183	22,988	23,955	24,411	25,724	26,466	27,159	27,860	28,851
2,131	2,462	2,942	3,320	859	3,600	3,802	4,153	4,570	4,698	4,671	5,273	5,491	5,483	5,464	5,471	5,557
2,568	3,243	3,133	2,948	883	3,169	3,706	4,093	4,505	4,614	4,726	5,794	5,993	6,032	6,116	6,112	6,359
7,351	6,890	7,187	7,235	2,092	9,499	9,601	8,372	8,584	6,856	6,393	6,382	6,968	6,824	7,054	7,323	7,519
22,782	28,032	30,911	34,511	7,216	38,009	43,966	52,556	64,504	82,537	84,697	88,936	103,180	114,210	122,692	130,415	134,264
												949	3,704	5,712	7,740	9,843
<u>-12,318</u>	<u>-16,651</u>	<u>-14,075</u>	<u>-14,704</u>	<u>-2,567</u>	<u>-15,053</u>	<u>-15,772</u>	<u>-18,488</u>	<u>-21,933</u>	<u>-30,320</u>	<u>-13,270</u>	<u>-20,414</u>	<u>-22,750</u>	<u>-24,628</u>	<u>-26,416</u>	<u>-27,722</u>	<u>-28,781</u>
245,647	267,911	324,243	364,473	94,110	400,506	488,415	490,997	576,674	657,205	728,375	805,202	848,483	918,515	989,571	1,058,437	1,126,937

CHART 30

STRATEGIC NUCLEAR FORCES

<u>U.S.</u>		ICBMs	<u>USSR</u>	
49	TITAN		SS-11	} 1398
450	MINUTEMAN II		SS-13	
550	MINUTEMAN III		SS-17	
<u>1049</u>			SS-18	
			SS-19	
		SLBMs		
304	POSEIDON		SS-N-5	} 950
240	TRIDENT I		SS-N-6	
<u>544</u>			SS-N-8	
			SS-N-17	
			SS-N-18	
			SS-NX-20	
		BOMBERS		
<u>U.S.</u>			<u>USSR</u>	
31	B-52D		BEAR	} 250
151	B-52G		BISON	
90	B-52H		BACKFIRE	
<u>56</u>	FB-111			
328				

APPROXIMATE TOTALS

	<u>U.S.</u>	<u>USSR</u>
DELIVERY VEHICLES	1921	2598
• MISSILES	1593	2348
• BOMBERS	328	250

AS OF 1 JANUARY 1983, PAA

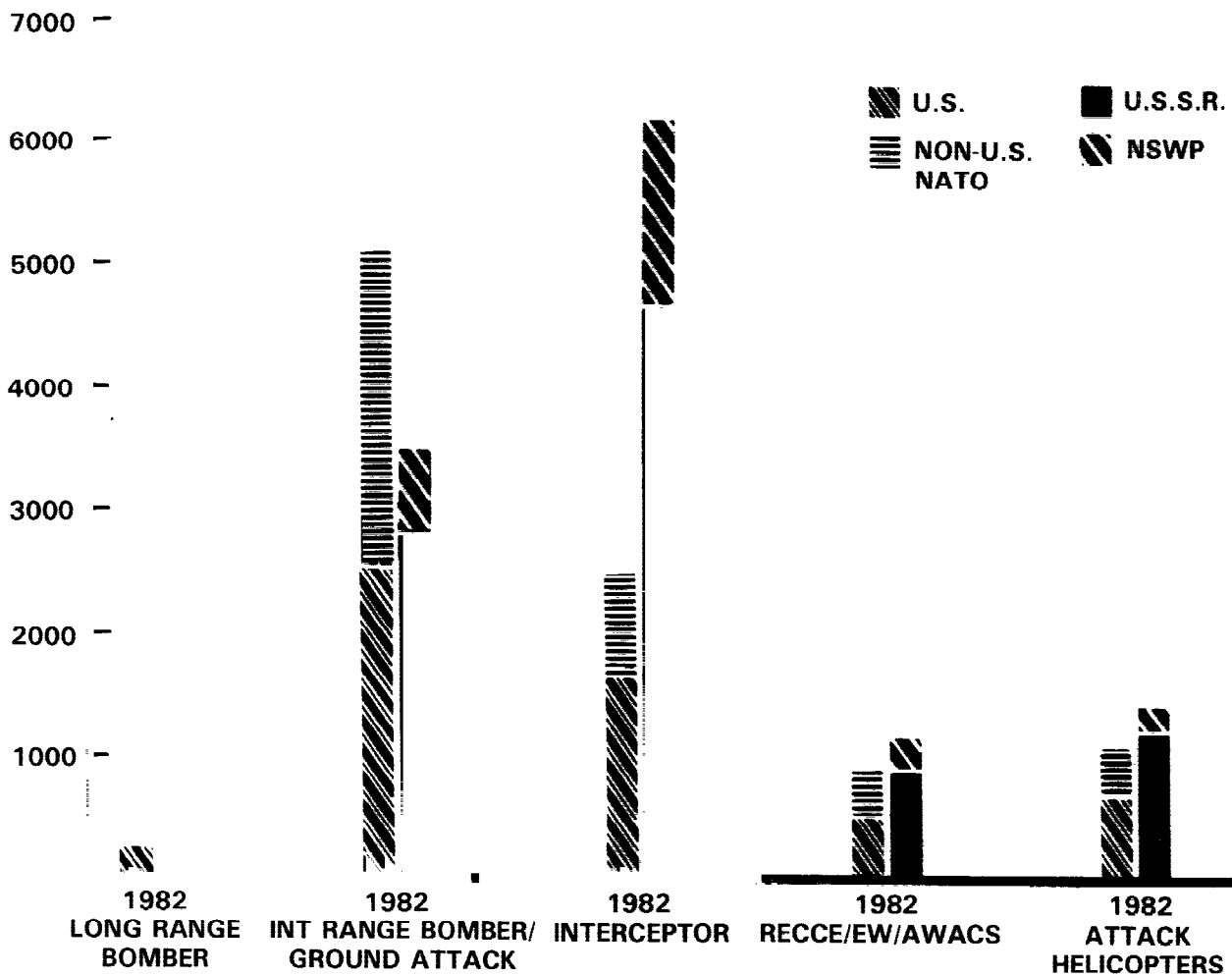
TABLE 51
COMPARISON OF NATIONAL DEFENSE OUTLAYS TO ON-BUDGET
AND COMBINED ON- AND OFF-BUDGET OUTLAYS
(1973-1988)

Year	National Defense Outlays	On Budget Outlays	Total On-And Off Budget Outlays	National Defense Share	
				On Budget	Total On-And Off Budget
-----(\$ millions)-----					
1973	74,541	245,647	245,707	30.3%	30.3%
1974	77,781	267,912	269,359	29.0	28.9
1975	85,552	324,245	332,332	26.4	25.7
1976	89,430	364,473	371,779	24.5	24.1
ITQ	22,307	94,188	95,973	23.7	23.2
1977	97,501	400,506	409,206	24.3	23.8
1978	105,186	448,368	458,726	23.5	22.9
1979	117,681	490,997	503,464	24.0	23.4
1980	135,856	576,675	590,920	23.6	23.0
1981	159,765	657,204	678,209	24.3	23.6
1982	187,418	728,375	745,706	25.7	25.1
1983 Est.	214,769	805,202	822,248	26.7	26.1
1984 "	245,305	848,483	862,524	28.9	28.4
1985 "	285,268	918,515	928,978	31.1	30.7
1986 "	323,035	989,571	999,018	32.6	32.3
1987 "	354,277	1,058,437	1,068,042	33.5	33.2
1988 "	385,591	1,126,937	1,136,178	34.2	33.9

Source: Federal Government Finances
1984 Budget Data
February 1983
Office of Management and Budget

CHART 32

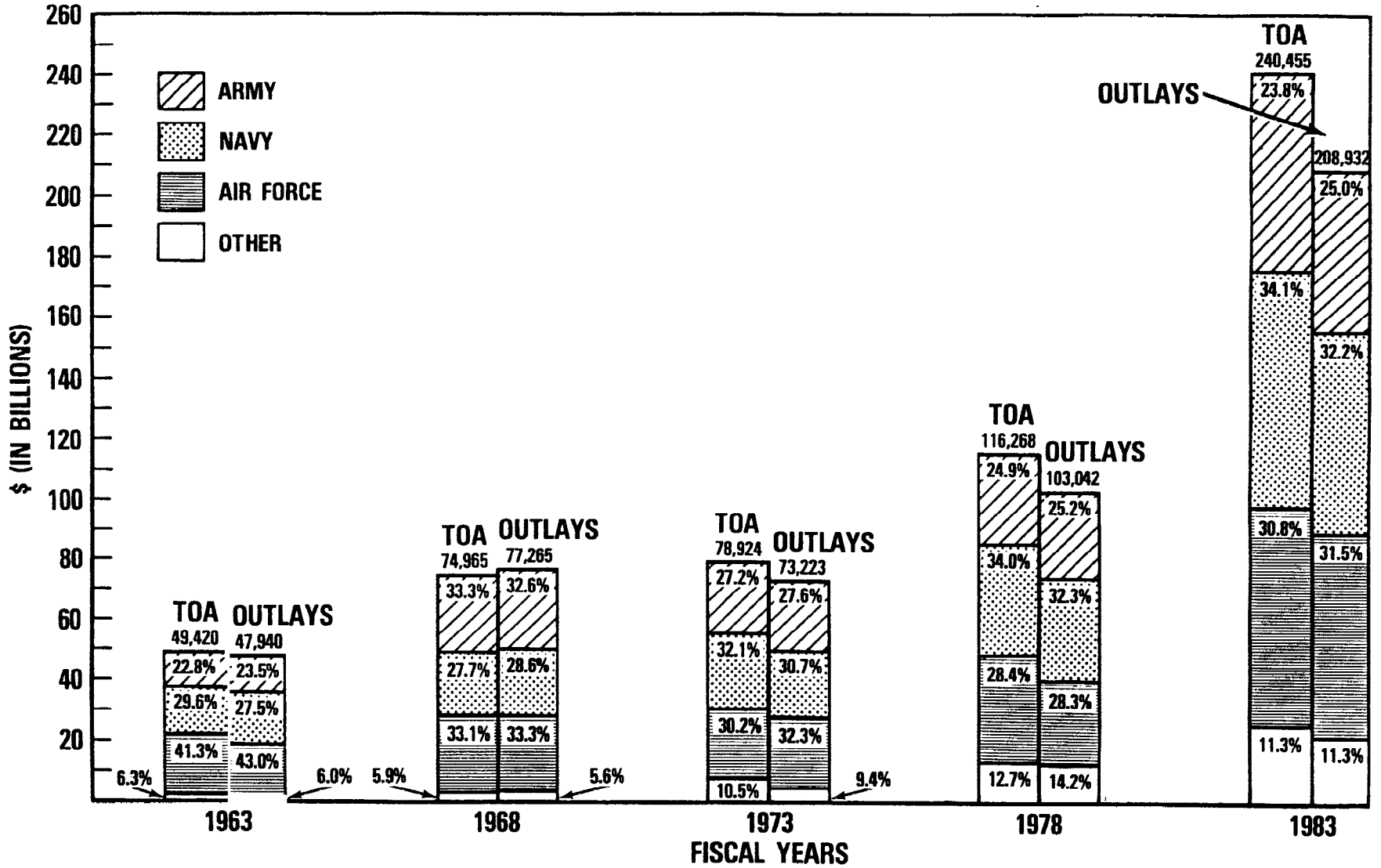
1982 VS 1988 COMBAT AIRCRAFT COMPARISON*



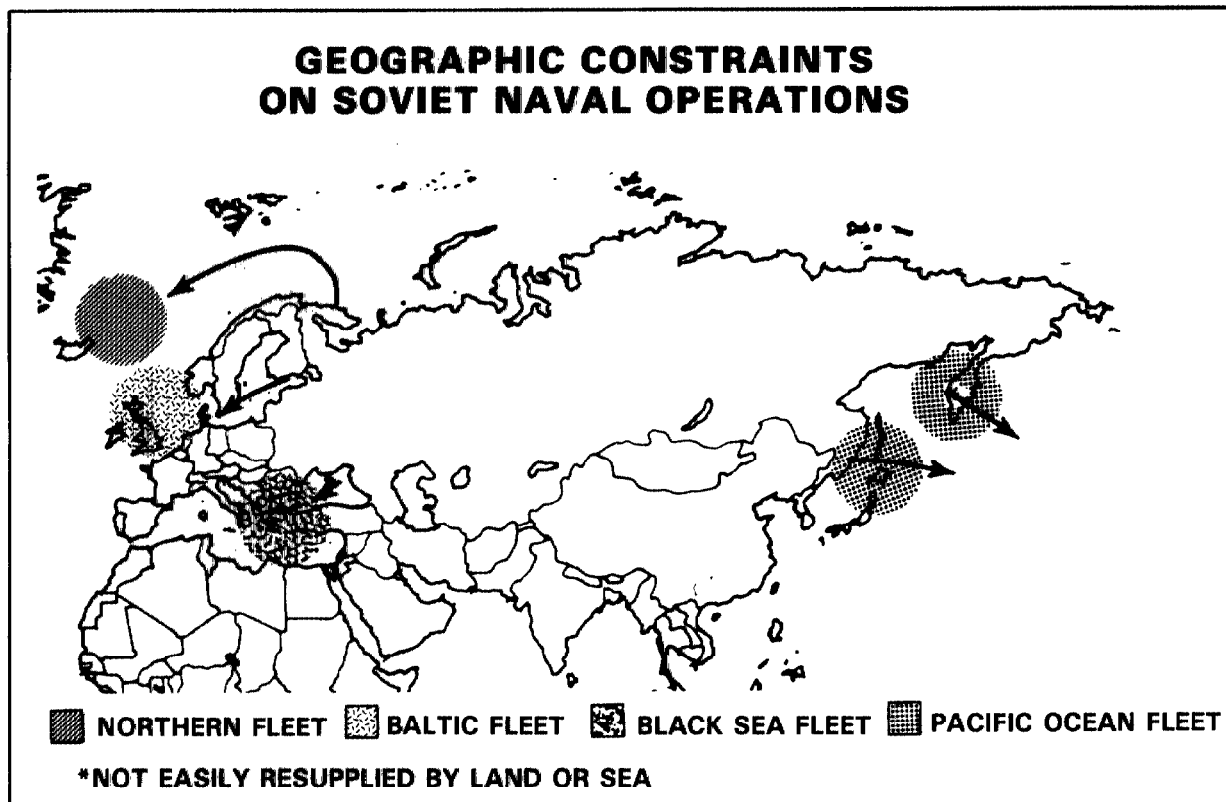
*NAVAL AIRCRAFT INCLUDED

CHART 28

SELECTED YEARS DOD ACTUAL APPROPRIATED DOLLARS TOA & OUTLAYS



MAP 2



SOURCE: United States Military Posture FY 1984
Prepared by the Organization of the Joint Chiefs of Staff

NOTE: The above map illustrates the constraints placed on the Soviet naval forces. The four fleets are widely separated and to reach open ocean must traverse considerable distances or transit through waters under U.S. allies' control. The only exception to this, the Pacific Fleet in the north-west Pacific Ocean, faces serious resupply problems unless major sea lines of supply could be sustained.

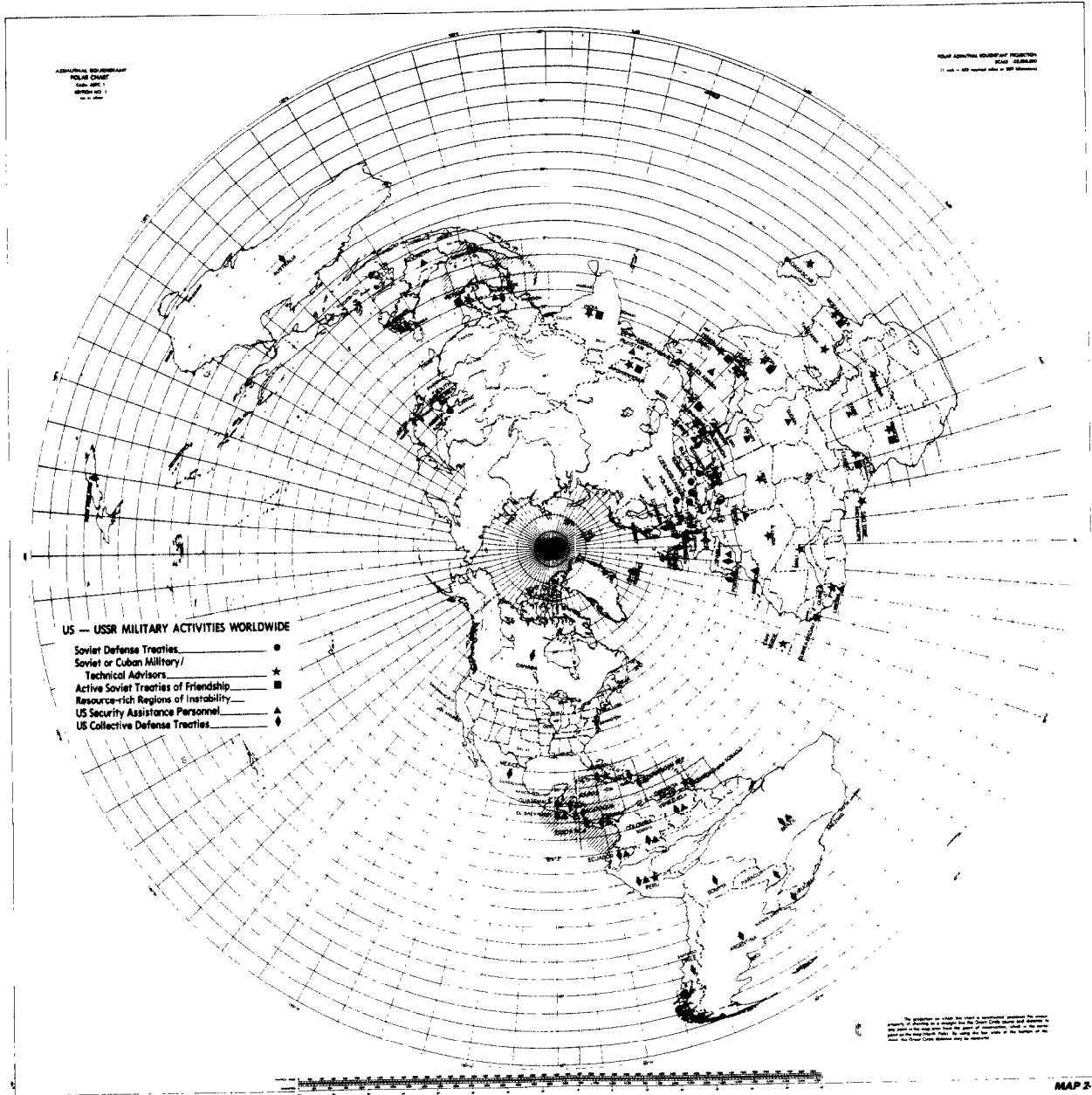


TABLE 53
FYDP STUDY PROCUREMENT SAMPLE

ARMY-Aircraft

AH-1 Cobra, Helicopter Attack
 CH-47A Chinook, Helicopter
 Cargo Transport
 UH-1 Iroquois Helicopter,
 Utility Tactical
 OV-1 Mohawk Airplane STOL
 OH-6A Helicopter Observation
 HLH CH-54A Flying Crane
 Helicopter
 UH-60A UH-60A, Blackhawk,
 Helicopter
 AH-54 Advanced Attack
 Helicopter
 CH-47A Modification

ARMY - Missiles

Dragon
 Copperhead 155 mm.
 HE projectile
 Hawk - same as Improved Hawk
 Hellfire
 Honest John
 Lance
 Patriot (Sam-D)
 Pershing
 Pershing II
 Shillelagh
 SS-11
 Stinger
 TOW

ARMY - Tracked Vehicles

Bradley Fighting Vehicle
 IFV/CFV
 Bridge, Mobile Assault
 Carrier, Personnel, Ft.,
 Armored M-113 A1/A2
 DIVAD System - Division Air
 Defense Gun System
 M 109, 155 mm. Self-
 Propelled Howitzer
 M 198, 155 mm. Medium
 Towed Howitzer
 Recovery Vehicle, Medium,
 Ft., M-88 A1
 Roland
 Tank, Main Battle, 105 mm.,
 M-60 A1/A3
 M 1 Abrams Tank

ARMY - Other

ANTTC - 39 Circuit Switch
 Radio Set ANGR - 106
 Radio Set ANPRC - 25
 Standoff TGT Acquisition System SOTAS
 TACFIRE

NAVY - Aircraft

AV8A&B Harrier
 A 4 Skyhawk
 A 6 Intruder
 A 7 Corsair
 CH-46 Sea Sprite
 CH-53E Sea Sprite
 E2C Hawkeye
 F-4 Phantom
 F-14 Tomcat
 F-18 Hornet
 P-3C Orion
 S-3A Viking
 SH-3A Sea King
 SH60B Lamps MK III

NAVY - Missiles

CAPTOR MK-60
 CONDOR AGM-53B
 HARM AGM-88A
 HARPOON AGM/R M/UGM-84A
 PHALANX MX-15 CIWS
 PHOENIX AIM-54
 POSEIDON UGM-73A
 Projectile 5"
 Projectile "
 Sidewinder AIM-9
 Sparrow AIM-7
 Tomahawk Sea Launched Cruise Missile
 SLCM BGM-109
 Torpedo MK-48
 Trident UGM-96A

CHART 31

**1982 VS 1988
GROUND FORCES COMPARISON**

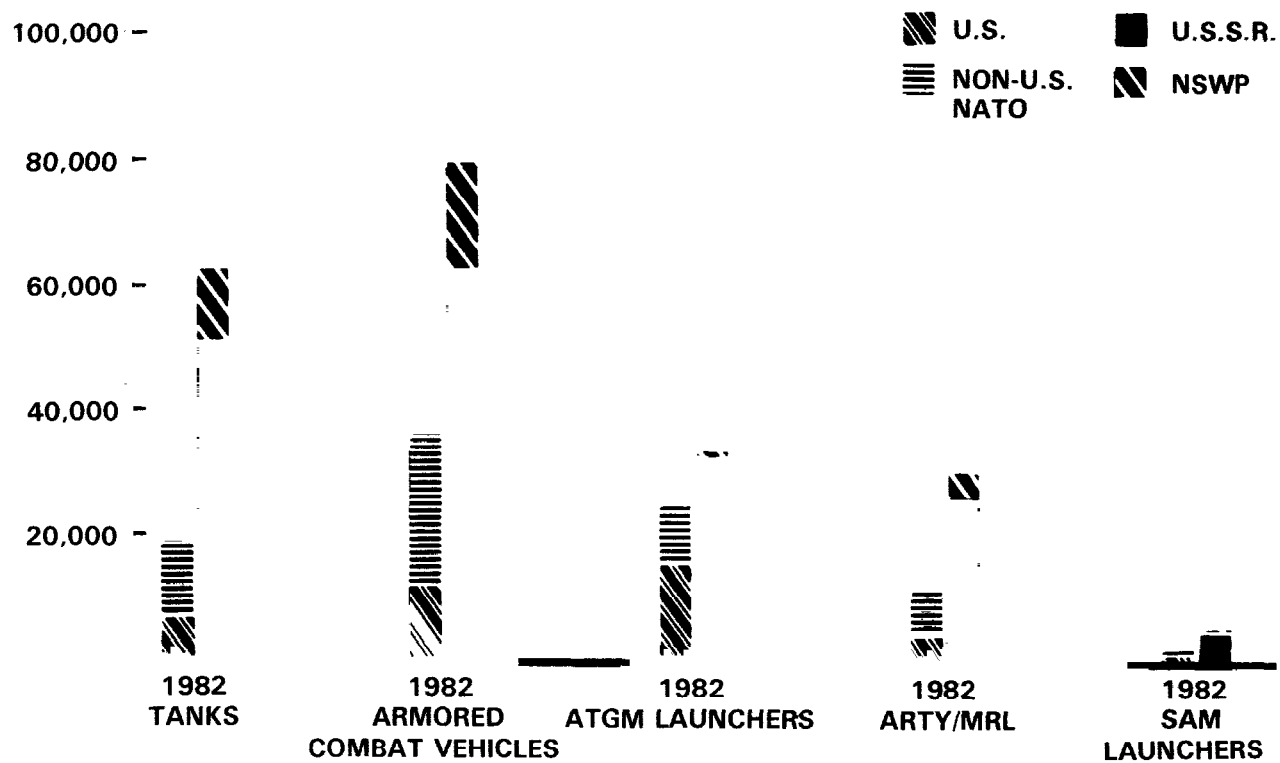


CHART 33

1982 VS 1988 NAVAL FORCES COMPARISON

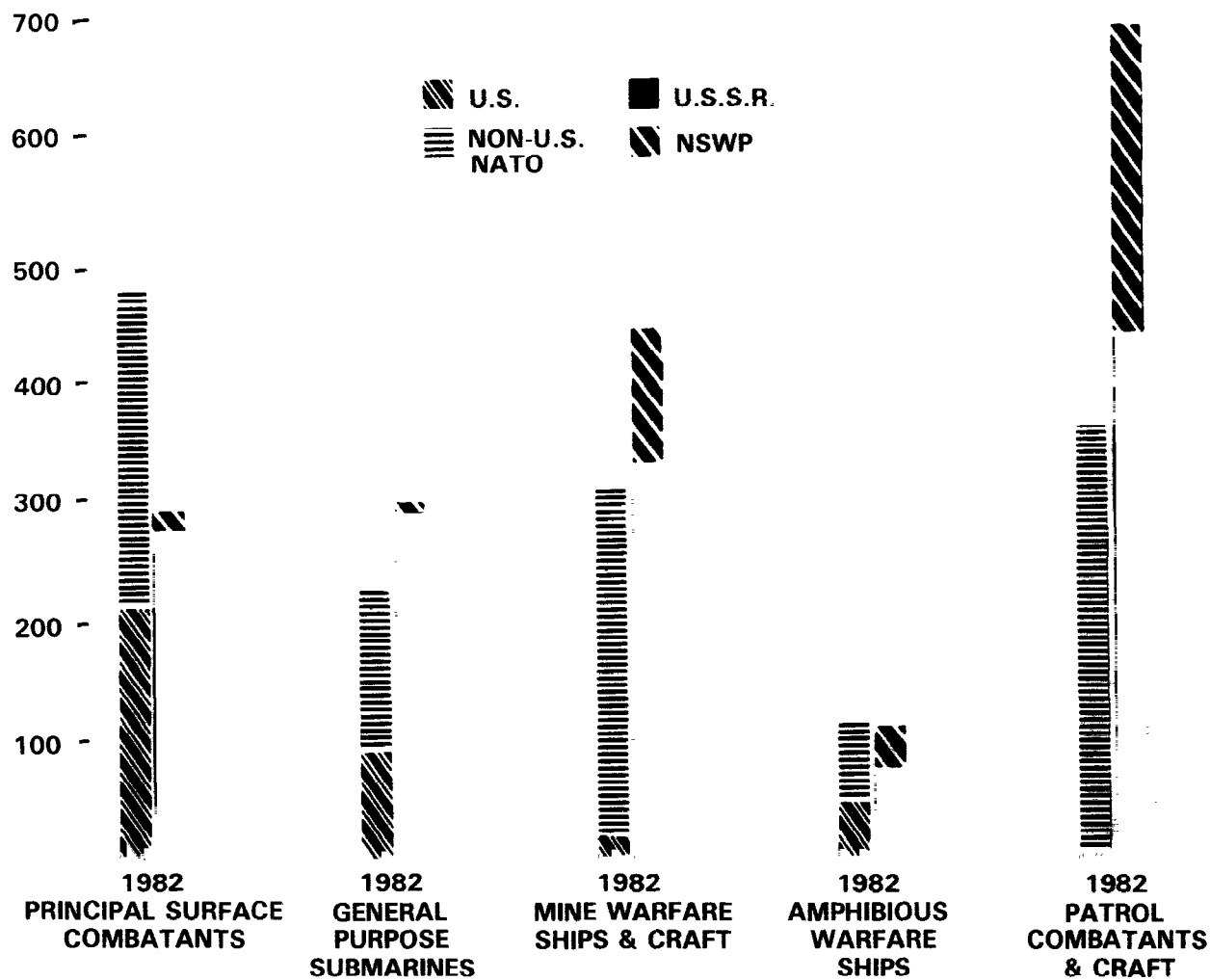


CHART 34

PRINCIPAL SUPPLIERS OF CRITICAL MINERALS*		
MINERAL	PRINCIPAL PRODUCING COUNTRIES AND % OF 1980 TOTAL WORLD PRODUCTION	COUNTRIES WITH MAJOR RESERVES AND ESTIMATED % OF WORLD TOTAL
BAUXITE	AUSTRALIA 30%, GUINEA 15%, JAMAICA 14%, SURINAME 5%, USSR 5%, BRAZIL 4%	GUINEA 28%, AUSTRALIA 20%, BRAZIL 11%, JAMAICA 9%, CAMEROON 4%
CHROMITE (CHROMIUM ORE)	SOUTH AFRICA 35%, USSR 25%, PHILIPPINES 6%, ZIMBABWE 6%, TURKEY 4%	SOUTH AFRICA 68%, ZIMBABWE 30%, FINLAND 0.7%, USSR 0.5%
COBALT	ZAIRE 50%, USSR 15%, ZAMBIA 11%, CANADA 5%, AUSTRALIA 5%, PHILIPPINES 4%, FINLAND 4%	ZAIRE 49%, ZAMBIA 15%, USSR 9%, CUBA 8%, PHILIPPINES 8%, NEW CALEDONIA 4%, AUSTRALIA 2%, MOROCCO 2%
COLUMBIUM	BRAZIL 86%, CANADA 12%	BRAZIL 79%, USSR 17%, CANADA 3%
MANGANESE	USSR 40%, SOUTH AFRICA 22%, BRAZIL 8%, GABON 8%, AUSTRALIA 7%, INDIA 6%	USSR 45%, SOUTH AFRICA 41%, AUSTRALIA 6%, GABON 3%, BRAZIL 2%
NICKEL	CANADA 25%, USSR 20%, NEW CALEDONIA 11%, AUSTRALIA 9%, PHILIPPINES 5%, INDONESIA 5%, CUBA 5%, SOUTH AFRICA 3%	NEW CALEDONIA 25%, CANADA 15%, USSR 14%, INDONESIA 13%, PHILIPPINES 10%, AUSTRALIA 9%
PLATINUM-GROUP METALS	USSR 48%, SOUTH AFRICA 45%, CANADA 5%	SOUTH AFRICA 81%, USSR 17%
TANTALUM	BRAZIL 28%, CANADA 23%, THAILAND 19%, AUSTRALIA 14%, NIGERIA 8%, RWANDA 2%, ZAIRE 2%	ZAIRE 57%, NIGERIA 11%, THAILAND 7%, USSR 7%, MALAYSIA 5%, BRAZIL 5%
TIN	MALAYSIA 25%, USSR 15%, THAILAND 14%, INDONESIA 13%, BOLIVIA 11%, CHINA 6%	INDONESIA 16%, CHINA 15%, MALAYSIA 12%, THAILAND 12%, USSR 10%, BOLIVIA 9%
TITANIUM ORES** ILMENITE	AUSTRALIA 27%, CANADA 18%, NORWAY 17%, USSR 9%, SOUTH AFRICA 7%, INDIA 4%, MALAYSIA 3%, FINLAND 3%	INDIA 23%, CANADA 22%, NORWAY 18%, SOUTH AFRICA 15%, AUSTRALIA 8%, U.S. 8%
RUTILE	AUSTRALIA 69%, SIERRA LEONE 12%, SOUTH AFRICA 11%, SRI LANKA 3%, USSR 2%	BRAZIL 74%, AUSTRALIA 7%, INDIA 6%, SOUTH AFRICA 4%, ITALY 2%, SIERRA LEONE 2%, USSR 2%
TUNGSTEN	CHINA 28%, USSR 16%, CANADA 7%, BOLIVIA 6%, AUSTRALIA 6%, U.S. 5%, SOUTH KOREA 5%, NORTH KOREA 4%	CHINA 52%, CANADA 2%, USSR 8%, U.S. 5%, NORTH KOREA 5%, SOUTH KOREA 3%, TURKEY 3%
* MINERALS VITAL TO DEFENSE PRODUCTION WHICH HAVE LIMITED CONVENIENT SUBSTITUTION POSSIBILITIES IN THEIR MAJOR APPLICATIONS AND FOR WHICH THE U.S. IS HIGHLY DEPENDENT ON IMPORTS FOR ITS CONSUMPTION REQUIREMENTS.		
** ILMENITE SUPPLIES ABOUT 87% OF THE WORLD'S DEMAND FOR TITANIFEROUS METALS		

NOTE: According to some critics this chart is misleading. It does not address the U.S. resources usage rates in this area.

Source: United States Military Posture
 FY 1984
 Prepared by The Organization of the
 Joint Chiefs of Staff.

TABLE 53 (cont.)
FYDP STUDY PROCUREMENT SAMPLE

<u>NAVY - Shipbuilding and Conversion</u>	<u>AIR Force - Missiles and Other</u>
AO Fleet Oiler	<u>Missiles</u>
CG-47 Aegis Cruiser	ALCM
CVA	GLCM
CGN-38 Class (DLGN-38)	HARM AGM-88A
CVN-69 Nuclear Powered Attack	MAVERICK AGM-65
CVN-69 Aircraft Carrier	MINUTEMAN
CVN-70	MINUTEMAN I
CVN-71	MINUTEMAN II III
DD 963 Destroyers	SIDEWINDER
FFG-7 Class Guided Missile Frigate	SPARROW
LHA General Purpose Amphibious	TITAN
Assault Ship	SRAM AGM-69 A/B
NATO PHM	
PF	<u>Other</u>
PHALANX CIWS	DSCSIII Space Seg
SSBN Submarines	NAVSTAR
SSN Submarines	
SSN Class 699 Submarines	
Trident Submarine	
 <u>NAVY - Other</u>	
AN/BQQ-5	
SURTASS Surveillance Towed Array Sensor	
TACTAS Tactical Towed Array Sonar	
AN/SQR-19	
 <u>AIR FORCE - Aircraft</u>	
A-7	
A-10	
AU-X Armed STOL	
BO1	
C-5	
C-130	
C-135	
KC-135	
C-141	
E-3A AWACS	
E-4 AABNCP	
EF-111A	
F-111A	
FB-111	
F-4	
F-15	
F-16	
OV-10	

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