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DEFENSE MANPOWER COMMISSION STAFF STUDIES
AND SUPPORTING PAPERS

VOLUME II

THE TOTAL FORCE AND ITS MANPOWER REQUIREMENTS
INCLUDING OVERVIEWS OF EACH SERVICE

11 MAY 1976

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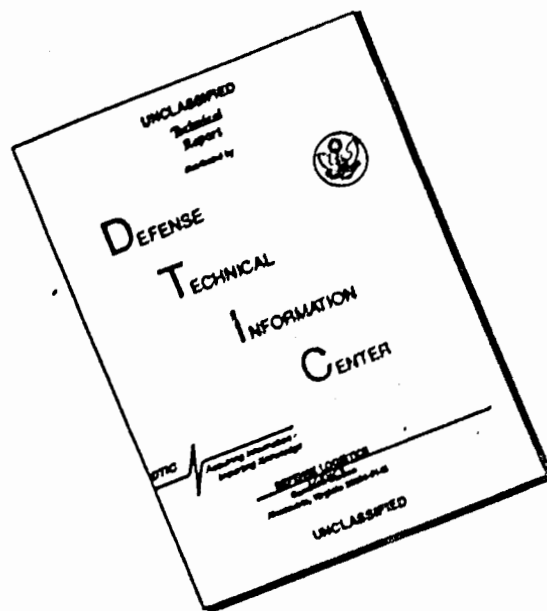
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PREFACE

This is Volume II of the published staff studies and supporting papers prepared for the Defense Manpower Commission.

The Defense Manpower Commission was created by a provision of the Defense Appropriation Authorization Act, 1974 (Public Law 93-155, Title VII), which, inter alia, stated:

Sec. 702. It shall be the duty of the Commission to conduct a comprehensive study and investigation of the overall manpower requirements of the Department of Defense on both a short-term and long-term basis with a view to determining what the manpower requirements are currently and will likely be over the next ten years, and how manpower can be more effectively utilized in the Department of Defense.

The Commissioners have submitted two formal reports to the Congress and the President, an Interim Report on May 16, 1975 and the Final Report on April 19, 1976.

In addition, for purposes of public information and to facilitate further research on these subjects, the Commissioners have arranged for this publication of certain studies and working papers prepared by the staff of the Defense Manpower Commission, together with supporting contract studies and a special report prepared for the Commission by the Department of Defense. While some of the published DMC staff papers are in finished form and were presented formally to the Commissioners, others are only draft working papers but still potentially useful to publish. Not published but included in the Commission files are internal working papers, trip reports, miscellaneous data, reference materials, records of DMC hearings and meetings, and administrative papers.

The views expressed in the published DMC staff papers and contract studies are those of the authors or contract research firms, so

applicable. Publication of such papers in these volumes does NOT necessarily imply approval or endorsement by the Defense Manpower Commission, whose views are as stated in the aforementioned DMC Interim Report and Final Report.

All of the papers published by the Defense Manpower Commission may be reproduced and disseminated without further authorization by the Commission, notwithstanding any previous limitations which may have been stated on contract reports pending review and release by the Commission. Additional copies, beyond those initially distributed by the Commission, may be purchased, by volume, from the Government Printing Office, Washington, D.C.

Bruce Felner, Jr.
General, USA (Ret.)
Executive Director
Defense Manpower Commission

Washington, D.C.
May, 1976

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WORKING PAPER
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U. S. ARMY
TOTAL FORCE OVERVIEW
AND
GENERAL PURPOSE FORCE MANPOWER REQUIREMENTS ISSUES

A Staff Issue Paper for
the Defense Manpower Commission

by John D. Sitterson, Jr.
Requirements Group
Defense Manpower Commission Staff
October 1975

A

EXECUTIVE SUMMARY

SUBJECT: Total Force Overview of U. S. Army

ISSUE: Optimal Manning of Army General Purpose Forces

BACKGROUND: DMC staff was directed to prepare an overview paper on each Service, in terms of the Total Force, focusing analysis on manpower requirements and mix of the General Purpose Forces.

ANALYSIS: First part of study is essentially informational. Main point is that Active Army manpower is projected in Five-Year Plan to continue at present level of 785,000 in average manyears--with a slight end-strength increase (to 793,000) in FY 71 and thereafter to adjust for seasonal variations in the new budget year system. No increase in civilian manpower is programmed by the Army.

Analysis focuses on the Army's planned expansion to 16 active divisions, including initially the use of three Selected Reserve Brigades to round out three new "hybrid" divisions plus use of a number of additional, separate round-out battalions from the Selected Reserve. This will be a major test under the Total Force concept.

The study examines a number of problems in planned Army force structure that impact on manpower requirements and utilization--including (a) shortcomings of the hybrid divisions under the 16-division program, and (b) problems associated with three brigades in Germany (one already there plus two new ones under Nunn Amendment) deployed there from parent divisions in CONUS. Some ideas for rationalizing the force structure in future years are discussed, in terms of manpower.

CONCLUSIONS: There is strong justification of the objective of 16 Active Army divisions, but there are serious practical problems affecting manpower in the Army's present force structure plans. The results of the efforts to use "hybrid" divisions with Selected Reserve round-out units will be especially significant in pointing the way for future decisions concerning the Total Force mix.

It would appear that little, if any, significant further military manpower savings can be projected in the Army General Purpose Forces, since major Army manpower savings otherwise achieved are being consumed in the 16-division program. A case could be made for some increase in such manpower, hopefully offset by savings elsewhere in the Army.

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RECOMMENDATION:

That the DMC accept this study as a basis
for pertinent parts of the DMC Final Report.

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U.S. ARMY

TOTAL FORCE OVERVIEW AND GENERAL PURPOSE FORCE MANPOWER REQUIREMENTS ISSUES

PART 1 - OVERVIEW

The purposes of this paper are: (a) to present an informational overview of the force structure and manpower of the U.S. Army, including its Reserve Components, in terms of the Total Force; and (b) to focus on the 16-division plan and other manpower requirements issues concerning the Army force structure, principally Army General Purpose Forces, on which the Defense Manpower Commission should establish a position. (Other staff papers will focus on the support forces and other issues.)

Summary of Army Manpower in the Total Force

U.S. Army Forces consist of the Active Army and its Reserve Components. The Selected Reserve elements of the Army are the Army National Guard and the U.S. Army Reserve. (Individual Reservists outside the Selected Reserve are treated separately in another DMC staff paper.) Selected Army manpower data are summarized as follows (including FY 1964 as a pre-Vietnam baseline year):

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ARMY MANPOWER IN THE TOTAL FORCE

(In Thousands)

	FY 64 Actual	FY 75 Authorized	FY 76 Authorized	FY 77 Authorized	FY 77 DOD Program ⁶
Active Military ¹	969.0	785.0	785.0 ^a	793.0 ^a	793.0
Civilians ^{1,2}	453.2	401.8	401.8 ^b	406.4 ^b	407.7
Direct Hire	(360.0)	(337.5)			
Indirect Hire ³	(93.3)	(64.3) ³			
Army Nat'l Guard ⁴	389.1 ⁵	400.0	400.0	400.0	400.0
Army Reserve ⁴	261.0 ⁵	225.0	219.0	219.0	212.4

Sources: DoD Manpower Report for FY 1976 and 1977; Defense Appropriations Authorization Act, 1975.

- 1 End strength.
- 2 Military functions only. (Excludes separately funded civil functions.)
- 3 Indirect hire not included in manpower authorization controls prior to FY 76. Indirect hire figures for FY 75 as well as FY 64 are actual.
- 4 Authorization for ARNG and USAR is minimum average paid drill strength.
- 5 National Guard technicians were changed from State to Federal employees in FY 69. FY 64 data have been adjusted to include these technicians as if Federal civilian employees.
- 6 As stated in DOD Budget for FY 76 and FY 77, January 1975. For up-dated figures, see DOD Appropriation Authorization Request for FY 77, when submitted.
- ^a Less Army part of 9,000 Congressional cut (military) to be allocated by Sec Def.
- ^b Programmed part of DOD total, subject to Sec Def re-allocation of reduced total after Congressional cut for DOD overall.

A

Below is a breakdown of the Active military, civilian (direct and indirect hire) and Selected Reserve (paid drill strength) manpower of the Army, according to the main Defense Planning and Programming categories, showing the trends FY74-FY77:*

(End strengths, thousands)

	FY 74 Actual	FY 75 Auth	FY 76 Requested	FY 77 Projected
<u>Strategic Forces</u>				
Military	3.0	.9	.9	.8
Civilian	4.5	1.6	.9	.6
Reserves	---	---	---	---
<u>General Purpose Forces</u>				
Military	417.8	444.6	472.5	475.2
Civilian	45.3	46.5	45.7	47.3
Reserves	563.8	553.8	553.8	553.8
<u>Auxiliary Forces</u>				
Military	40.1	35.2	27.9	27.3
Civilian	31.6	30.8	28.4	28.7
Reserves	---	---	---	---
<u>Mission Support Forces</u>				
Military	42.9	41.7	40.5	39.7
Civilian	99.6	103.2	105.3	105.9
Reserves	26.9	25.9	21.9	22.2
<u>General Support Forces</u>				
Military	144.9	128.7	121.5	120.6
Civilian	227.6	224.0	221.5	225.2
Reserves	32.5	33.8	32.6	32.6
<u>Individual (Active Mil)</u>				
Cadets, Students, trainees	134.2	133.9	121.8	134.8
Patients, prison, trans.	(95.6)	(95.5)	(83.9)	(100.4)
	(38.6)	(38.4)	(37.9)	(34.4)

* Compiled from DOD Manpower Requirements Report for FY 1976 and DOD Reserve Forces Manpower Requirements Report for FY 1976. For up-dating, see same reports for FY 77, when published.

Organization of the Active Army

The Active Army in the United States is under Headquarters, Department of the Army, in Washington. DA commands Army activities in the United States (except Army elements under unified or specified joint commands). Under the National Security Act of 1947, as amended by the Department of Defense Reorganization Act of 1958, DA also remains responsible for the administration of, and the provision of personnel, equipment and support for, Army forces under the operational command of unified or specified commands overseas (or elsewhere).

The Army command structure in CONUS underwent many changes in 1973. As a result, there are now three major commands under DA, as follows:

• Forces Command (FORSCOM), with headquarters at Fort McPherson, Georgia -- Commands the deployable Active Army forces in CONUS, presently including two corps (III and XVIII Abn) and all the divisions and other deployable units, and the forces-oriented installations on which those units are based. Also exercises command over three CONUS "field army" headquarters (dividing geographically the country, plus Puerto Rico), which, in turn, command the Army Reserve units in their areas and supervise USAR and Army National Guard training. The three "field armies" control and are assisted by nine Army Readiness Regions and by Active Army Advisory Groups working with the USAR and ARNG units. Active Army troops under FORSCOM represented about 60% of total Active Army military strength in 1974, with the proportion increasing in 1975-77.

• Training and Doctrine Command (TRADOC), with headquarters at Fort Monroe, Virginia -- Directs all Army individual training, including the Active training centers and Army schools* and exercises command over some

*Except the Army War College, which is directly under DA, and the Medical Training Center and Medical Service Schools.

22 major installations. Manages the Army ROTC, through four recently established regional activities. Also is responsible for the development of organizations, materiel requirements and doctrine; directs three functional combat development agencies (for administration, logistics, and combined arms operations) co-located and affiliated with key Army educational institutions. (NOTE: Issues of DMC interest in the areas of training and education are addressed in separate DMC staff papers prepared by the Development and Utilization Group.)

• Army Materiel Command (AMC), with headquarters in Alexandria, Virginia -- Responsible for the design, development, procurement, distribution of, and support services for, the Army's combat and support materiel. Exercises command over a number of subordinate "commodity commands" (Armaments Command, Electronics Command, Troop Support Command, etc.), the Test and Evaluation Command, depots, laboratories, etc. and associated installations.

In addition, there are a number of smaller but highly important other activities directly under DA -- notably including the Health Services Command (single manager for Army medical activities in the United States), the Recruiting Command, the Army Intelligence Command, the Army Security Agency, the Strategic Communications Command, the Army War College, and the U.S. Military Academy.

Overseas the Army provides, administers and supports the Army forces which are under the operational command of the Unified Commanders. The principal Army components overseas are U.S. Army, Europe (USAREUR), consisting primarily of the Seventh Army and support elements (4 1/3 divisions and other units in Germany in 1974, with two more combat brigades being added in 1975-76 under the Nunn Amendment); and the Eighth Army in Korea, now down

to one division plus supporting elements. (The U.S. Army is in the process of eliminating field army headquarters.) Other Army organizations overseas include the U.S. Army, Japan (primarily concerned with logistical activities and installations on Okinawa and in mainland Japan), the Army elements of SOUTHCOM in the Canal Zone, and the Army elements of various U.S. MAAGS, missions and attache activities accredited to foreign countries around the world.

Army Force Structure

The key combat unit in the Army is the division. The U.S. Army has several different types, which can be tailored in detailed organization and strength, but typically would run in authorized strength (at 100% manning levels with three brigades each) about as follows:

Infantry Division	16,500
Infantry Division (Mechanized)	16,300
Armored Division	16,500
Airborne Division (82nd)	14,900
Airmobile Division (101st)	17,700

The U.S. Army uses a Division Force Equivalent (DFE), sometimes called "division slice," for figuring and allocating manpower requirements in an active theater of operations. For about ten years, this planning figure has been 48,000 for each division and its proportionate share of all the other combat and support troops in the force. (NOTE: An analysis of U.S. Army combat-to-support ratios in comparison to those of the Soviet Army is provided in a separate DMC staff paper and the associated contract research report on that subject.)

As of 1974, there were 13 divisions (actually 12 2/3, as one was short a brigade) plus four separate brigades and other units in the Active Army, and 8 National Guard divisions plus 20 separate brigades (general purpose)

A

and other units in the Reserve Components.

A main subject of DMC and Congressional interest concerning the U.S. Army Force structure is the on-going DOD/Army program to increase the number of Active Army divisions from 13 to 16 by end FY 76, initially at least using a Reserve Component brigade to round out each of four "hybrid" divisions, plus using a number of additional "round-out" battalions. At the same time, the Army is forming two additional divisional brigades for deployment to Europe under the Nunn Amendment. 1/ The Army has stated that it can do this progressively by internal reorganizations and manpower conversions with no significant increase in authorized personnel (except a small end-strength adjustment for seasonal differences under the new fiscal year system). DOD and Army five-year plans project a leveling off at the Active Army level of 16 divisions and end-year strengths of 793,000 active military personnel, with no increase in civilian employee levels. Some needed reorganization of the Reserve Component force structure is being worked out (as will be discussed separately), but with no increase now programmed in paid drill strength.

In a comparison of periods of hostilities, the Army reached a high of 89 divisions and about 8.3 million in World War II (including about 2.3 million in the Army Air Force); 20 active divisions with 1,668,579 active military personnel (including some mobilized Reserves) as of 31 March 1952 during the Korean War; and 19 active divisions with 1,570,343 active military personnel during the peak of the Vietnam conflict (30 June 1968). 2/

1/ The Nunn Amendment (to the FY 75 Defense Appropriations Authorization Act) required the non-combat component of total U.S. military strength to be reduced by 18,000 by June 30, 1976 (6,000 by June 30, 1975) and authorized equivalent increases in combat strength. The Army's share of the non-combat cut in Europe and of the commensurate increase in combat strength there, as allocated by the Secretary of Defense, is about two thirds of the total.

2/ Source: Selected Manpower Statistics, DOD, OASD (Comptroller), May 1975. **A**

Some other selected comparative data follow: 1/

	<u>FY 64</u>	<u>FY 68</u> (Vietnam)	<u>FY 74</u>	<u>FY 77 Proposed</u> <u>2/</u>
DIVISIONS				
Active	16	19	13(-)	16(-)
Reserve	<u>29</u>	<u>8</u>	<u>8</u>	<u>8</u>
Total	49	28	21	24
SEPARATE BRIGADES				
Active <u>3/</u>	5	6	4	4
Reserves	<u>11</u>	<u>20</u>	<u>20</u> <u>4/</u>	<u>20</u> <u>4/</u>
Total	16	26	24 <u>4/</u>	24 <u>4/</u>
ARMORED CAV REGTS				
Active	4	5	3	4
Reserve	<u>3</u>	<u>4</u>	<u>4</u>	<u>4</u>
Total	7	9	7	8
SPEC FORCES GPS				
Active	7	7	4	3
Reserve	<u>7</u>	<u>4</u>	<u>4</u>	<u>4</u>
Total	14	11	8	8

1/ Sources: DOD Manpower Requirements Report for FY 1976; Report of Hearings before the SASC (94th Congress) on S.920 (DOD Appropriations Authorization for FY 76 and FY 77, Feb-Mar 1975).

2/ Programmed as of spring 1975.

3/ Of the Active Army brigades, three are "special purpose" (Berlin, Alaska, Canal Zone). The fourth, in FY 75-77, is the newly-organized 6th Armored Cavalry Brigade (Air Combat), a new type experimental unit formed in 1975. In 1974 the fourth separate brigade was the 197th, subsequently incorporated in one of the new hybrid divisions.

4/ Of the Reserve (ARNG and USAR) separate brigades in FY 74-76 and programmed for FY 77, 20 are in the deployable "General Purpose Forces." There is an additional special purpose ARNG brigade, programmed for school troop support in the event of mobilization.

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The projected 16 divisions in the Active Army at the end of FY 76 will vary from two Active brigades each to four, with varying use of additional "round-out" brigades and separate battalions; there also are 24 separate brigades (as shown in the preceding tables) and many other non-divisional combat units; and various Active/Reserve battalion mixes are involved. Therefore, it is necessary to count the net changes in total numbers of brigades and combat battalions.

In terms of Active Army brigades, there were 42 total in 1974 and there will be 50 at the end of FY 76, a net increase of eight. The Army and DOD programmed two more for FY 77, to replace the round-out Reserve Component brigades in two of the hybrid divisions. (The RC brigades would remain affiliated as augmentation units.) However, the Senate Armed Services Committee, in acting on the 16-division plan in May 1975, stated its approval of the plan to be "conditioned only if the Army . . . continues to maintain an Army National Guard or Reserve brigade as one of the three brigades in each of the three proposed divisions."* The Committee went on to point out that the number of Army divisions is not authorized as a matter of permanent law and will continue to be subject to changes in the annual authorization and appropriation process.

In terms of Reserve Component brigades, the total of 44 (24 divisional and 20 non-divisional) is unchanged from FY 74 in the present programs for FY 76-77 and thereafter.

*Report No. 94-146, Senate Armed Services Committee on S.920 (DOD Appropriations Authorization Bill), May 1975, p. 115.

Maneuver battalions (counting other non-divisional combat units of Armor and Infantry as well as those included in the table above) totaled 378 (172 Active and 206 Reserve) in FY 74 and (as of summer 1975, subject to change) were programmed to increase to about 411 in FY 77 (205 Active and the same 206 Reserve). Thus, the Active Army maneuver battalions, a meaningful measure of strength in combat units, would increase by 27.

Army General Purpose Forces also include other non-divisional units of Rangers, Field Artillery, Air Defense Artillery, Engineers, etc. In all, counting these units as well as the maneuver battalions, the Army states that it has programmed the addition of 48 new Active Army combat battalions by end FY 76 (compared to FY 74), a 17% increase in such units. (Actually, some of these are conversions of previously existing units, i.e., converting three Construction Engineer battalions to Combat Engineer units.) Of these, 28 battalions will go toward making up the Active Army components of the three new "hybrid" divisions. Eight will be used to form the two new Nunn Amendment brigades for Europe (both actually fourth brigades, deployed in Germany, of two divisions in CONUS).

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Two are new Ranger battalions. Three are the Engineer unit reorganizations, previously mentioned. The remainder are six field artillery battalions and one HAWK air defense battalion, to beef up non-divisional combat support. (A tabular recapitulation of all the existing and programmed units in the Active Army cannot be provided in this paper because of security classification.)

In addition to the changes in units, some significant manning increases are programmed in the authorized level of actual organization (ALO) of some units previously programmed for manning at less than full TOE strength.¹

Summing up all the changes, Mr. Paul Phillips, then Acting Assistant Secretary of the Army (M&RA), stated before a Senate Armed Services Subcommittee on February 25, 1975 that the changes will increase the Active Army's combat-to-support manpower ratio to 53:47 by the end of FY 76, compared to a FY 72 ratio of 41:59.²

¹ For example, the Army planned to increase the U.S. manning level of the 2nd Infantry Division in Korea (excluding attached Korean KATUSA personnel) from 80% (ALO-3) to 86% in FY 75, hoping to go higher in FY 76 and ultimately to 100% (ALO-1). (Report of Hearings before SASC, 94th Congress, on S. 920, DOD Appropriations Authorization Bill for FY 76 and FY 77, 1975, Part 3, pp. 1197-98.)

² SASC Hearings, op. cit., p. 1155. Apparently Mr. Phillips used the "major combat units" (divisions plus) methodology which counts as "combat" all manpower in divisions and all non-divisional combat units. For further discussion, see the separate DMC staff paper entitled, "U.S. and Soviet Combat-to-Support Ratios" and the associated contract study for the DMC by the General Research Corporation.

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Projected end FY 76 peacetime deployments of Active Army divisions and separate brigades are as follows:

CONUS	10 Divisions (including 3 with one brigade each in Europe and 3 hybrid divisions short 1 active brigade each)
Europe	4 Divisions + 3 Brigades (from CONUS divisions) 1 Brigade (special purpose, Berlin)
Hawaii	1 Division (hybrid, short one brigade)
Alaska	1 Brigade (special purpose)
Panama Canal Zone	1 Brigade (special purpose)
Far East (Korea)	1 Division (rounded out by KATUSAs)

The foregoing information has been furnished in considerable detail because the 24-division (16 active and 8 reserve) structure and manpower levels programmed for FY 76-77 have been projected by DA and DOD to continue, at least in general outline, throughout the five-year planning period--subject to changes in details which may be programmed by DOD/DA and, of course, to Congressional action in the annual authorization and appropriation processes.

Further details concerning the Army National Guard and the Army Reserve and their future manpower requirements are presented in the separate DMC staff papers entitled "Overview of the Reserve Components" and "Selected Reserve Issues."

Issues covering the civilian employee components and contracting for services in the Army (and the other Services) are treated primarily as part of the separate DMC staff paper on "Support Force Issues".

Selected issues concerning the future manpower requirements of the Army, primarily concerning its General Purpose Forces, are treated in Part II.

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PART II - SELECTED ISSUES: ARMY FORCE STRUCTURE AND MANPOWER

REQUIREMENTS

GENERAL

This section focuses on the Army's 16-division plan and other manpower requirements issues concerning the Army force structure, principally Army General Purpose Forces, on which the Defense Manpower Commission should establish a position.

Incremental Costs of Additional Army Division

At a hearing by the Manpower Subcommittee of the Senate Armed Services Committee on February 25, 1975, Mr. Paul Phillips (then Acting Assistant Secretary of the Army, M&RA), responding to a question by Senator Nunn, acknowledged the sizeable manpower reductions which might have been possible if the Army had remained at 13 divisions. He also explained other currently estimated incremental costs of adding the three new divisions, totaling approximately \$2.0 billion for the five-year period FY76-FY80--including about \$409 million in new construction, about \$1.3 billion for equipment requirements over five years, and increased operating costs (excluding military personnel) of \$51 million in FY76 and \$31-37 million (in constant dollars) annually thereafter.^{1/} No additional training costs were cited, although it is obvious that significant training savings could have been achieved with a smaller force.

Requirements for Army General Purpose Forces

If the Army can create three more divisions (at least in hybrid form) without an increase in manpower, an obvious question is:

^{1/} Report of Hearing on S.920 (Defense Appropriations Authorization Bill), SASC, Part 3, Feb-March 1975, pp. 1177-78.

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Why shouldn't the Army hold at the 13-division level and turn the savings back to the taxpayers? In response to this question, the Department of Defense has provided strong justification for a U.S. Army active force of 16 divisions, plus reserve components.

In his Annual Defense Department Report submitted to the Congress in February 1975, Secretary Schlessinger discussed the worldwide military balance, including the strategic nuclear aspects. In part of that report he addressed particularly the balance of military forces in Western and Central Europe, where U.S. and NATO forces have been directly confronted by some 27 Soviet and 31 other Warsaw Pact divisions (smaller than U.S. divisions) with some 16,000 tanks and about 2,900 tactical aircraft in East Germany, Poland and Czechoslovakia alone.^{1/} (And we know from official intelligence estimates and our study of unclassified materials from reputable sources^{2/} that the Soviet/Warsaw Pact Forces immediately confronting NATO are backed up by large Soviet Forces in the USSR, although some are committed to the China Frontier, plus a tremendous Soviet mobilization capacity.^{3/}) Mr. Schlessinger also addressed

^{1/} Pp. I-19, III-3,4.

^{2/} For example, see The Military Balance, 1975-1976, International Institute for Strategic Studies, London, 1975; and Jeffrey Record, Sizing Up the Soviet Army, The Brookings Institution, Washington, 1975. IISS estimates Soviet ground forces at about 1.8 million in the Soviet Army plus about 310,000 KGB and MVD security troops, total about 2.1 million, excluding 17,000 Soviet naval infantry troops (comparable to U.S. Marines).

^{3/} For further detailed estimates of Soviet Army strengths and the numbers and size of the different types of some 166-167 so-called "divisions" (some manned at only 2/3 or 1/3 strength but rapidly mobilizable), see separate DMC staff paper and accompanying contract research study by the General Research Corporation on "US and Soviet Combat-to-Support Ratios."

Chinese military strength and other factors worldwide affecting the need for US ground forces. He went on to make a strong case for 16 active U.S. Army divisions in the context of the Total Force. His stated rationale for the 16-division is so pertinent to this paper that it is extracted and attached (Appendix A).

In their turns before Congressional committees in 1975, Secretary of the Army Colloway, General Weyand (the Army Chief of Staff) and Mr. Paul Phillips all emphasized the need for the 16-division active force. General Weyand stated that "Since 1968, while we have cut our Army in half, the Soviets have added 20 more combat divisions."^{1/}

General Weyand stated:

As you know, our NATO commitment alone exceeds 20 combat divisions and a considerable number of non-divisional units, and the best considered military judgment of the Joint Chiefs of Staff has established a requirement of 30 divisions (including Reserves) with a low-risk Army force level.^{2/}

Under questioning he explained, "That figure of 30 divisions is what the JCS believe that we required to respond not only to NATO but to unilateral contingency problems . . . 30 divisions worldwide."^{3/} General Weyand explained further:

Our objective . . . is to build 16 active Army divisions from roughly the same resources used to provide 13 divisions in 1974. Our plan to do this involves the creation of three new, active combat divisions from existing units and manpower, both active and Reserve, that had been made available by the conversion from support to combat functions.^{4/}

^{1/} Statement by General Fred C. Weyand, before the Committee on Armed Services, House of Representatives, February 26, 1975.

^{2/} SASC Hearings, op cit, p. 1123.

^{3/} Ibid.

^{4/} Ibid., p. 1122.

Mr. Phillips stated that, "Over the years, our best military judgment has determined that in a conventional war the Army would require about 30 divisions (Active and Reserve) to provide the United States with a low-risk force and a high probability of success." He went on to tell the Senate Committee:

A low-risk force of 30 divisions would be too expensive considering other claimants for natural resources. However, we now have the opportunity to create additional combat power from within our current manpower authorizations and we should do so. We can do so if you will again authorize us to remain at a strength of 785,000. Our Army would be significantly better than in 1972 when we reached the low of 12 2/3 divisions with an 810,000 end strength, presuming [then] that we could make much greater immediate use of large Reserve component units than we now know to be possible. At the 13-division level, we had simply gone too far in our post-Vietnam force reductions.^{1/}

The DMC staff's extensive study of pertinent materials^{2/} and the various official briefings for the Commissioners and staff (by OSD, DIA, OJCS and CIA) support the need for increased capabilities in the Active and Reserve components in the U.S. Army, especially considering the Soviet threat to the United States and to NATO Europe, but also considering other problems in the worldwide situation, both present and potential. We are deeply concerned about the increased Soviet threat and the shortcomings of the United States and NATO military posture, aside from our strategic forces.

^{1/} Op. cit., p. 1155.

^{2/} Specifically includes a number of studies published by the Brookings Institution and the International Institute of Strategic Studies.

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Assuming or given the need for the expanded Active Army Force of 16 divisions (including the hybrid divisions and the Nunn Amendment brigades in Europe), this Commission under its charter still must concern itself further with the manpower implications--with the Army's current and projected manpower requirements and how that manpower will be used. The ensuing discussion focuses on several selected issues in that area or related areas.

SELECTED ISSUES

A Closer Look at the 16-Division Plan

As mentioned earlier, all three of the new "divisions" (as well as the older 25th in Hawaii) initially are "hybrids," each short one active brigade but in the event of mobilization to be "rounded-out" by an affiliated brigade of the Army National Guard or Reserve. Two of these new hybrid divisions will additionally be short another Active battalion each, and several other CONUS divisions will also be short of battalions, again relying on Reserve Component "round-out" units. In all, as of mid-1975, the Army Staff was planning on using 12 separate round-out battalions by end FY76, 11 at the end of FY77. (These figures are subject to change as the Army reviews and modifies its plans following Congressional action on the FY76 Defense Authorization Bill.)

Moreover, two of the new hybrid divisions (the 24th Infantry Division with headquarters at Fort Stewart, Ga., and the 5th Infantry Division (Mechanized) with headquarters at Fort Polk, La.) will, at least

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through FY 76, have only one Active Army brigade each located with the parent division headquarters and other division base units. The other two brigades, redesignated (with slight reorganization) from "school troops" brigades previously existing at the Infantry and Armor Schools, will continue in those "school troop" roles at Fort Benning and Fort Knox, respectively.

Additionally, there are some very serious problems about equipment for the new divisions, which relate to the viability of the whole plan but are essentially outside the charter of the DMC.

Thus the Army's 16-division plan should be seen as exactly what it is--with no illusion that somehow the Army is producing three new, full, ready-to-go Active divisions, plus the new two Nunn Amendment brigades in Europe (to be discussed further below), all with adequate support--and all with no increase in manpower.

Because of their own concerns about these same matters, the Army and DOD planned to create an additional Active brigade for each of these two "hybrid" divisions in FY77, using manpower spaces hopefully squeezed from savings elsewhere and also using the additional time to procure needed equipment. Under that plan, the two Reserve Component brigades would continue in affiliated status as augmentation units but no longer relied on to "round-out" the divisions. This reflects DOD/Army doubt that Army Guard and Reserve units of brigade or larger size can realistically maintain and sustain the high readiness status required for the quick deployment capability expected of Active Army divisions. The two new hybrid divisions at Forts Stewart and Polk were selected to be filled out with Active brigades first

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because of their having only a brigade each located at their base stations. Clearly, the Army hoped to fill out the third new division ultimately, if it could squeeze out the manpower and obtain the equipment to do so.

Meanwhile, however, as previously noted, the Senate Armed Services Committee, in its report on the FY76 Defense Authorization Bill, stated its approval of the 16-division plan to be "conditioned only if the Army fully carries out its present plan and continues to maintain an Army National Guard or Reserve brigade as one of the three brigades in each of the three proposed divisions." The Committee said nothing about the separate round-out battalions. Obviously the Army is having to adjust its planning accordingly. The Senate action does not keep the Army from trying to reprogram the manpower that would have gone into the two new brigades so as to form battalions in FY77 if that manpower is authorized for FY77 (a big "IF") but that would do little to fill out the truncated "divisions" at Forts Stewart and Polk.

Round-Out and the Total Force Policy

In terms of the Total Force concept, the Army's affiliation program (affiliating Reserve Component brigades and battalions with Active Army divisions for training, etc.) is a wholly laudable one which already is paying dividends in improved readiness and morale in the affiliated units. Going one step further and relying on the affiliated units to "round-out" Active divisions is a major example and genuine test of the Total Force concept as applied to the Army.

The round-out units would be given special attention and extraordinary support, which they must have if they are to achieve the necessary

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degree of readiness to be able to mobilize rapidly and deploy and fight effectively with their affiliated Active divisions. Even so, the question remains as to whether it is realistic to consider that such Guard and Reserve units can really achieve and maintain the necessary readiness. The round-out concept has proved itself to be successful in the special case of the hybrid 25th Division in Hawaii, given geographic proximity and other very special factors including the especially strong and proud Guard and Reserve units involved and total support from both them and the Active Army side. By contrast, the CONUS hybrid divisions and their round-out units face different circumstances, and the questions remain.

The cited action by the Senate Armed Services Committee is going to force a genuine test of the round-out and hybrid division concept and focus increased attention on that test--much more so than if the arrangements were viewed as just a temporary, interim device pending the filling out of the divisions with Active units. This should challenge both sides, both Active and Reserve Components, who will have to work very hard to make the concept succeed, and the necessary first-line equipment will have to be provided and funded. If it works successfully, then a major breakthrough in implementing the Total Force concept will have been achieved and the pattern should be continued. If it does not, and the results are faced realistically, then the consequences must be to stop relying on the Army Reserve Components to do things that only adequate Active Forces can do.

A related problem is, where do the affiliation and round-out programs leave the National Guard divisions which do not participate in these programs? That and other issues concerning the Selected Reserve will be addressed in a paper on "Selected Reserve Issues."

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The Nunn Amendment Brigades in Europe. As previously noted, the Army is creating two new brigades for deployment to Germany, as part of the U.S. Army, Europe, under the provisions of the Nunn Amendment calling for reduction in FY75-76 of 18,000 U.S. support personnel there (all services) but authorizing their replacement with combat units. Each Nunn brigade will be a fourth, forward deployed brigade of a CONUS division earmarked for wartime deployment to Europe. Each brigade will have its headquarters and support elements permanently stationed in Germany, with the maneuver battalions (armor and infantry) rotating periodically from the parent division in CONUS. This arrangement not only is costly but is impacting severely on the readiness of the parent divisions in CONUS (as described in a separate paper on this subject by the Development and Utilization Group and Reginald Brown).

Meanwhile, the Army has already had a brigade from the 1st Infantry Division permanently stationed in Germany as part of Seventh Army. The rest of the 1st Division is stationed in CONUS at Fort Riley, committed to NATO, with its personnel periodically airlifted there temporarily on REFORGER exercises involving the use of equipment pre-positioned in Europe. That might have made sense as an economy measure (reducing gold outflow, etc.) and the Armed Forces have committed themselves to making the REFORGER system work; but it is hardly the best system in terms of military efficacy. (We know that more than one senior military commander in Europe has been concerned about this, while necessarily accepting the decision.)

Now that the two Nunn brigades are being added, the question is, why have three separate divisional brigades in Europe--each separated from its parent division thousands of miles away in CONUS? The division

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is the basic self-sustaining combat organization of the Army, not a divisional brigade. The problems of the separate brigades in this instance are horrendous, the readiness of the parent divisions of the two Nunn brigades is impaired, and the adequacy of sustained support for the expanded USAREUR combat force is questionable (has been questioned by a former CINCUSAREUR).

Rationalization of the Force Structure.

In light of the foregoing, why not combine the three separate division brigades into a fifth division in USAREUR, with the necessary additional divisional headquarters and support elements, thereby creating a more effective combat force, with more punch and sustaining power? This would solve every single problem that has been mentioned above. And the parent "heavy" divisions of the Nunn brigades, besides being able to recover their readiness, would be back down to their normal three-brigade size, a more manageable and efficient force. It would take a few more thousand troops in Europe, but the necessary manpower could come from eliminating one of the hybrid division base organizations in CONUS, not yet fully formed, anyway. Or manpower spaces could come from not activating the two new Active brigades for the hybrid divisions.

It probably is too late to do any of the restructuring indicated above, at least in the near term, without further undesirable turbulence. However, the foregoing observations have been set forth to show what a tangle the Army's force structure has gotten into--an Army which has done a truly superb job of rebuilding in many respects but which now is confronted with the results of a number of incremental actions, some of which were

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forced on the Army. All of this impacts on the requirements for and utilization of Army manpower, which is not being used to maximum cost-effectiveness in the force structure described above. As the Army proceeds into the decade ahead, and depending importantly on the results of the Total Force experiment with the new hybrid divisions, consideration should be given (by the Army, the Department of Defense and the Congress) to modifying the Army's force structure into a more rational one.

CONCLUSIONS

There are serious problems in the Army's present force structure plans, as discussed above. The coming decade should afford an opportunity to resolve these problems.

The use of Reserve Component units to "round out" Active Army divisions is a major new effort to implement the Total Force concept. The success of this experiment remains to be seen, in terms of the ability of the round-out units, with Active Army support, to achieve and sustain the necessary levels of readiness. The continuation of such a degree of reliance on Selected Reserve round-out units depends on the success of the experiment over the next several years. The results will impact on the subsequent force structure of both Active and Selected Reserve units of the Army.

The Army's total manpower requirements and optimal Total Force manpower mix for the next decade cannot be completely projected until further studies that are in process are completed (especially the papers on Support Forces, Selected Reserve Issues, and Individual Reserves).^{1/}

^{1/} See the DMC Final Report, when published, for estimates of overall defense manpower requirements for the next decade.

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Insofar as can be projected for the analysis of selected issues concerning the Army's General Purpose Forces, it would appear that little, if any, significant further military manpower savings can be projected in these vital parts of the Army. Major savings in various parts of Army manpower have already been accrued, but the net military manpower savings that otherwise would have been possible are being applied, and used up, in the 16-division program. Indeed, a good case could be made for some modest increases in General Purpose Forces military manpower to complete the 16-division program and permit the suggested changes in the USAREUR force structure. Pending the final results of the other related studies, we could expect any increased military manpower in the Army General Purpose Forces to be more than offset by savings elsewhere in the Army Total Force.

RECOMMENDATION

It is recommended that the Defense Manpower Commission accept the foregoing analysis and conclusions as a basis for preparation of pertinent sections of the DMC Final Report.

Attachment
Appendix A

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APPENDIX A

Following is an extract (Pages 111-13 - 16) of the Report of Secretary of Defense James R. Schlesinger to the Congress on the FY1976 and FY1977, February 5, 1975:

The Ground Forces

Despite the advances of modern technology, no one doubts the need for ground forces in most conventional conflicts. There is no other full countermeasure to enemy ground forces. They are the key element in holding territory against attack, and (of course) they can also seize enemy territory or threaten to do so. Because of this versatility, they provide the most effective leverage that we have available in bringing an enemy to terms. For all these reasons, the ground forces are an indispensable ingredient of any non-nuclear deterrent.

In 1964 we set our Army strength at 16 1/3 active and 8 reserve divisions. In the aftermath of Vietnam, the change in strategic concept, budgetary pressures, and the concerns about the feasibility of the all-volunteer force, we reduced the Army objective to 13 active and 8 reserve divisions. (The Marines, as you know, maintain 3 active divisions and air wings by law.) Now we believe that we should return to the 16 active and 8 reserve division objective provided that the Army is able to improve its "teeth-to-tail" ratio and find more combat spaces within its existing manpower total.

Some observers have asked why, if 13 active divisions was a good enough number several years ago, we now need to revise the number upward. Others have suggested that, if there are support spaces to be saved, we should return the money to the Treasury rather than provide the Army with this allegedly perverse and unnecessary incentive to become more efficient. But these criticisms miss the point that we had already gone too far in reducing our active-duty ground forces.

When the previous administration changed the strategic concept and set an objective of 13 active Army divisions, it did so on the assumption that our high-priority National Guard and Reserve divisions would achieve sufficiently high standards of combat readiness so that we could deploy them almost as rapidly as our active Army divisions. We have now concluded, however, that such heavy reliance on the Guard and Reserve divisions for initial defense missions would be imprudent. It is worth remembering, in this connection, that it took a minimum of eleven months to ready these divisions for combat in World War II and Korea.

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Our plans for initial defense should depend primarily on the active forces for two main reasons. First, we might have very few days or weeks in which to ready and deploy forces before the outbreak of fighting. Second, as matters now stand, we must depend primarily on active-duty ground force units to meet such demanding schedules.

This is not to say that Guard and Reserve units would not have important roles to play in conventional conflicts of the future. Mobilization and deployment schedules might prove less demanding than I have indicated, in which case we might be willing to call up the main reserve units. In addition, they can continue to serve as the long-war hedge described earlier.

In other words, if we are to act responsibly toward the National Guard and Reserve, we should stop pretending that we can use all of them as full substitutes for active-duty ground forces. Obviously they can be useful in special circumstances such as the callup during the Berlin crisis of 1961. Eventually they did play an important role in World War II and Korea, and they might have done so in Vietnam had there been the political will to call them to active duty. But in circumstances where there are only short periods of warning and the most decisive battles of the war occur during the first days and weeks of conflict, then the active-duty ground forces must bear the brunt of the initial defense. Nonetheless, we will still rely on two brigades and a number of separate maneuver battalions from our Reserve Components to round out the 16 division active Army force that we are planning.

There still remains the question of why we need 16 rather than 13 active-duty Army divisions. Part of the answer obviously lies in a greater substitution of active-duty components for reserve units in our initial defense force. But of even greater importance is our belief that in the aftermath of Vietnam and the changeover to the all-volunteer force, we basically want too far in reducing our active-duty ground forces.

For most contingencies, the ground force requirement depends on several factors. The first is the ratio of force to space. Whether we are talking about Central Europe or Korea, if a front is to be held along its length with a reasonable degree of confidence, there must be a minimum density of manpower along that front, with no significant gaps between units. Second, there should be a reserve -- both locally and at higher levels, that can be allocated to halt penetrations or develop counterattacks. Third, certain ratios -- whether we are talking about manpower, manpower in maneuver battalions, firepower scores, or weapons effects indicators -- should not be allowed to favor an attacker by too great a margin. For example, if an attacker could achieve a favorable overall ratio of perhaps 1.5:1 in several of these respects, he could embark on such large local concentrations that the defender would find it difficult to prevent one or more breakthroughs.

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With these factors in mind, and a detailed knowledge of the capabilities of both allies and potential enemies, it becomes possible to calculate the needed input of ground forces by the United States to provide an adequate initial defense in any given theater, and the deterrence that goes with it.

Our current strategic concept, the maintenance of two major strongpoints in conjunction with our allies, and the need to provide a highly combat-ready force for initial defense pretty well dictate our ground force requirement. To satisfy this minimum initial defense requirement (the United States ultimately deployed 90 large divisions in World War II), not only would we want 16 active-duty Army divisions; we would also have to depend heavily on the three active-duty Marine divisions to help fill the need.

Within a total active Army strength of 785,000 men and women, we obviously cannot expect to acquire the full 16 division force or anything like it as part of the standing Army. Even if we were able to bring our overhead for training support and command down to 25 percent of the total, that will still leave us with fewer than 590,000 people for the ground forces. At this level, we must continue to draw on the reserve for selected combat units as well as for critical supporting elements of the division slices.

Given all these circumstances, I believe that the Congress not only should endorse the goal of 16 active-duty Army divisions, but should also join in:

- continuing to offer the Army the incentive to convert specialties from support to combat by allowing them to retain the benefits of real efficiencies in the form of increased combat power;
- maintaining active-duty Army strength at the minimum level of 785,000 despite the high cost of manpower and the understandable temptation to reduce military personnel as an allegedly quick way to save money;
- considering whether, in fact, we should not increase active Army manpower so as to reduce still further our dependence on the Guard and Reserve for our initial defense forces.

If the Congress will provide this kind of support, the Department is confident that General Weyand -- following the example so powerfully set by General Abrams -- will ensure the evolution of a lean and capable Army of which we can all be proud. We are also confident that our overall non-nuclear deterrent -- and thus all deterrence -- will be substantially strengthened.

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WORKING PAPER
NOT OFFICIAL POSITION OF DMC

U. S. NAVY
TOTAL FORCE OVERVIEW
AND
GENERAL PURPOSE FORCE MANPOWER REQUIREMENTS ISSUES

(Revised)

A Staff Issue Paper for
the Defense Manpower Commission

by
Paul C. Keenan, Jr., John D. Sitterson, Jr., and Hugh M. Walton
Defense Manpower Commission Staff
November 1975

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EXECUTIVE SUMMARY

SUBJECT: Total Force Overview and General Purpose Force
Manpower Requirements Issues of the U.S. Navy

ISSUES:

- o Unique Navy Problems
- o Active/Reserve Mix
- o Manpower Requirements Determination Problems
- o Rotation - Tempo of Operations
- o Number of Aircraft Carriers
- o Manpower Requirements

BACKGROUND: The DMC Staff was directed to prepare an overview paper on each Service in terms of the Total Force and to focus on issues pertaining to General Purpose Forces.

CONCLUSIONS: The U. S. Navy does have unique problems in manpower matters compared to other Services.

Continued attention should be given to the Naval Reserve to integrate it better with the active forces.

The Navy's manpower requirements determination process is being improved but needs strong and continued support.

Rotation and tempo of operation have major manpower implications on manpower planning.

The Staff accepts without issue the latest Secretary of Defense actions on the carrier program level, earlier marked for study.

The Staff sees little likelihood of further major savings in manpower of the General Purpose Forces of the active Navy and believes present DoD manpower projections should be tentatively accepted.

RECOMMENDATION: The DMC accept this paper as basis for the preparation of pertinent parts of the DMC final report.

U.S. NAVY
TOTAL FORCE OVERVIEW AND GENERAL PURPOSE FORCE
MANPOWER REQUIREMENTS ISSUES

I. PURPOSE

The purposes of this paper are: (a) to present an overview of the force structure and the manpower of the U.S. Navy in terms of the Total Force; and (b) to focus on manpower requirement issues concerning the naval force structure, primarily the naval General Purposes Forces, which are of interest to the Defense Manpower Commission. Other staff papers will focus on the support forces and other issues.

II. TOTAL FORCE OVERVIEW

A. Naval Force Structure - At the height of the Vietnam War in 1968, the U. S. Navy had a force structure of 976 ships. The structure has been reduced to some 490 ships (with a low of 480 projected by the end of FY 76). Current plans and Congressionally-approved shipbuilding programs call for the fleet to increase from the FY 76 low to 509 by the end of FY 77. The Navy has set as its objective a Navy of 600 ships; however, neither the Secretary of Defense nor the Congress has indicated approval of that level at this time. The present and recent Navy force structure follows:

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NAVY FORCE STRUCTURE

Type of Ship	Number of Active Force Ships		
	FY 74	FY 75	FY 76
<u>Submarines:</u>	<u>114</u>	<u>116</u>	<u>120</u>
Ballistic Missile (SSBN)	41	41	41
Nuclear Attack (SSN)	61	64	68
Diesel Attack (SS)	12	11	10
<u>Carriers:</u>	<u>15</u>	<u>15</u>	<u>13</u>
Attack (CVA)	15	7	5
Multi-purpose (CMA)	3	6	7
Nuclear Attack (CVAN)	1	2	1
Nuclear Multi-purpose (CVN)	0	0	0
Training (CVT)	1	0	0
<u>Surface Combatants:</u>	<u>162</u>	<u>105</u>	<u>100</u>
Cruisers	4	28	28
Destroyers:	<u>92</u>	<u>73</u>	<u>76</u>
WWII fram	18	18	15
DD 931/945	14	14	14
DDG	29	38	39
DLG	28	0	0
DDGN	3	0	0
DD963	0	3	4
Escort Ships:	<u>64</u>	<u>0</u>	<u>0</u>
DE	58	0	0
DEG	6	0	0
Frigates:	<u>0</u>	<u>64</u>	<u>64</u>
FF	0	58	58
FFG	0	6	6
<u>Amphibious Forces</u>	<u>66</u>	<u>6</u>	<u>63</u>
<u>Support Forces:</u>	<u>135</u>	<u>126</u>	<u>117</u>
Underway Replenishment	49	44	41
Auxiliaries	86	81	76
<u>Patrol Craft</u>	<u>0</u>	<u>14</u>	<u>7</u>
<u>Minesweepers</u>	<u>9</u>	<u>3</u>	<u>3</u>
TOTALS	515	504	490

*Multi-purpose carriers combine attack and ASW capabilities; all CVAs will eventually be converted to CVs with the exception of the MIDWAY.
 **On June 30, 1975, several surface combatants were redesignated: Cruisers - DLGN to CGN, DLG-16 and DLG-26 classes to CG; Destroyers - DLG-6 class to DDG; Frigates - DE to FF and DEG to FFG. There was no increase in cruisers from FY74 to FY75 other than the redesignation of destroyers.

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NAVAL RESERVE FORCE SHIPS

<u>Type of Ship</u>	<u>Number</u>		
	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>
Destroyers	37	34	30
Amphibious Warfare Ships	0	0	3
Mine Warfare Ships	25	31	22
Patrol Ships	<u>0</u>	<u>0</u>	<u>8</u>
TOTAL	62	65	63

NAVAL AIR FORCES

	<u>Number</u>		
	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>
<u>Active Tactical Air Forces</u>			
Fighter/Attack Squadrons	68	70	65
Reconn & EW Squadrons	<u>30</u>	<u>31</u>	<u>32</u>
	98	101	97
<u>Active AFS Squadrons</u>			
Land Based	24	24	24
Ship Based	<u>23</u>	<u>23</u>	<u>27</u>
	47	47	51
<u>Naval Reserve</u>			
Attack Carrier Air Wings	2	2	2
Reserve Tactical Spt Wing	1	1	1
Carrier Anti-Submarine Aviation Group	2	2	1
Reserve Patrol Wing	<u>2</u>	<u>2</u>	<u>2</u>
	7	7	6

For FY 76, the squadrons of the Tactical Naval Air Forces are organized into 12 Carrier Air Wings. ASW aircraft forces include squadrons of carrier-based (fixed wing and helicopter) and squadrons of land-based P-3 patrol aircraft.

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B. Summary of Navy Manpower in the Total Force - U. S. Naval

forces consist of the active Navy, including its civilian component, and the Naval Reserve. Selected Naval manpower data are summarized as follows:

(including FY 1964 as a pre-Vietnam baseline year):

NAVAL MANPOWER IN THE TOTAL FORCE
(End Strengths in Thousands)

	<u>FY 64</u> <u>Actual</u>	<u>FY 75</u> <u>Author-</u> <u>ized</u>	<u>FY 76</u> <u>Author-</u> <u>ized</u>	<u>FY77</u> <u>Author-</u> <u>ized</u>	<u>FY 77</u> <u>DOD</u> <u>Program</u>
Active Military*	667.6	540.0	528.7	535.9	546.0
Civilians	327.8	310.0	213.8	314.2	319.8
Direct Hire	314.7	300.3	304.4	304.8	310.4
Indirect Hire	13.1	9.7	9.4	9.4	9.4
Naval Reserve**	123.3	117.0	106.0	106.0	92.0

* End Strength

** Minimum average paid drill strength

See Table I for Manpower Program breakdown.

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TABLE I
NAVY

Below is a breakdown of the active military, civilian (direct and indirect hire), and Selected Reserve (paid drill strength) manpower of the Navy according to the main Defense Planning and Programming categories, showing the trends FY 74-FY 77*

(End Strengths, thousands)

	FY 1974 Actual	FY 1975 Authorized	FY 1976 Requested	FY 1977 Projected
<u>Strategic Forces</u>				
Military	18.6	18.9	19.6	20.4
Civilian	1.3	1.4	1.5	1.8
Reserves	0.1	0.1	0.1	0.1
<u>General Purpose Forces</u>				
Military	236.8	245.1	241.1	249.2
Civilian	5.7	5.5	5.9	6.1
Reserves	63.0	60.4	45.6	45.4
<u>Auxiliary Forces</u>				
Military	29.7	31.0	29.5	26.8
Civilian	48.5	47.8	45.2	45.2
Reserves	8.1	7.4	7.1	7.1
<u>Mission Support Forces</u>				
Military	67.1	70.4	69.5	69.5
Civilian	35.5	36.2	37.8	37.8
Reserves	26.0	25.9	21.9	22.1
<u>Central Support Forces</u>				
Military	87.2	86.1	86.2	85.8
Civilian	224.3	219.1	223.4	228.8
Reserves	16.3	17.6	16.4	16.4
<u>Individual (Active Mil)</u>				
Mishpn, Students, trnes	106.2	84.6	82.7	94.1
Patients, prison, trans.	(61.0)	(56.9)	(54.5)	(55.5)
	(45.1)	(27.7)	(28.2)	(28.9)

* Compiled from DOD Manpower Requirements Report for FY 1976 and DOD Reserve Forces Manpower Requirements Report for FY 1976. For up-dating, see same reports for FY 77B when published.

C. Organization of the Navy* - The Secretary of the Navy heads the Department of the Navy. Under the direction, authority and control of the Secretary of Defense, he is responsible for the policies and control of the Department of the Navy, including its organization, administration, operation and efficiency. The Civilian Executive Assistants to the Secretary are the principal advisers and assistants to the Secretary on the administration of the department as a whole and are assigned responsibilities in their respective areas.

The Chief of Naval Operations (CNO), the senior military officer of the Department of Navy, is the principal naval adviser and naval executive to the Secretary of the Navy and is a member of the Joint Chiefs of Staff. Under the Secretary he heads the Navy staff and exercises command over the operating forces of the Navy not under the unified commands and over certain central executive organizations (e.g., Naval Materiel Command, Bureau of Medicine and Surgery) and assigned shore activities (functional field commands). Under his direction the Department of the Navy provides the operating Naval forces under the operational control of the unified commands and provides support and administration for them.

The operating forces of the Navy include the several fleets, seagoing forces, district forces, Fleet Marine Forces and other assigned Marine Corps forces, the Military Sealift Command, and other forces and activities as may be assigned.

The major commands afloat include the Pacific Fleet, the Atlantic Fleet, the Naval Forces, Europe, and the Military Sealift Command. The Pacific Fleet includes the Third and Seventh Fleets, with the former

*Summarized from U.S. Government Manual, 1975/1976 revised May 1, 1975, General Services Administration.

operating in home waters off the west coast of the United States and the latter deployed to the Western Pacific and Asian areas. The Atlantic Fleet includes the Second and Sixth Fleets, with the former operating off the eastern and Gulf Coast of the United States and the latter deployed to the Mediterranean area. The Naval Forces, Europe include forces assigned by the CNO or otherwise made available by other naval commanders. The Military Sealift Command provides ocean transportation (by Government-owned or commercial vessels) for personnel and cargo for all components of the Department of Defense.

The Bureau of Naval Personnel plans and directs the procurement, distribution, administration and career development of Navy personnel.

D. Reserve/Active Mix - Our main treatment of manpower requirements issues concerning the Naval Reserve will be contained in the forthcoming DMC staff paper, "Selected Reserve Issues." Meanwhile, however, some reference to the active/Reserve mix is appropriate here.

The Navy's approach to the Reserve/active mix indicates that the Navy has been traditionally less dependent on the Reserves than the Army, Air Force and the Marine Corps. The Service is hardware-oriented and, understandably, there has been a general tendency for the active forces to have priority over the Reserve forces in both numbers and quality of equipment. The Navy has been reviewing its approach to the Reserve forces in the past few years and has initiated changes in organization toward mission-oriented activities.

The latest major restructuring of the Naval Reserve occurred in 1973 when it was adjusted in mission-capable, task-performing units specifically

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tailored to provide capabilities for the active Navy, rather than the heavy emphasis on individual augmentation that previous existed. This was the fifth major restructuring since World War II.

The Navy is getting substantial prodding to reexamine its approach to the use of Reserves by both the Secretary of Defense and the Congress. This will be covered in greater detail later.

E. Civilian Force - As shown by the statistics, the Navy has a relatively large civilian force. The projected percentage of civilians versus active duty military personnel in the Navy in FY 77 is approximately 60%, compared to the Army's 51%, the Air Force's 46% and the Marine Corps' 10%.

The civilian force faces a number of difficult problems. The need for civilians with technical backgrounds and skills is accentuated by the Title VIII section of the Defense Appropriations Authorization Act of 1975, which requires that all major combatants built in the future be nuclear powered, subject to the possibility of certain exceptions being sought by the President on the basis of the "national interest." The general requirement for nuclear power applies to new aircraft carriers, major surface combatants and strategic and other submarines. The fact that the Navy builds a number of its own ships in shipyards and the importance of the shipyard as a major strategic element in our Defense program adds a dimension not paralleled in other Services. The problem of numerical civilian ceilings as well as monetary control is viewed as a difficult problem with regard to supporting and managing the Total Force manpower base because of the loss of flexibility.

The ability to forecast future shipyard work and the relative low profits in the industry have made manufacturers reluctant to enter into

expensive training programs for newly hired personnel. The Navy states the need for a "stable, reasonably sized, long-range Navy shipbuilding commitment" to overcome these difficulties. (Many of these problems will be covered in later Requirements Group papers under Base Support and in Management Group papers which discuss the problems of specific operating controls set down by Congress for the Executive Branch.)

III. SELECTED ISSUES

A. Unique Navy Problems - The Navy has unique problems compared to the other Services. The Navy is constrained in its manpower planning and weapons system development by the size of a ship. A hull of a certain size can contain only so many bunks, so many missiles, aircraft, etc.

The nature of sea duty itself is a difficult and unique problem. The Navy feels it is not possible to offer a career which would require sailors to stay at sea during their entire time in the Service. The long deployments in peacetime and the family separation pose many difficulties. Some rotation between sea and shore is considered essential. Even then a sailor's life is not a normal working experience. The hours are long; witness the ship manning documents which are based on a 74-hour week for watch standers and a 66-hour week for non-watch standers in "at sea, at war" condition. In addition to this, when the ships come in for overhauls at periodic intervals the crew, or at least part of it, remains with the ship, working side by side with union workers who are generally better paid and have more reasonable hours.

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Deployments continue to be difficult even in peacetime. The Commission found that the goal for peacetime deployments was six months deployment followed by 12 months operating from the ship's home port. Besides the planned deployments being far from the home port, the operations conducted by a Navy ship during the "home port period" may mean several weeks at a time away from home port. At times, because of scheduling, time away from home port may begin to approach that of an actual deployment.

The requirement for highly trained technicians makes the Navy difficult to man. This need for technical competence is required in both the military and the civilian branches. The technician requires difficult recruiting competition for a high quality man, then long lead times for training with the concomitant expense. The Title VIII requirement for nuclear propulsion exacerbates the need for top technical capability.

B. Active/Reserve Mix - The Defense Department Total Force Study and the recent Congressional interest have increased the Navy's interest in the use of the Naval Reserve and has highlighted some of difficulties of effective use of these resources.

As of this late date, the question of the funded level of the Naval Reserve for FY 76 still is not settled, pending final Congressional action on the Department of Defense Budget for FY 76 and 77. The Senate Appropriations Committee recently voted to appropriate funds for an FY 76 Naval Selected Reserve at an overall paid drill strength of 94,000 (as proposed by the Department of Defense), which is 23,000 below the average strength authorized and funded by the Congress in 1975. Previously the Congress had approved an authorization of 106,000 pending completion of a new Navy

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study. The Senate Armed Services Committee commented that although the Committee received testimony supporting higher levels from representatives of the Naval Reserve and various Reserve associations, they found no specific missions which would justify increases about these strengths, but neither did the Committee go along with the further cuts which the Department of Defense had proposed.* Further, the SASC singled out the Naval Reserve as in need for increased integration of Reserve units with active duty forces.

The DoD Total Force Study, recently completed, resulted in the Secretary of Defense directing the Navy to conduct major tests for both the surface component and the air component of the Reserve. A test in FY 77 will plan three manning systems for surface combatants (100% active, 80 active/20 Reserve, and 65/35, comparing ships of comparable age). In Naval aviation the Navy was directed to provide two Reserve carrier wings with active duty training aboard a carrier and is to develop training to a level of efficiency where one wing could always be ready for combat within 14 days, including night and cyclic operations; the second wing is to be ready within 30 days. The Secretary of Defense further pointed out if the Reserves could not meet these requirements, the Navy should disband in FY 78 the Reserve Tactical Air Carrier Squadrons.

*NOTE (added in February 1976): Subsequently, in the final Congressional action on the FY76 DoD Budget, the Naval Reserve was funded at 102,000 for FY 76.

In general, although there has been renewed interest in the Naval Reserve, there appears to be a lack of imagination in the use of these resources. A possible increase in the use of Reserves to man ships and aircraft perhaps could assist the Navy over the difficult period faced in the immediate future where most of the pressing needs are in hardware acquisition or rebuilding the Fleet. Requiring that all ships be manned fully by active duty personnel adds to the overall cost of the Navy. The concept of allowing more units at lower immediate readiness relying on an immediate callup such as in the Army roundout concept, may be of value in reducing overall costs and allowing the Navy to move toward its objective to increase the number of ships at a lower overall cost.

C. Manpower Requirements Determination Problems - The hardware orientation of the Navy has put manpower planning in the back seat. There does not appear to be adequate understanding to the top level of Navy management of the impact of some of the decisions made regarding manpower. This applies not just to the manpower managers but to the entire Navy planning and programming operation.

This problem is illustrated by examination of the comparison between the requirements determined by the Ship Manning Documents and other factors which affect manning levels. The Ship Manpower Documentation Program began in 1966 with the objective of providing a rigorous, analytical process for determining manpower requirements afloat. By the end of FY 74 this program had been completed on a ship class basis and is of great value to the Navy. The Navy has expanded the program so that it is now examining each individual ship. This is necessary because the equipment and configuration modifications are different between individual ships of the same class.

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However, what is occurring in Navy programs is this: A ship's manning document will call for a certain number, say 300, in order to accomplish the work based on a 74-hour watch standard and a 66-hour non-watch standard working week. This takes into account all the ship's functions and the weapons systems employed. However, it may be that the number of bunks that a ship has is only 250. Next, in order to reduce costs, the total manpower requirements will be underfunded so that perhaps only about 240 people are budgeted for that particular ship. However, this is still not the final number of personnel assigned, because of varying manning priorities within the Fleet (such as the requirement to man the Fleet Ballistic Missile Submarines at 100% and others at a higher percentage than the overall manning level). Thus the personnel actually assigned to a given ship may fall well below the budgeted average levels.

The end result of this is confusion and unhappiness in the Fleet. The Fleet sees the bottom line, namely the personnel they have on board, compares it both with the number of bunks they have and the number of personnel necessary to run their ship and weapons system, and finds that it is inadequate to do the job. Thus a frustrating experience is caused for the people on the line. The reasons for this are not completely understood by the top level decision makers.

Needless to say, readiness conditions from a personnel standpoint have been deeply affected. Although the Navy states that most of the ships and aircraft squadrons deploying are in an "essentially combat-ready status," critical shortages in middle grade, experienced petty officers degrade the personal readiness of all units. For example, the Navy currently has an enlisted shortfall of 15,200 enlisted personnel, which equates to a manning

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percentage of 96%. However, this does not take into account a skill mismatch problem of 29,900 petty officer deficit in 45 undermanned ratings. The Navy reports that these personnel deficiencies have resulted in 35% of deployed ships and 55% of deployed aircraft squadrons reporting essentially non-combat ready due to personnel. It should be noted, however, that the Navy reporting system is much more unit-oriented than some of the other Services. This means that although it gives the Navy a precise indication of its units, the inter-Service comparisons may not be valid, as other Services report larger aggregate units.

As mentioned above, the Manpower Documentation Program is being expanded in FY 75 to begin to do a ship-by-ship documentation program. This further refinement is not expected to change the aggregate numbers of personnel required by the Navy; however, experience to date has shown that the new documentation indicates a need for larger numbers of technically trained people who are long lead time training problems. This will require careful management of these more expensive personnel in the Navy inventory and may require increased funding for their training.

The Commission also notes that the training responsibilities and the manpower responsibilities have been divided since 1971. While this appears to have many advantages, this indicates that there may be coordination problems between the Chief of Naval Education and Training and the Chief of Naval Personnel.

The DMC staff notes that many improvements have been initiated in the Navy to improve their manpower requirements determination. The Commission staff commends these efforts, but cautions the Navy and the Department of Defense that unless adequate funds and manpower are devoted to

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this important element of the Service, the difficult problems noted above will not be solved. It is incumbent that all top Navy managers understand the unique and difficult manpower problems that the Navy presents and that they take that into account in all decision making.

D. Rotation-Tempo of Operations - The DMC staff notes that there are manpower implications of substantial importance from the rotation and tempo of operation policies of the Navy. The Navy, as a matter of course, spends a great deal of time at sea, deployed throughout the world to project a presence of the United States. The problems of maintenance of a viable personnel force under these circumstances are immense. For example, in the high priority, nuclear submarine and surface force community it has been necessary to provide an unprecedented bonus to encourage officers and enlisted men to extend their obligated periods of duty in order to insure that the operational schedules can be met. A Navy person going into these programs can expect the first ten years to be back-to-back sea duty tours with little opportunity for normal family life.

There were several approaches taken in regard to rotation in an earlier paper by the Defense Manpower Commission. In one paper it was noted that stationing personnel overseas for a period of three years appeared to be an excellent idea, both from the cost standpoint and that of morale. Nevertheless, this does not apply directly to the situation the Navy faces, since the Navy lacks the same infrastructure of housing, commissaries, etc. overseas that is available to the Army and Air Force units in Europe. Additionally, repair facilities for the large combatants are not generally available in overseas areas. There is an exception to this in the Yokosuka area where one aircraft carrier is now stationed, and this program appears to be working reasonably well.

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E. Number of Aircraft Carriers - In the subject issue paper developed by the Requirements Team, Naval carrier forces were discussed. The approach approved by the Commission was that we would study the subject and monitor the progress of the planned carrier reduction program through the Congress.

The Navy program included in the Defense Department's budget request for FY 76-77 reflected a decision to go ahead with the reduction in carriers. It showed a decrease in the number of large carriers to 13 by the end of FY 76, with 12 active carrier wings. The reduction would retire the two oldest active carriers. Twelve are to be used to support the forward deployment of four, in the usual three-for-one pattern. The thirteenth, retained at least for the present, pending further decisions, will provide a spare for surge requirements (in emergencies it could replace another carrier in overhaul, using its air wing, or take on Marine or Reserve squadrons) and otherwise make a deck available for training the two Naval Air Reserve carrier wings. The Secretary of Defense decision regarding retention of the thirteenth carrier will be subject to review in future years, depending in part on the ability of the NAR carrier wings to meet criteria recommended in the 1975 OSD study on "The Guard and Reserve in the Total Force."

We are satisfied that the question of the thirteenth carrier is being addressed properly in the Department of Defense. Accordingly, the DMC staff suggests that the Commission simply note the foregoing and accept the programmed level of carriers without issue.

F. Manpower Requirements - Despite all of the special problems which have been discussed concerning the Navy's manpower requirements, it remains necessary for the DMC to address the question as to what those requirements are.

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DoD planning and programming project a 17,000 increase in the Navy's FY 77 active military manning requirements over those of FY 76. Even if those additional personnel are provided, there still will be a 15,000 personnel shortfall below requirements for full manning, accordingly to the Navy (with skill mismatches and serious petty officer deficiencies in certain ratings). Apparently the decision to program manning at that level took place in the budget process in trade-offs between materiel, operating costs, and military manpower. Considering the problems which have been discussed, the DMC staff considers the General Purpose Forces portion of the Navy's military manpower program to be fully justified. Even that level ought to be accompanied by some decrease in the routine operating tempo. Some cut-back in routine distant deployments of the Sixth and/or Seventh Fleets is feasible, would ease the presently serious manning problems of the Navy, and actually could even enhance, rather than diminish, the Navy's overall readiness and its surge capability for wartime operations. Beyond that, any further savings in Naval manpower (both military and civilian) would have to come from the Navy shore establishment and possible measures for increased cost-effectiveness which are discussed in the separate DMC staff issue paper on "Support Forces.

Beyond FY 77, the Navy will encounter additional manpower problems as it pursues its presently approved programs for expansion of the fleet and, beyond that, its announced further objective of a 600-ship active fleet. The fleet of FY 80 is already fairly well set by shipbuilding programs already in process, and some of the programming details out as far as FY 83-84 are taking shape. Beyond that, with respect to the Navy's goals of a 600-ship active fleet, the details of programming and the prospects for OSD and

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Congressional approval and funding are far from clear, so it is impossible for the DMC at this stage to know whether or when the 600-ship goal will be achieved.

For FY 80, on the basis of testimony by the Assistant Secretary of the Navy (M&RA), it appears that the Navy, with an increased number of ships, will require roughly the same number of personnel as in FY 77, with some differences in composition. Accordingly, our comments on the FY 77 levels will still apply. Before then, however, the experiments with different active/Reserve mixes will have been completed, and may be (or may not be) appropriate to make some manning changes on the basis of the results of these tests.

Looking even further into the future, to the extent possible with existing manpower planning factors, the Navy estimates that its goals of 600 active ships, when and if achieved, would require approximately 2,000 officers and 34,000 enlisted personnel over FY 76 levels. The LMC staff has no basis for arguing against such an increase (other than the recommendations in the separate paper on "Support Forces" and the expressed views on reducing routine operating tempo.)

Conclusions

The DMC staff concludes that the Navy has a number of unique and serious manpower problems and that this must be recognized, both within the Navy top management and the Department of Defense and elsewhere.

Manpower planning has taken a back seat to hardware planning in the Navy, and this is causing many serious problems within the manpower program. Additionally, these are more serious because most manpower problems are long range and are difficult to solve expeditiously. The staff notes that

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solutions and efforts to implement these solutions have been started by the Navy and they should be strongly encouraged. By encouragement, it is meant that manpower and funds should be properly committed to develop the necessary tools for decision-making in the development of weapons systems and the building of ships and aircraft.

Rotation, continuous distant deployments, and tempo of operations have major manpower implications and should be considered by strategic planners. There has been a serious impact on the Navy's manpower and on reduced readiness and surge capability to meet emergency requirements. In general, it appears that the tempo of peacetime operations could and should be reduced. The importance of this is emphasized.

The staff notes the issue of the programmed level of carriers and accepts the plan that has been recommended by the Secretary of Defense. The tests of active/Reserve mixes that have been directed by the Secretary of Defense appear valid and should be carried out. It is hoped that this type of innovative thinking and testing may provide a better use for the Naval Reserve than is currently being considered. (For further treatment of the Naval Reserve, see separate DMC staff issue paper, "Selected Reserve Issues.")

The DMC should tentatively accept the OSD manpower projections for the General Purpose Forces of the active Navy.

V. RECOMMENDATION

That the DMC accept the foregoing analysis and conclusions as a basis for the preparation of pertinent parts of the DMC final report.

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REVISED Draft for DMC, Oct. 23, 1975

WORKING PAPER
NOT OFFICIAL POSITION OF THE DMC

U.S. MARINE CORPS
TOTAL FORCE OVERVIEW AND SELECTED MANPOWER REQUIREMENTS ISSUES

A Staff Issue Paper for
the Defense Manpower Commission

by John D. Sitterson, Jr. and Ray A. Dunn, Jr.
Requirements Group
Defense Manpower Commission Staff
October 1975

C

EXECUTIVE SUMMARY

SUBJECT: Total Force Overview of the U. S. Marine Corps

ISSUE: Basic manpower problems of the Marine Corps.

BACKGROUND: The DMC staff was directed to prepare an overview paper on each Service in terms of the Total Force and to focus on issues pertaining to General Purpose Forces. The first part of the paper is informational.

ANALYSIS: Reveals a unique and highly specialized force organized, in compliance with statutory requirements, for the primary mission of establishing and defending advanced bases in support of naval campaigns.

Identifies significant personnel quality shortcomings and problem of numbers vs. quality.

Indicates Marine Corps is moving to improve quality.

Shows that Marine Corps is undertaking organizational changes to enhance effectiveness and save manpower.

CONCLUSION: Marine Corps has serious manning problems, raising questions of ability or desirability of maintaining present levels.

Marine Corps should:

- a. Emphasize quality--at expense of size, if necessary.
- b. Continue to examine its structure for possible manpower savings which would not decrease combat capabilities.

Major manpower savings and a more cost effective Marine Corps could be achieved.

RECOMMENDATION: DMC accept the paper and its conclusions as a basis for pertinent sections of the final report.

NOTE: The Senate Armed Services Committee has asked the Marine Corps for a special report concerning its mission force structure and manpower problems by January 1, 1976. This DMC staff paper, therefore, is tentative, subject to revision based upon those reports.

U. S. MARINE CORPS

TOTAL FORCE OVERVIEW AND SELECTED MANPOWER REQUIREMENTS

PART I - OVERVIEW

Purpose

The purposes of this paper are (a) in Part I, to provide a brief informational overview of the force structure and manpower of the U.S. Marine Corps, including its reserve component, in terms of the Total Force; (b) in Part II, Selected Issues, to discuss basic manpower problems of the Marine Corps.

(NOTE: The Senate Armed Services Committee has asked the Marine Corps to conduct a study concerning its mission, force structure and manpower problems and report back by 1 January 1976. The findings of that study could alter the determinations made in this paper.)

Summary of Marine Corps Manpower in the Total Force

U.S. Marine Corps forces consist of the active U.S. Marine Corps and the Marine Corps Reserve. The Marine Corps makes use of both the Selected Reserve and the Individual Ready Reserve.

Marine Corps Manpower(As presented in the DoD budget for FY 1976-77)
(Thousands)

	<u>FY 64</u>	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 77</u>
Active					
Military	189.8	196.4	196.3 ^{1/}	196.5	197.6
Civilians	19.3 ^{2/}	20.3	19.9	20.4	20.4
Direct Hire	(18.0)	(18.0)	(17.6)	(18.1)	(18.1)
Indirect Hire	(1.3)	(2.3)	(2.3)	(2.3)	(2.3)
Reserve ^{3/}	45.9	32.3	32.5	33.0	34.7

Marine Corps has established a full strength active duty manpower requirement at 212,000 military and 20,500 civilian spaces. For FY76-77 the authorizations requested were fiscally constrained to the 196-197,000 range for military and 18,000 for civilian spaces, a little over 90% of the requirement. As a result, selected units are not fully manned and some have been placed in cadre status. The Marine Corps structure emphasizes mobility and ready combat capability. The military/civilian mix is, therefore, the highest in military of any of the services; and, additionally, the Marine Corps is manpower intensive.

Organization of the Marine Corps

The Marine Corps is unique among the services in that its structure is fixed by law. The Armed Forces Unification Act of 1947, as amended, (Title 10, U.S. Code) prescribes that "The Marine Corps, within the Department of the Navy, shall be so organized as to include not less than

^{1/} SecDef will apportion a 9,000 cut among the services as directed by the Conference Committee.

^{2/} Functions performed by the Navy and Marine Corps were differently divided in FY64. These figures are factored to provide comparability with today's situation.

^{3/} FY75-FY77 Figures are average strength.

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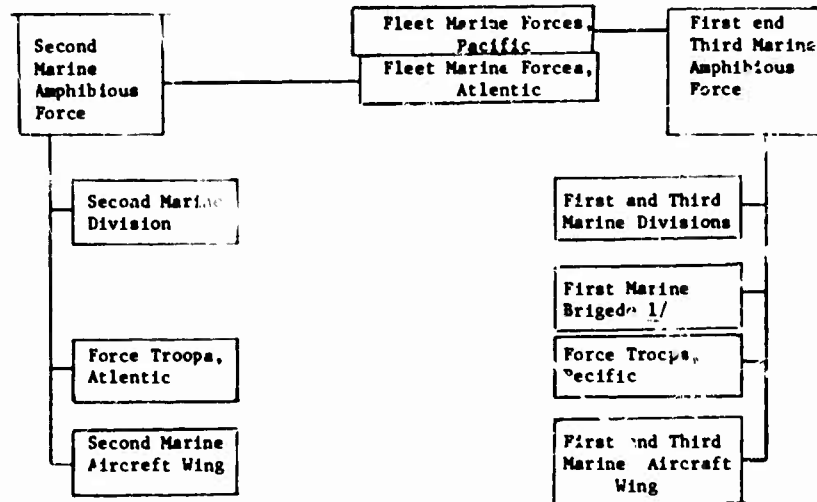
three combat divisions and three air wings and such other land combat, aviation, and other services as may be organic therein." While the structure of the Marine Corps is specified, its size is not.

The Marine Corps mission is to provide forces of combined arms, together with supporting air, for seizure or defense of advanced naval bases and for the conduct of land operations essential to a naval campaign. In addition, it is responsible for security of naval installations and aboard ship. Finally, it is charged with developing tactics and equipment for amphibious operations and the performance of such other duties as the President may direct. The Marine Corps organization reflects both its statutory basis and its mission requirements.

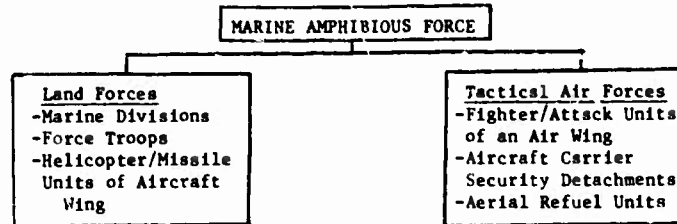
There are three division/wing teams in the active force and a fourth in the Reserves. These operational elements are assigned to the Fleet Marine Forces (FMF). The remainder of the organization provides staff services, training and support for the operational forces. There are two FMFs, one in the Atlantic and one for the Pacific, under operational control of the appropriate Fleet Commands, which, in turn, are under the Unified Commands and the JCS. The Fleet Marine Forces themselves are management headquarters.

FMFs are composed of divisions, wings, and force troops, which provide support, additional combat strength, and services for the division/wing. When combined they form an integrated combined arms team with its own support elements, designed to project naval power ashore. These deployable organizations are called Marine Amphibious Forces (MAF).

The Fleet Marine Forces



One division/wing team or MAF is located on the East Coast, committed to NATO and supporting Atlantic Fleet deployments. One is forward deployed in the Pacific (based on Okinawa). The third is on the West Coast and can be used as a strategic reserve. The Reserves form a fourth division/wing in the event of mobilization. The composition of a MAF is indicated below:



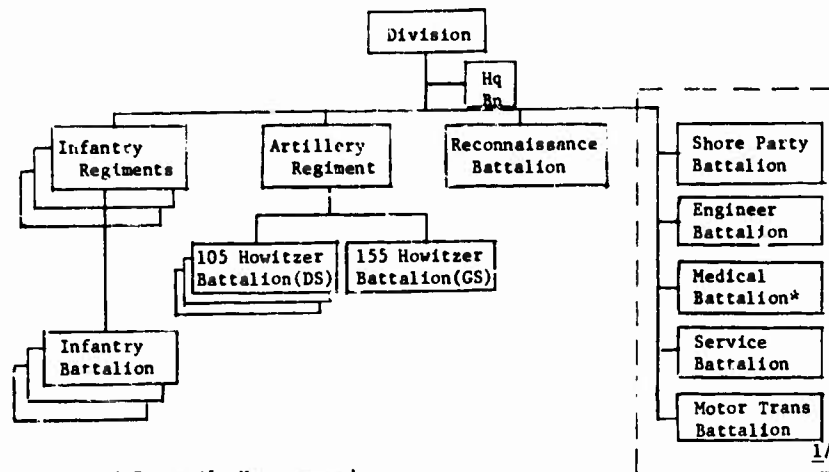
1/ Composed of units from Third Marine Division, First Marine Aircraft Wing, and Force Troops Pacific.

Marine Amphibious Forces are, in turn, organized in Marine Amphibious Units (MAUs) which are tailored to their tasks and deployed as needed. A MAU would be composed of the same or a portion of the elements above, depending on its size, location and mission.

At any time the Fleet Marine Forces typically deploy two amphibious units in the Western Pacific and one in the Mediterranean, while one rotates into the Caribbean Area. Each is task organized and sized for its particular mission. At present the MAU in the Mediterranean numbers about 1800 men with supporting helicopter and Harrier (vertical take-off) fighter/attack aircraft. Those in the Pacific are somewhat smaller.

Marine Division Organization

A Marine division totals about 18,000 personnel. Each is built around nine battalions of infantry and four artillery battalions.



* Primarily Navy manned

1/ These elements will be removed from the division under the new FMF organization.

The Shore Party Battalion is unique to Marine Divisions, in virtue of the amphibious mission. It is the function of the shore party to provide command and control in establishing and supporting beach operations during amphibious assaults. It can serve the same function during helicopter assaults.

The infantry and artillery elements are similar to those of the Army except that the infantry battalion is about 25 percent larger. Marine Corps divisions are somewhat differently constituted in other respects. For example, they do not have tanks, helicopters or an integral air defense capability as does the Army, nor do they furnish the bulk of their medical needs. These are supplied by Force Troops, the associated Air Wings, and the Navy in the case of medical support. The Marine Division is about 1500 men larger.^{1/}

As this paper is written, the Marine Corps is undertaking a comprehensive reorganization which will leave the Division with combat forces only. This will be discussed in more detail below.

Marine aviation is composed entirely of general purpose fighter/attack, reconnaissance, transport/tanker fixed wing aircraft and transport and attack helicopters. In all, there are about 900 operational aircraft, roughly equally divided between fixed and rotary wing aircraft.

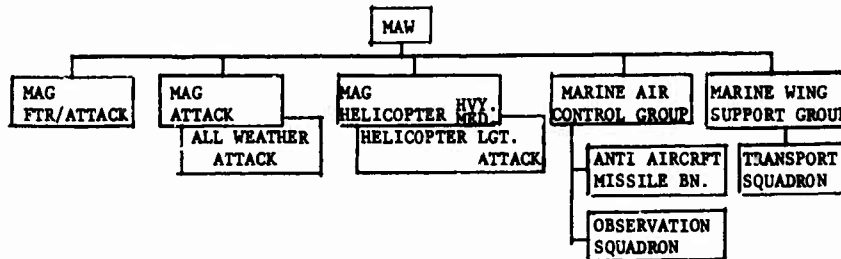
These assets are organized into three wings in compliance with statutory requirements and in parallel with the division structure.

^{1/} A U.S. Army infantry division is approximately 16,500.

Marine Air Wing Organization (MAW)

Marine Air Wings are not uniform in size, although each has attack, fighter, transport and helicopter and support aircraft assigned to it. The Second Wing, for example, has about 500 aircraft, while the First Wing in the Pacific has just under 200. The wings are subdivided into Groups (MAGs), each generally consisting of like type aircraft, fixed wing or helicopter, and a support group. Certain limited resources, such as electronic countermeasures (EA-6) and reconnaissance aircraft (RF4), are presently concentrated in a single wing for ease of maintenance and operation. They provide these capabilities to other wings by deploying detachments on temporary duty.

A Marine air wing could be as depicted below:



The squadrons which make up these groups vary from twelve to twenty aircraft, depending on complexity of support and maintenance and mission. Each MAG has a Headquarters and Maintenance Squadron (H&MS) and a Marine Air Base Squadron (MABS), which provide specialized maintenance beyond squadron capability and operate the airstrip. The Control Group provides command and control, airborne observation and fire control in the combined arms concepts.

In the Marine structure, anti-aircraft capability is also vested in the air wing, which typically has a HAWK missile battalion for medium and low altitude area defense, extending beyond the portable Redeyes suitable for close-in, lower altitude use in forward areas.

A Marine wing is highly mobile and provides tailored, task oriented packages to MAUs or other operations as required. It is versatile and its aircraft are capable of operating from carriers, airfields ashore or mobile SATS (short airfields for tactical support). In the case of the VSTOL AV.8 Harrier and the helicopters, airfields are not necessary.

Force Troops

Each of the FMFs has, in addition to a division/wing team, a third component, known as Force Troops, to provide additional combat strength (with heavy artillery and armor) and engineering, supply and maintenance support beyond the capability of the division/wing. In addition to these functions, the Force Troops are the source of the major communications net and furnish services such as medical and dental facilities, cold storage, water purification and other necessities for a combat unit in the field. Like the other two components of the team, the Force Troops are organized so that they can provide support to any size unit from a MAU to a full MAF.

The New Organization

At the present time, the Marine Corps is reorganizing its FMF structure on the East Coast. FMF Atlantic has established a new Force Service Support Group (FSSG), which assumes all the functions of the Force Troops except the artillery and armor and some of the support functions from the division and wing. The new organization will consolidate the service, engineering, transportation and medical functions in the new

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organization. The Service Support Group will also take over the Shore Party Battalion from the division. The divisions will have combat forces only and will be smaller. When completed they will have only the infantry regiments, the artillery regiment and the reconnaissance battalion. The Force Troops will retain essentially the Artillery Group and armored elements. The air wings will not be as heavily affected and will retain motor transport and engineering functions.

The change, says the Marine Corps, is designed to eliminate the duplication of functions and some manpower, centralize support functions and create an organization that is more responsive to both garrison and deployed needs.

Organization and Role of the Reserves

The Marine Corps Reserves are comprised of two elements--the Individual Reserves and the Organized Reserve.

There is a third resource that can be called upon if necessary. The Fleet Marine Corps Reserve, which is peculiar to the Marine Corps (and Navy with its Fleet Reserve), is composed of enlisted Marines who are retired from active duty after 20 but before 30 years of service. They are liable for training and recall until they reach 30 years. In the interim, they receive Retainer Pay at the same rate as retirees from other Services.

The Individual Reserves are primarily the Individual Ready Reserve (IRR) and the Standby Reserve, both of which are described for all Services in the separate DMC staff papers on "Individual Reserves" and "Overview of the Reserve Components." They would be used as fillers and initial replacements in case of recall. In addition,

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other retired personnel (besides the Fleet Marine Corps Reserve) are subject to recall under certain emergency conditions.

The Fourth Marine Division and Fourth Marine Air Wing, U.S. Marine Corps Reserve, make up the Organized Reserve, which is the Selected Reserve paid drill component of the Marine Corps. Both are organized in essentially the same manner as the active duty divisions and wings. In the case of the wing, however, there is a lesser number of aircraft groups and squadrons. The Fourth Marine Division has three infantry regiments, one artillery regiment and service elements. The Fourth Marine Aircraft Wing is comprised of two fixed-wing (one fighter and one attack) and two rotary-wing groups. The wing also has an air control group and a service group.

The overall authorized manning level of these Reserve organizations is just over 11,000 personnel. There are almost 4,000 active duty Marines assigned (including 1,000 in the aviation units), so that the actual reserve strength should be about 37,000. At present, however, there is a shortfall of about 3000 Reserve personnel. The Marine Corps feels that they will be able to bring the Reserve division/wing back up to authorized strength by FY 1978. The Marine Corps estimates that it would take between 60 and 120 days after activation for the division to be ready for deployment and, based upon the latest cycle of active duty tours, that about half the air units would be ready within 30 days and the remainder within 60.

The Reserve has a three-fold mission. First, it can provide subordinate units of the division/wing team for assignment as needed;

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second, it can provide a full division/wing team in the event of general war; and third, it could be used as a source of individual replacements in case of general mobilization.

PART II - SELECTED ISSUES

Basic Marine Corps Manpower Problem

The Marines are both helped and hindered by their special statutory basis. On the one hand, they are guaranteed a structure made up of three divisions and wings and they are given a unique status and mission (emphaazing amphibious operations). On the other hand, the Marine Corps ia faced with serious manpower shortages and quality problems, primarily resulting from the special impact of the transition from a draft base to a volunteer force, which makes it difficult to maintain their statutory structure.

In an effort to keep up the numbers, the Corps recruited many low quality enlistees, real troublemakers as well as those of low usefulness, and then was slow in getting rid of them. This situation unduly tied up unit commanders and NCO's in dealing with personnel problems to the detriment of unit training and readiness. Now the Marine Corps has faced up to their problems and (as of the fall of 1975) is moving aggressively to correct them. The problems of the Services with respect to recruiting accession and subsequent utilization will be addressed in other DMC staff papers. Suffice to say here that the Marine Corps is moving to restore standards, correct malpractices in the recruiting and qualification of enlistees, and, through a combination of administrative procedures and judicial measures, dispose of substandard personnel and disciplinary offenders already in the Marine Corps ranks.

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The Marine Corps is programmed to be manned at a 196,000 active military level in FY 76, approximately the same as FY75, while their full "requirement" is calculated as 212,000. The result is that some active units have had to be programmed for FY76 undermanning--some reduced to cadre status or even to zero.

FY 76 active duty strength as a percent of 100% wartime strength would be about as follows, if target accessions are achieved:

1st Division	80%	1st Marine Air Wing	90%
2nd "	96%	2nd " " "	90%
3rd "	88%	3rd " " "	80%

If target accession goals are not achieved for any reason (including restored recruiting standards as well as other factors), then manning levels shown above will be correspondingly affected.

CONCLUSIONS

1. The Marine Corps should emphasize the primacy of quality standards in its policies and procedures for recruiting, testing and eliminating personnel. If this results in a somewhat smaller force, so be it. As the main advantage, this will provide a high quality, reliable Marine Corps--and still one of adequate size.

2. The Marine Corps should continue to examine its force and support structure for possible manpower savings which would not decrease combat capabilities. In this connection we endorse the ongoing Marine Corps examination of its mission, organization, and manpower shortcomings.

Manpower Implications. Depending upon actual developments, the foregoing could result in a somewhat smaller but more cost effective Marine Corps over the next decade. Manpower savings, military and civilian, cannot be projected accurately. Some of the manpower savings

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achieved could be used to restore certain units to authorized manning levels.

RECOMMENDATIONS

That the DMC accept this paper as a basis for preparation of portions of the final report, subject to revision, based upon consideration of the Marine Corps special report to the Senate Armed Services Committee, due January 1976.

Note:

January 15, 1976

No change was made in this paper after DMC staff review of the report submitted by the Commander of the Marine Corps to the Senate Armed Services Committee in January 1976.

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WORKING PAPER -
NOT AN OFFICIAL POSITION OF THE DMC

U. S. AIR FORCE
TOTAL FORCE OVERVIEW AND GENERAL PURPOSE
FORCE MANPOWER REQUIREMENTS ISSUES

A Staff Issue Paper
For The
Defense Manpower Commission

by Ray A. Dunn, Jr., Consultant
Requirements Group
Defense Manpower Commission Staff

October 1975
(With subsequent minor revision)

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EXECUTIVE SUMMARY

Subject: Total Force Overview of U.S. Air Force

Issue: Optimal Manning and General Purpose Forces

Background:

The DMC staff was directed to prepare an overview paper on each Service, in terms of the Total Force, focusing analyses on manpower requirements and mix of the General Purpose Forces.

The first part of the study is essentially informational.

Analysis:

Review shows excellent use of Reserve Forces, which are highly effective. Questions exist about costly level of their manning and support, which will be addressed later in a separate paper on Reserves.

Major changes affecting manpower are in USAF's plan to expand tactical forces from 22 wing equivalents to 26 full wings. USAF is finding the necessary manpower spaces, which shows that without expansion, manpower savings could be effected. Doubling up the new wings with existing wings on existing bases would save manpower.

Review reveals imbalance between deployment (operational) requirements and military manning — fruitful areas for further civilianization and application of the Total Force policy. (Further analysis affecting the USAF will be provided in a separate paper on Support Forces.)

Conclusion:

USAF has done a commendable job of using the Guard and Reserve under the Total Force policy. Substantial active force manpower savings which would have been possible will largely be offset by expansion to 26 wings

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Even so, significant opportunities exist for some further savings and improvements in mix.

Recommendation:

That DMC accept the paper as a basis for pertinent sections of the DMC Final Report.

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U. S. AIR FORCE

TOTAL FORCE OVERVIEW AND GENERAL PURPOSE
FORCE MANPOWER REQUIREMENTS ISSUES

Purpose:

The purposes of this paper are: (a) to present an informational overview of the force structure and manpower levels of the active and reserve elements of the U.S. Air Force, and (b) to focus on General Purpose Air Force organization and procedures affecting manpower requirements and to suggest changes which could yield long-term economies.

Major Features of Air Force Structure and Manpower in the Total Force:

U.S. Air Forces consist of the active Air Force and its Reserve Components. The organized Reserve Components are the Selected Reserve elements of the Air National Guard and the Air Force Reserve. There are also individual reservists, not assigned to selected units, in the Individual Ready Reserve and Standby Reserve, which are discussed in a separate paper. Manpower data (excluding individual reservists and contractor personnel) are summarized below.

AIR FORCE MANPOWER (in thousands)
(End Strengths except as noted)

	<u>FY1964</u> <u>Actual</u>	<u>FY1975</u> <u>Authorized</u>	<u>FY1976</u> <u>Authorized</u>	<u>FY1977</u> <u>Authorized</u>	<u>FY1977</u> <u>DOD Program</u> ^{3/}
Active Military	855.8	611.5	590.0 ^{1/}	590.0 ^{1/}	590.0
Civilians (Total)	337.7	281.2	271.3 ^{1/}	273.2 ^{1/}	271.0
(Direct Hire)	(305.6)	(265.6)	(255.9)	(257.8)	(255.7)
(Indirect Hire)	(32.7)	(15.6)	(15.4)	(15.4)	(15.3)
Air National Guard ^{2/}	73.2	96.0	94.9	95.0	94.0
Air Force Reserve ^{2/}	67.0	51.3	51.8	54.0	55.0

^{1/} Less USAF part of a 9,000 military cut and a 23,000 civilian cut in DoD, made by Congress, to be apportioned by the Secretary of Defense.

^{2/} Selected Reserves, paid drill strength. For FY 75 through FY 77 figures are average strength as prescribed in P.L. 93-365, Title IV, Reserve Forces.

^{3/} Throughout this paper, the FY 77 program figures are from the DoD Budget and Manpower Requirements Report for FY 76, submitted in 1975.

The active component of the Air Force is organized to provide air forces for strategic nuclear or conventional deterrence on a world-wide basis, for support and airlift of other forces, and for actual offensive and defensive combat operations in the event of hostilities. For actual operations, most of the operational control of the commanders of the specified and unified commands under the Joint Chiefs of Staff and the Secretary of Defense.

The Strategic Air Command (SAC), a specified command of the JCS, serves as a deterrent to nuclear attack and provides the forces to retaliate if deterrence fails.

The Aerospace Defense Command (ADC), also a specified command, is charged with surveillance and warning for the continental U.S. and with peacetime control of U.S. airspace. In view of a limited bomber threat against the U.S., it has a limited fighter defense force.

The Military Airlift Command (MAC), a major command of the Air Force, provides a full spectrum of airlift services for the entire Department of Defense. Priorities are established by the JCS and the Commander, MAC, as the Executive Director of Defense Airlift Services.

The Tactical Air Command (TAC) provides general purpose fighter/attack and reconnaissance forces to counter known threats or contingencies world-wide. A portion of the TAC Forces are assigned to Air Force components under operational control of Unified Commands overseas. The two largest of these are U.S. Air Forces, Europe, and Pacific Air Forces, under the Commanders in Chief, Europe and Pacific. There are similar arrangements in Panama and Alaska. In addition, TAC Forces in the United States are available for deployment to meet contingencies world-wide and serve as the Air Force element of the Readiness Command and the Atlantic Command.

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Each of the major commands above will be discussed in some detail further below.

Supporting this structure are the logistic, training, research and service elements of the Air Force. These are organized into commands such as the Air Force Logistics Command (AFLC) and the Air Training Command (ATC), and Separate Operating Agencies (SOA's), such as the Air Force Academy.

Integral to the "Total Force" structure of the Air Force is the Air Reserve Force, made up of the Air National Guard and the Air Force Reserve. The Selected Reserve elements of these Reserve Components provide trained, equipped combat and support units which can join the active force upon mobilization. Each such unit is assigned to a wartime "gaining command," which assists the unit by providing advisors, training teams and inspections as part of the training process. These Reserve Force units are required to meet substantially the same readiness standards as the active forces; and insofar as practicable, they receive the same priority, logistic support and training as comparable active units.

Many reserve units contribute to the active Air Force mission on a regular and daily basis. For many years, the Air National Guard has stood regular air defense alert and actually provides more than half the total interceptor force now. Even after force modernization is complete and the overall air defense structure reduced, they will still provide half the forces. The Air Force Reserve contributes to the daily airlift schedule of MAC through its Associate Program. This program integrates reserve aircrews and maintenance crews directly into

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active airlift squadrons. They train and fly with the active force equipment and materially augment the unit's capability. During the Israeli Airlift of 1973, reserve crews flew 22% of the flights as an essentially routine operation. The Air Force has for some years used its Reserve Force in a manner now embodied in the Total Force policy and is expending on this reliance by modernizing equipment and shifting greater responsibility to them.

The Strategic Forces:

The Strategic Forces are composed of the Strategic Air Command and the Aerospace Defense Command.

The Strategic Air Command (SAC):

United States policy calls for maintenance of an assured retaliatory nuclear strike capability. The "TRIAD" of intercontinental ballistic missiles (ICBMs), long-range bombers and submarine-launched ballistic missiles (SLBMs) is designed to meet this requirement in light of the currently perceived threat. The Strategic Air Command includes two elements of the TRIAD, the ICBM force and the bombers. Both of these elements are undergoing changes to enhance their capabilities and to reduce their operational overhead.

The ICBM force consists of 1,000 solid propellant Minuteman missiles. Of these, 450 are MM11's and 550 are MM111's, equipped with multiple independently targetable reentry vehicle warheads (MIRV's), which provide great flexibility. In addition, there are 54 older, larger liquid-fueled Titans. The missile force is constantly on alert and maintains a very high readiness rate. The missile force is undergoing modernization and hardening of both the launch facilities and the missiles themselves in order to increase survivability.

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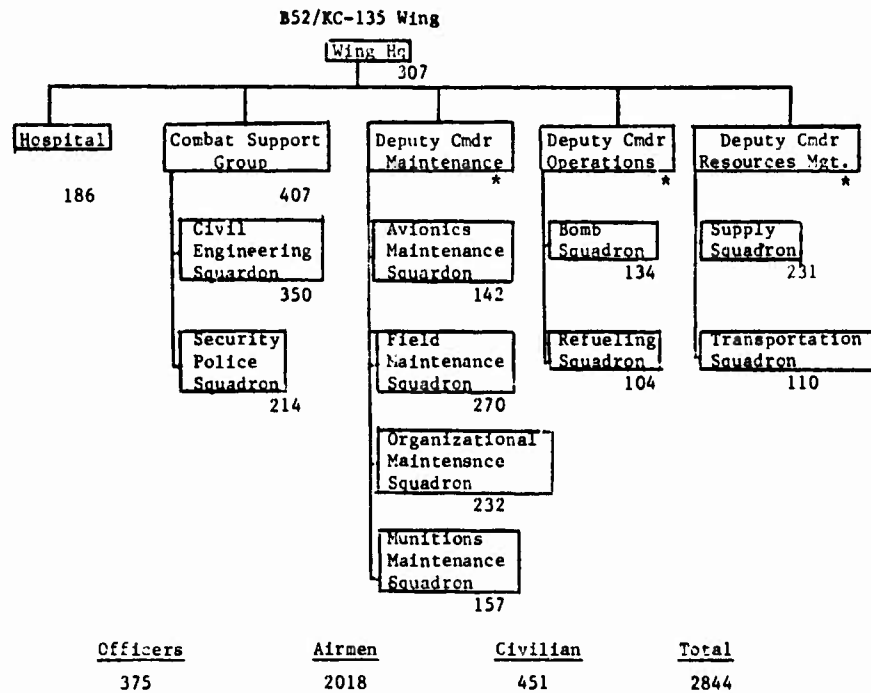
The Bomber Force presently consists of 330 B-52's and 66 FB111's, plus their associated KC-135 tankers. This element too is changing. The B-52 force, which is over 20-years old, is being modified, and a new bomber, the B-1, is under development. Operational and organizational changes also are taking place that will reduce manpower requirements substantially compared to FY75 levels. By the end of FY76, there will be 22 B-52 squadrons -- marking a reorganization, not a reduction, of the bomber force. In addition, SAC has reduced its 40% bomber alert rate to 30% and achieved considerable resource savings with comparatively little degradation in effectiveness. During FY76, the Air Reserve Forces will start to assume a strategic offensive role for the first time. By the end of FY77, SAC will transfer five squadrons of KC-135 tankers to the reserves, where they will be formed into nine smaller air refueling squadrons.

Reporting to SAC Headquarters at Offutt AFB, Nebraska are two numbered Air Forces, the 8th and the 15th. Certain unique organizations and the 3rd Air Division (Guam) also report directly to SAC.

Each numbered air force is subdivided into air divisions which, in turn, command a number of bomber or missile wings. A typical bomber wing is equipped with 15 B-52's and 15 K-135's, organized into a bomb squadron and an air refueling squadron. Wings are highly centralized in their organization. Maintenance, personnel, supply, security, operational control and partially everything other than those functions not directly connected with flying the aircraft is done on a consolidated basis. The flying squadrons are freed of all but their operational functions.

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A typical bomb wing organization is shown below.



FB-111 wings are similarly organized, except that there are two bomb squadrons of 15 aircraft each, instead of one as in the B-52 wing.

Minuteman wings are different. Instead of being concentrated, the operational launch sites are widely dispersed and are supported from the base by crews on a rotational basis. The operational and support requirements of this dispersed organization are considerably different from those of a highly centralized bomb wing. The great travel distances

*Included in Wing Hq manning

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involved and number of sites to be secured are evident in the large number of security personnel and size of the transportation squadron. The number of operational launch crews required to maintain the round-the-clock alert also results in about one-third more personnel being assigned in the mission area than in a bomb wing. Manning of a typical missile wing is shown below.

<u>Officers</u>	<u>Airmen</u>	<u>Civilians</u>	<u>Total</u>
598	2,703	564	3,865

The Aerospace Defense Command (ADC):

The Aerospace Defense Command, also in the category of Strategic Forces, is the defensive counterpart of SAC. Its mission is to provide strategic warning of attack and to provide airspace surveillance and control. Since July 1975, after dissolution of the Continental Air Defense Command (CONAD) and the Army Air Defense Command (ARADCOM), ADC has assumed the additional function of controlling Army air defense forces.

In the airspace surveillance and control role, the Air National Guard has played a significant part since 1964. At present, it provides 15 air defense fighter squadrons. The active force has been reduced to six squadrons, by contrast. However, by FY77, the ANG will also phase out its older aircraft and reduce to six squadrons. These reductions are attributable to reevaluation of the bomber threat to the U.S. warning.

With the changing nature of the threat, ADC has responded by decreasing emphasis on manned interceptors and increasing its reliance on surveillance and warning to protect our forces. As an example, in

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1964, ADC had 40 fighter interceptor squadrons and was postured for defense against aircraft, since the U.S.S.R. had only a nominal missile force. Today, their missile force represents the primary threat to the U.S. and their bomber force has remained essentially constant; hence, there has been a shift to even greater emphasis on surveillance and warning, besides continual emphasis on deterrence, with a reduction to six active interceptor squadrons. These six squadrons represent only 35% of the total interceptor force, the remainder being in the Air National Guard.

A major change taking place is the program which consolidates military radars with those of the Federal Aviation Agency. Almost 30 are now operated on a shared basis, and by 1978 it is proposed that over 40 of the facilities be shared. Consolidation will permit elimination of some overhead and management structure, and will also permit closer coordination and better control of U.S. airspace.

Relatively minor strength changes are now programmed for the ADC.

Strategic Forces Summary

Strategic Force units and active force manpower programs are summarized below.

Strategic Forces Summary (Units)

	<u>FY1975</u>	<u>FY1976</u>	<u>FY1977</u>	<u>FY1977</u>
<u>Active Forces</u>				
B-52 Squadrons	23	22	22	22
FB-111 Squadrons	4	4	4	4
KC-135 Squadrons	38	35	35	33
Titan Squadrons	6	6	6	6
Minuteman Squadrons	20	20	20	20
F-106 Squadrons	6	6	6	6
SR-171 Squadrons	1	1	1	1

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<u>Reserve Forces</u>	<u>FY1975</u>	<u>FY1976</u>	<u>FY1977</u>	<u>FY1977</u>
KC-135 Squadrons	-	4	5	9
F-4C Squadrons	-	1	1	1
F-102 Squadrons	2	-	-	-
F-101 Squadrons	7	4	3	-
F-106 Squadrons	6	6	6	6

Active USAF Strategic Force Total Manpower Summary

	<u>FY1975</u>	<u>FY1976</u>	<u>FY1977</u>	<u>FY1977</u>
Military	90,035	81,933	81,649	81,641
Direct Hire Civilian	<u>7,586</u>	<u>7,098</u>	<u>7,000</u>	<u>6,849</u>
Total	97,621	89,031	88,649	88,490

The General Purpose Forces:

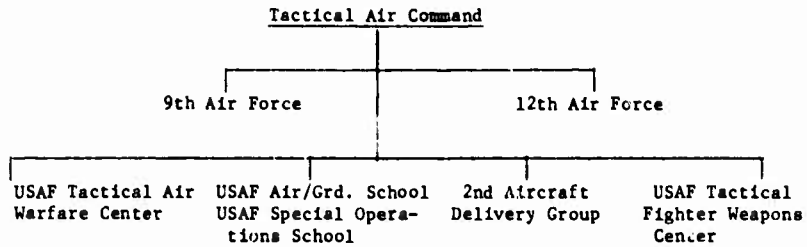
The General Purpose Forces of the Air Force consist of the fighter/attack and reconnaissance forces of the Tactical Air Command and the mobility forces under the Military Airlift Command.

Tactical Air Command (TAC):

The mission of TAC is to train, equip and provide tactical fighter and reconnaissance forces for combat. It is primarily a management headquarters and generally does not exercise command or control of forces which are assigned to the Unified Commands overseas. As an exception to this general rule, TAC does serve as the Air Component for the Atlantic Command (LANTCOM) and Readiness Command (REDCOM) and can provide them forces for contingencies in the Atlantic or Caribbean area or world-wide. For the purpose of this overview, all USAF tactical units will be addressed, regardless of their actual assignment or location.

TAC directs the activities of two numbered air forces within the United States, two specialized centers, two specialized schools, and a world-wide aircraft delivery group.

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TAC's forces may be employed at primitive levels of conflict on a small scale up to full commitment of the force in all aspects of tactical operations, including nuclear delivery. As a result, organizations are tailored to a degree to meet the sorts of threat that might be encountered. At the lower end of the scale, there are a few units that are equipped with a variety of relatively unsophisticated aircraft suitable for limited operations in low intensity hostile environments. To deal with the bulk of the situations that might be encountered, the majority of tactical fighter and reconnaissance wings are equipped with high performance, versatile, multi-purpose aircraft. The F-4 fills this role today in both attack/fighter and reconnaissance configurations. To support the upper end of the conflict spectrum, the basic fighter/attack force would be reinforced by more specialized aircraft that can provide greater capability in selected areas. An example would be the F-111, with its very sophisticated attack capability and long range, or the F-105 "Wild Weasels" with their electronic countermeasure equipment.

Today, there are 22 fighter/attack wing equivalents in the tactical air forces, plus reconnaissance units. While there is a basic wing

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structure, there are differences in numbers of aircraft and personnel. This results from tailoring wings to meet specific wartime requirements, the number and type of bases to which the wing might deploy, and the host or tenant status the wing might enjoy at its home base. A meaningful evaluation of manning levels hinges basically on the wartime deployment requirements of the wing, but must take the other factors into account.

A typical tactical fighter wing is equipped with 72 aircraft.

Although at present some fall short of that objective, a full wing may have either four squadrons of 18 aircraft or three squadrons of 24 aircraft. Frequently, one (or more) of these squadrons is not immediately deployable (not even subject to a C-rating for readiness), but is in training status. A typical wing might be presented like this:

<u>Unit</u>	<u>Readiness *</u>	<u>Deployable</u>
One (1) Squadron	C-1 or C-2	Immediately
Two (2) Squadrons	C-2 or C-3	Combat ready -- can be deployed fairly rapidly, but require upgrading prior to deployment.
One (1) Squadron	Training Status	Deployable by M+30, but must be fully manned and equipped for combat prior to deployment.

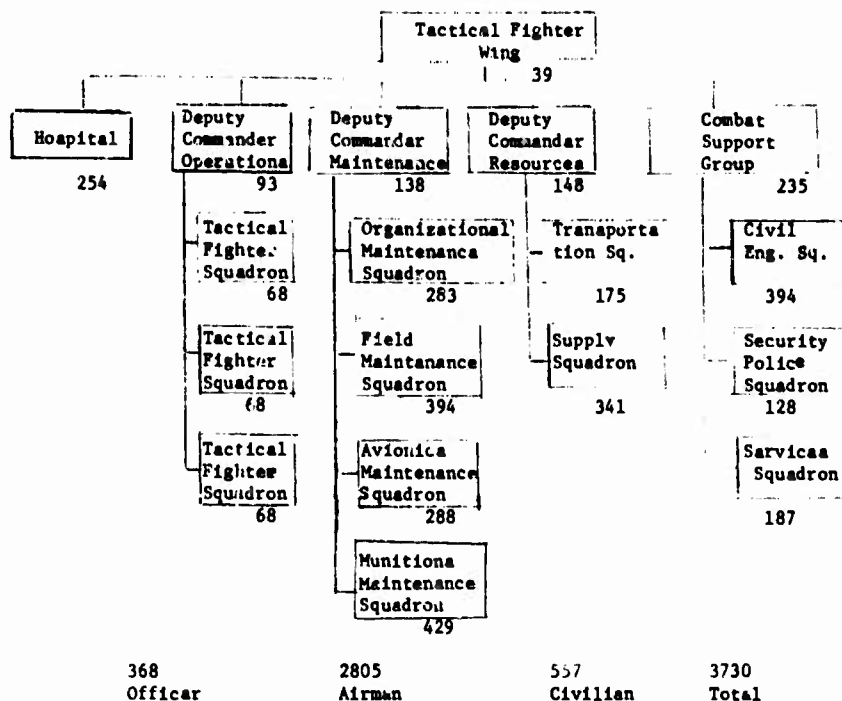
Since it is unlikely that an entire wing will deploy to a single base, the wing is structured to support individual squadrons. Each squadron is supposed to be self-sustaining for short periods of time, and wing support elements are organized into packages to deploy with the squadrons and provide them necessary support. The deployment requirements serve, therefore, as the baseline for establishing military manpower requirements. In addition, provisions must be made to maintain

* C-ratings, from 1 through 4, classify the readiness status of the organization in terms of equipment, personnel and training: 1, combat ready; 2, essentially ready; 3, marginally ready; 4, not combat ready.

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an adequate military training base, a rotation base for military personnel from overseas and hardship assignments, and a sufficient number of military replacement personnel, and to meet any other essentially military operational requirements.

Coupled with these military personnel is the civilian component of the wing, concentrated primarily in the support and services area. The organization and manning table depicted below is for a typical 72 aircraft, 3-squadron F-4 wing. The manning depicts a host wing, which is the situation at 80% of the TAC bases.



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A wing may contain four squadrons instead of three, with fewer aircraft each and the same total, but that would not materially change the remaining organization or total numbers of personnel.

The deployment package for such a wing would consist of the fighter squadrons in their entirety, a large proportion of the maintenance elements, and lesser numbers of other support organizations. All individuals and equipment in a deployment package are specifically designated, and frequent exercises assure familiarity with procedures and requirements. In all, the wing depicted would deploy about 1,750 personnel, and would be capable of carrying on combat operations for 60 days in this manning configuration.

When a wing has deployed, there is still a large element in residence at the home base. These personnel are required to maintain the functions of the airfield, provide communications, service transient aircraft, train replacement and rotation personnel, and continue to support the tenant organizations on the base.

This residual structure requires close analysis to assure that maximum economy is attained without damage to mission effectiveness. For example, there is considerable variance in the ratio of deployable to non-deployable personnel in a given squadron and in the military/civilian mix of those squadrons. The following table demonstrates this spread. The squadron titles explain the basic mission of the unit.

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Military Manning

<u>Unit (of TAC Wing)</u>	<u>Total</u>	<u>Military</u>	<u>Deployable</u>	<u>Percent of Total</u>	
				<u>Military</u>	<u>Deployable</u>
Tactical Fighter Sqdn.	68	68	68	100	100
Field Maintenance Sqdn.	394	394	289*	100	73*
Avionics Maint. Sqdn.	288	288	148*	100	51*
Supply Sqdn.	341	287	63	84	18
Transportation Sqdn.	175	128	50	73	29
Civil Engineering Sqdn.	394	198	60	50	15
Services Sqdn.	187	78	48	42	26

Source: 4th Tactical Fighter Wing, Seymour Johnson AFB, North Carolina

It is apparent that there is wide diversity in the number and types of military personnel required in a deployed situation. The combat elements and those required to directly support the aircraft are totally (or almost) military manned and deploy in large percentages. As the support becomes less directly associated with the aircraft and more generally allied to personnel and facilities, the percentage of military personnel decreases, and so does the percentage of the unit which deploys.

It is in this latter area that the Air Force should examine its requirements and objectives, especially in light of the DoD policy calling for civilianization of positions which do not need to be military.** In the example above, the Supply, Transportation and Services Squadrons would appear to be unnecessarily rich in military personnel, unless there is a demonstrated requirement not evident to the DMC staff for military manning. The non-deployable military manpower content of the Civil Engineering Squadron is also high, although the Air Force contends that there are requirements for some of the residual personnel to be military.

* Subsequent information from the Air Staff is that the above figures for deployable personnel in the Field Maintenance and Avionics Squadrons pertain to those immediately deployable, and that most of the remaining military personnel in those two squadrons would follow later.

** The general subject of civilianization of positions in the support activities of all the Services is addressed further in a separate DMC staff issue paper by the Requirements Group on "Support Forces."

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The Total Force Relationship:

Forty-two percent of USAF tactical strike forces world-wide are in the Reserve Components. In all, Air Reserve Forces would provide some 60,500 personnel in case of mobilization. The great majority of the forces gained by TAC are from the ANG, but there is also a significant input from the AFR. The Air National Guard would provide 116 units and the Air Force Reserve, 11 units. Together, they would augment TAC by about 1,200 primary mission aircraft. The significant contribution that the reserves make gives TAC a vested interest in their capability. Each unit in the reserves is matched by an advisory unit within TAC. The advisory unit is responsible for an annual assistance visit with its associated unit and such additional visits as it feels are necessary, or as are requested by the reserve unit. Advisory assistance teams usually comprise about twenty personnel and cover plans, operations, standardization and evaluation, safety, maintenance, personnel, supply, civil engineering and administration, plus other functions depending on the mission of the unit. In addition, active duty advisors are assigned to the unit to monitor their training and to provide advice and liaison with the parent unit. Typically, there is a regular and free exchange of ideas, new concepts, and problems between the units. The reserve unit is inspected by the numbered Air Force annually and meets essentially the same criteria and standards that apply to a like active force unit. The difference in criteria is basically one of degree. For example, an active RF-4 squadron would be required to demonstrate capability in all aspects of day and night reconnaissance, whereas a

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reserve unit would be charged with either day or night capability and familiarity with the other missions.

In recent years, a strong effort has been made to modernize the equipment of the Reserve Components. At present, they are equipped with F and RF-4's, A-7's and F-105's, as are active units. Older aircraft such as the F-100 and the KC-97 are programmed to be replaced with more A-7's, F-4's and KC-135's as additional aircraft are released by active force conversions to F-15's, F-16's and A-10's. The A-10's will also go directly from the production line to the Reserve Force, a first in Air Force history.

TAC Reconstitution:

Along with the modernization of the Reserve Components, TAC is in the process of reinforcing its own capabilities. The Vietnam War caused considerable personnel turbulence which resulted in reduced crew ratios, shortages in certain support and maintenance fields, and delay in modernization of weapons systems. During the Vietnam War, TAC was forced to reduce its aircrew manning to 1.1 per aircraft, which limited achievement of desired sortie rates and use of equipment. They are in the process of returning to 1.25 per aircraft to meet the requirements of deployment and combat sortie rates. In addition, modernization of the force is commencing. The first F-15 squadron will activate in early 1976 and the A-10 will be joining the force beginning in FY77. In the longer term, the ACF (F-16) will be deployed to meet the threat expected in the 80's.

At the present time, combat crew training is a major effort. Additional crews are necessary to provide for sustained combat operations and to provide for full utilization of aircraft. Two F-4 wings have a

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primary mission of combat crew training, and a third wing is just beginning to return to its operational mission from that status. The goal is to raise the crew ratio to 1.25 per aircraft from the presently authorized 1.1 ratio. Each wing in training status still has an operational commitment, but temporarily is not required to meet readiness standards until D+10 or longer. If they were called upon, instructor personnel would, in combination with students, form crews and requalify in primary mission skills. Aircraft would also be brought to combat readiness in the interval allowed before deployment. This is different from the case of training squadrons within operational wings.

In addition to the effort to raise crew ratios, the Air Force is in the process of forming, as an objective, four additional tactical fighter wings over the next several years. If achieved, this will raise the force level from the present 22 wing equivalents to 26 wings. The Air Force, with the Secretary of Defense's approval, proposes to do this within overall manpower ceilings by making use of personnel spaces released by reductions in support manning, elimination of headquarters and other management adjustments. The aircraft necessary to flesh out this structure will accrue during modernization of the force and acquisition of the A-10, F-15, and F-16.

Initiatives:

Two initiatives have been taken within TAC to increase its effectiveness in the short term. The first is the Designed Operational Capability System (DOC), which was instituted as a result of Vietnam experience and as a counter to fuel requirements. DOC attempts to

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optimize each wing's training by assigning it a specific tactical mission, either air-to-air or air-to-ground. The wing then concentrates its efforts in its primary area, but also maintains capability in the secondary role. The training concept has further been modified to accomplish the training through the allocation of sorties, rather than hours of training. The sortie approach is more economical, its results are readily measurable, and it can be adjusted to individual skill levels to eliminate unnecessary training. The objective is optimum effectiveness with minimum sorties expended.

The second effort being made by TAC lies in the maintenance area. Several test programs which could save manpower are underway. Consolidation of effort is at the heart of two of them: one program combines the intermediate maintenance effort of a TAC fighter wing and a SAC bomb wing; another provides that certain maintenance functions be conducted at one base for a number of units from several bases -- a regionalization of effort. Both tests are in the initial stages and manpower/facility savings are not yet measurable. A more innovative test is being conducted by one fighter wing in which maintenance personnel are being cross-trained into other compatible specialties so that they may be more fully utilized. In addition, a considerable number of shop maintenance personnel have been physically moved to the flight line (where they have actually had to do the work in the past) to provide more rapid response and greater flexibility. The next phase of this test involves reorganization of intermediate level maintenance to reduce over-specialization and to provide a better interface with the flight

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line elements. Initial results have been promising and the program has been well-received by the fighter squadrons.

In the longer term, development of the high-low mix of aircraft structured to meet a specific threat is an attempt to meet requirements within reasonable resource allocation. The Air Force is developing a tactical force structure with a limited number of F-15's, high performance aircraft capable of performing the entire spectrum of tactical fighter operations (the high side), and a larger number of F-16's and A-10's (the low side) which, while of lesser overall capability, are specifically designed for the air combat and ground support roles. Their specialization yields two advantages: higher effectiveness and, by virtue of greater simplicity, lower cost in dollars and operational and maintenance manpower requirements. The shift to the optimized missions and aircraft concept and the choice of the air combat and ground support roles also reflect an effort to develop a force structure designed for combat against the NATO threat, which is seen to require strong initial air control and ground support capability in a limited battle zone and which deemphasizes tactical air's long standing adherence to deep strike counter-air and interdiction missions.

The Military Airlift Command (MAC):

MAC is responsible for strategic, tactical, and support airlift for the Air Force and the Department of Defense. It derives its resources and doctrine from the Air Force and reports to the Chief of Staff, USAF. However, MAC performs its tasks in accordance with priorities established by the Joint Chiefs of Staff and Commander, MAC

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in his capacity of Executive Director under the single manager concept. MAC's mission was broadened in 1975 by assumption of all C-130 tactical airlift assets and responsibilities from TAC.

Airlift management and control is carried out through two numbered Air Forces, which are equipped with C-5, C-141 and C-130 aircraft. Each of these numbered Air Forces is responsible for operations in its half of the U.S. and around the globe to a point where they meet again in India. Each is responsible for support of, and coordination with, theater and area commanders in its geographical area of operations. MAC squadrons typically have 15 aircraft for the C-5 and C-141 and 16 for the C-130. The C-5 and C-141 are nominally strategic and the C-130 tactical, but these designations are misleading since any of the aircraft can be used in either role depending on the situation.

Three specialized wings complete MAC's active airlift structure. The 89th Wing provides world-wide airlift for government officials and foreign dignitaries. The 443rd Wing conducts aircrew and associated ground crew training for the Command and the 357th Aeromedical Airlift Wing performs domestic aeromedical flights for all Services. Aeromedical Airlift overseas is carried out by C-141's which are designed to accept specifically configured and equipped packages for this purpose.

In addition to its airlift organizations, MAC provides other services. The Aerospace Rescue and Recovery Service and Air Weather Service provide a network of rescue services and weather support world-wide for the Air Force and other DOD and government activities.

MAC, like other commands, relies on Air Reserve Forces for a portion of its total capability. Some airlift assets, notably the C-130's, are

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assigned directly to and operated by the Reserve. At the present, they furnish about half the total C-130 force. In addition, MAC has established a Reserve Associate Program in which Reserve crews, both air and ground, are attached to an active airlift unit. They train with and contribute to the day-to-day mission of their parent unit.

Two other facets of airlift come within the purview of MAC. Both involve civil aviation. The first and simplest is direct purchase of airlift from civil carriers. More than 90% of all military personnel are moved under these contracts. The second is management, as Executive Director, for the Secretary of the Air Force, of the Civil Reserve Air Fleet (CRAF) Program. This is a joint program with the Department of Transportation to provide a ready transportation system for use during national emergencies. The CRAF can be called up incrementally to augment military airlift capability as needed. When totally mobilized, CRAF could supply about 250 aircraft, primarily in a cargo configuration.

Airlift Enhancement:

Since the 1973 Israeli Airlift, MAC has taken several initiatives designed to enhance its capabilities. One step has been to try to raise aircraft utilization to 10 hours per day. In order to do this, MAC is raising crew ratios to 4:00 per aircraft; in this, they are relying heavily on Air Reserve personnel. Another step taken was to qualify C-5 crews in air refueling techniques so that there will be less reliance on intermediate airfields, loads can be increased, and fuel saved in future crisis situations. A final broad step involves plane

to stretch C-141's and provide them with an in-flight refueling system and to upgrade the CRAF by providing incentives to build in "convertibility" in civil jets, particularly the new generation of wide body aircraft. The total improvement package would permit the U.S. to deploy a division to Europe in seven days, instead of the approximate twenty days it takes now.

General Purpose Forces Summary:

General Purpose Forces units and active force manpower programs are summarized below.

General Purpose Forces Summary (Units)

<u>Active Forces</u>	<u>FY1975</u>	<u>FY1976</u>	<u>FY1977</u>	<u>FY1977</u>
Tac. Fighter Wing Equivalent	22	22	22	22
RF-4 Squadrons	13	9	9	9
C-130 Squadrons	17	15	15	15
F-5E Training Squadrons	-	3	3	3
C-141 Squadrons	13	13	13	13
C-9 Squadrons	3	3	3	3
C-5 Squadrons	4	4	4	4
AWACS Aircraft	-	-	-	6
SOS Squadrons	5	3	3	3
Airborne CP Squadrons	3	3	3	3
Rescue Aircraft	115	88	91	91

<u>Reserve Force</u>	<u>FY1975</u>	<u>FY1976</u>	<u>FY1977</u>	<u>FY1977</u>
TAC Fighter Squadrons	36	35	35	37
TAC Fighter Training Squadrons	2	2	2	2
RF-101 Squadrons	4	2	2	2
RF-4 Squadrons	3	7	7	7
KC-97 Squadrons	9	8	8	5
C-123 Squadrons	5	4	4	4
C-130 Squadrons	29	30	30	30
C-7 Squadrons	3	3	3	3
C-141 Assoc. Squadrons	13	13	13	13
C-5 Assoc. Squadrons	4	4	4	4
Aeromed Assoc. Squadrons	1	1	1	1
O-2 (TACS) Squadrons	7	7	7	7
EC-121 (TEWS) Squadrons	2	2	2	2
Rescue Squadrons	6	6	6	6

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Active General Purpose Forces Total Manpower Summary

	<u>FY1975</u>	<u>FY1976</u>	<u>FY1977</u>	<u>FY1977</u>
Military	11 ,530	112,417	112,736	116,598
Direct Hire Civilian	<u>24,518</u>	<u>29,323</u>	<u>29,369</u>	<u>29,607</u>
Total	140,048	141,740	142,105	146,205

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USAF Support Structure

Support functions are carried out by Major Commands, charged with specific tasks in support of the operational forces such as logistics, research and development and training, and by Separate Operating Agencies which provide services on a more limited basis. Examples would be the Military Personnel Center or the Intelligence Service.

The bulk of USAF manpower is found in the support area, and it is in this area that the largest reductions are being made. The majority of these are the result of management improvements, headquarters reductions, base closures and consolidations. FY 76 manpower reductions alone amount to approximately 31,000 spaces, of which about 25,000 are in the support area.

Air Force Systems Command (AFSC)

AFSC is responsible for research, development, test and evaluation and procurement of Air Force aircraft, missiles and related materiel. It is functionally organized to carry out these responsibilities and expends approximately 25% of the Air Force budget. Five Systems Divisions are responsible for the development and/or management of aircraft; electronic systems, medical programs, contract management and foreign technology. In addition, the Space and Missile Organization develops, tests and procures space and missile hardware. There are also several test centers and laboratories involved in evaluation of materiel being developed. AFSC is in the process of realigning its laboratory structure to more closely parallel its major systems divisions and of consolidating its test aircraft in order to reduce operational costs and save manpower.

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Air Force Logistics Command (AFLC)

AFLC is charged with worldwide technical and logistic support for the Air Force weapons systems. Their mission includes supporting Reserve Forces, allied forces and other U.S. agencies as well as the active Air Force. The Command is organized into five field organizations, designated Air Logistics Centers (ALC), and four specialized organizations. The ALC's are industrial complexes, largely civilian staffed, that supply and service particular Air Force weapon systems. They are also responsible for designated equipment and commodities worldwide. The Contract Maintenance Center administers worldwide civilian maintenance contracts. Aircraft storage and disposition are handled for all Services, as is the maintenance and overhaul of inertial guidance systems at the Guidance and Meteorology Center. Steps are underway to increase effectiveness and reduce costs at the ALCs through capital investment in modern industrial equipment. Fiscal 1976 savings are programmed to be over 700 spaces and the ultimate goal is to save 3,000 spaces.

Air Training Command (ATC)

ATC recruits and trains airmen. It provides basic military training, technical training, and flying training, as well as specialized training. It also provides field training detachments to USAF and allied organizations to assist in teaching new technology or as unique needs arise that are beyond the ability of the organization. Flying training is carried out at eight bases. One of these, Vance AFB in Oklahoma, has been operated under contract for several years with singularly successful results. Some of the lessons learned there in relation to organization

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and supervision could well be applied to other organizations.* Technical training is carried out at four large centers which are functionally specialized. Each teaches associated skills such as electronics and computer technology at Keesler or engine mechanics and airframe repair at Chanute.

The Air University (AU)

The Air University, with its main facilities at Maxwell AFB, Alabama, is a major command of the USAF and provides professional education for officers and senior non-commissioned officers. It includes the Squadron Officers School, the Air Command and Staff College, the Air War College, the Non-Commissioned Officers Academy and other specialized schools. The Air University also is responsible for the development and administration of the Air Force ROTC Program.

Other Commands

Two other major commands bear brief mention: One is the USAF Security Service, which provides signal intelligence and communications security worldwide. The second is Headquarters Command, which is responsible for operation of the two Air Force bases in the Washington area and which serves all USAF personnel in the USAF Headquarters and associated agencies, and also provides some administrative support for personnel assigned to unified commands overseas. Additionally it operates the USAF Courier and Postal Service, the Civil Air Patrol, and the National Emergency Airborne Command Post.

Separate Operating Agencies (SOA)

These agencies are charged with providing the specialized services indicated in their titles. Many of the agencies are operating extensions of the Air Staff, their commanders serving in a dual capacity

* For further discussion of contracting, see the DMC Staff paper on "Support Forces."

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as an Assistant Chief of Staff or Director of the Staff agency responsible for the function. These SOA's are:

- Air Force Academy
- Air Force Accounting and Finance Center*
- Air Force Audit Agency*
- Air Force Data Automation Agency*
- Air Force Inspection and Safety Center*
- Air Force Intelligence Service*
- Air Force Office of Special Investigations
- Air Force Military Personnel Center*
- Air Force Test and Evaluation Center
- Air Reserve Personnel Center

Manpower Summaries for Auxiliary Forces, Support Forces and Individuals

USAF active duty manpower categories other than Strategic Forces and General Purpose Forces are summarized below. Organizational structure does not exactly parallel this breakout. For example, Mission Support Forces include personnel providing base operating support in the strategic and tactical wings. For some accounting purposes and functionally they are support, but administratively they are assigned to the combat organization they support. Thus, this category of manpower as well as others can be found in SAC, TAC or in one of the support commands described above.

Auxiliary Forces

Activities in this category include intelligence services, research and development activities, communications functions and military assistance programs.

Auxiliary Force Manpower

	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 77</u>
Military	71,767	67,723	67,630	67,525
Direct Hire Civ.	<u>32,549</u>	<u>31,024</u>	<u>31,005</u>	<u>30,987</u>
TOTAL	104,316	98,747	98,635	98,512

* Air Staff extension

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Mission Support Forces

These forces include base operating support, and combat training operations.

Mission Support Manpower

	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 77</u>
Military	164,107	157,099	150,989	155,393
Direct Hire Civ.	<u>77,024</u>	<u>74,623</u>	<u>74,782</u>	<u>73,212</u>
TOTAL	241,131	231,722	231,771	228,605

Central Support Forces

This category includes centralized logistics functions, centralized training, associated base operating support, medical services and certain common support activities for the entire Air Force.

Central Support Forces Manpower

	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 77</u>
Military	105,344	103,056	103,040	102,857
Direct Hire Civ.	<u>135,489</u>	<u>129,200</u>	<u>131,031</u>	<u>130,362</u>
TOTAL	240,833	232,256	234,071	233,219

Individuals

Includes students, cadets, patients and transients

Individual Manpower Summary

	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 77</u>
Military:				
Students Academy	38,531	38,339	39,039	39,152
Cadets	4,417	4,417	4,211	4,240
Patients	800	800	800	800
Transient	<u>25,003</u>	<u>24,216</u>	<u>23,906</u>	<u>21,794</u>
Military TOTAL	68,751	67,772	67,956	65,986
Civilian	--	--	--	--
TOTAL	68,751	67,772	67,956	65,986

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The totals for the above USAF manpower categories are given below.

Total USAF Auxiliary and Support Forces Manpower and Individuals(Active)

	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 77</u>
Military	409,969	395,650	395,615	391,761
Direct Hire Civ.	<u>245,062</u>	<u>234,847</u>	<u>236,818</u>	<u>234,561</u>
TOTAL	655,031	630,497	632,433	626,322

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Manpower Programs (Active Force)

As seen at the outset of this paper, the Air Force was programmed to reduce its overall strength by 21,000 military and 10,000 civilian personnel in FY 76 (compared to FY 75) and then more-or-less level off. Some small further reductions probably will be required as the Secretary of Defense apportions the overall DOD cuts of 9,000 military and 23,000 civilian personnel made by the Congress in its action on the FY76 budget. This reduction is being achieved by improving organization structure, consolidating functions, eliminating marginally productive functions, and changing operational procedures. The majority of the reductions are taking place in overhead support categories, but there are also significant reductions in strategic forces, both offensive and defensive. The savings resulting from these reductions have provided the manpower resources needed for development and modernization programs for the general purpose forces, and to enhance their combat capability.

Assessment

Use of Air Reserve Forces in the Total Force Mix

As to the Total Force Mix in the Air Force between the active and reserve components and the utilization of reserve components, the 1975 OSD Study on "The Guard and Reserve in the Total Force" stated:

Total Force policy is closer to reality in the Air Force than in any other Service. The Air Force has integrated active and reserve forces through the gaining command concept, preassigning Air Reserve Forces in peacetime to the organizations with which they will serve during wartime. The Air Reserve Forces have high states of readiness, with two-thirds of the force considered deployable within ten days after mobilization, and some units deployable within three days . . .

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On the basis of all information available through our own research, the DMC staff concurs fully in the OSD assessment above. The Air Force has demonstrated commendable initiative in integration of the Air Reserve Force into its Total Force capability. Not only has it achieved a broad-based ready adjunct to the Active Force for use in emergencies; it also has integrated the Reserves into its day-to-day peacetime missions as well. Especially notable are the parts played by air defense forces of the Air National Guard and the MAC/Air Force Reserve Associate Program. This latter was an innovative approach, well suited to the particular mission of MAC, and has significantly increased its effectiveness. The transfer of KC-135's from SAC to the Reserves is a similar imaginative step, and the program to deliver A-10's to the Reserves concurrently with Active Force acquisition is a major step in assuring a first line Reserve capability. Similar ideas could yield greater returns in the future.

Several areas within the Reserve structure bear further examination. One is the overhead structure, the number and size of headquarters necessary to manage the organization, etc.; and a second is the apparent disparity between the numbers of advisors and technicians assigned the Air National Guard versus the Air Force Reserve. In this respect, the National Guard appears far more heavily favored than the Air Force Reserve. Both of these combine into an issue of how much manpower is really required to man and support the Reserve units for maximum cost-effectiveness. These and other matters will be addressed in the separate DMC staff issue papers concerning the Reserves.

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Civilianization and Contracting for Services

With respect to these aspects of Total Force mix, the Assistant Secretary of the Air Force for Manpower and Reserve Affairs stated the following as Air Force policy in testimony on the FY 76 Defense Appropriations Authorization Bill before the Military Personnel Subcommittee of the House Armed Services Committee:

Authorizations requiring military incumbency by reason of combat or direct combat support, support of contingency and overseas rotation, career progression, training, law, security or discipline are designated as military positions. The remaining positions are civilian. Within this category, decisions are made in consideration of the need to retain certain functions in house because of law or for proprietary reasons. In-house versus contractor performance of all remaining workloads is based on periodic assessments of their relative economy.

Further assessment as to how the Air Force is doing in these aspects of Total Force mix will be presented in the separate DMC staff issue papers on "Support Forces." It should be noted here, however, that these papers will point the way to some more civilianization, more contracting, and considerable net savings.

Manpower Requirements for Active USAF General Purpose Forces

The DMC staff is convinced that further savings are possible in the Air Force, including the TAC wings, without hurting effectiveness. Indeed, they are essential if the Air Force is to meet the 26 fighter/attack wing goal that the Secretary of Defense has authorized for the Air Force. This force has been established as one that can reasonably be attained in the early 1980's within the overall 590,000 military space authorization and be able to meet the postulated threat at a level described by the Joint Chiefs of Staff as somewhat below a prudent risk level.

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It is evident that significant savings in active USAF military manpower could be achieved in the absence of the expansion to 26 full wings. In spite of manpower savings gleaned from reductions with TAC and other commands, TAC will still be faced with approximately a 5,000 space shortfall in striving to reach a 26-fighter wing structure. Every effort should be made to accommodate the additional wings within the existing USAF base structure in order to minimize support costs. A tenant wing costs far less in manpower than a host wing, yet yields the same operational capabilities. It is evident that dual basing of wings, even of different commands and with differing missions, can be accomplished effectively; and, if current maintenance consolidation tests are successful, substantial savings could be achieved by expanding the dual basing policy. (By "dual basing", we mean basing more than one wing on a base.)

There are additional aspects of manning the General Purpose Forces that bear closer examination. All tactical fighter wings are structured to provide mobility capability and are generally organized the same way, whether based in the U.S. or overseas. It is questionable whether this should be the case. Those that are already deployed to an overseas base may not all need the ability to deploy rapidly to another overseas base. If some units could be relieved of this responsibility, immediate savings could be achieved and/or force mix changes could result.

Further questions of military manning levels arise when deployment requirements are examined. Tactical fighter squadrons are manned entirely by military personnel, and the entire squadron deploys. Maintenance squadrons are likewise entirely manned by military personnel,

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but varying percentages of them deploy with the fighter squadrons. Other support organizations, Civil Engineering and Supply for example, have a heavy mix of military personnel, but only a small percentage deploy. There is little apparent reason why this type organization should be so heavily military. A critical reexamination of requirements in these areas, both from the viewpoint of military/civilian mix and residual population after deployment, is indicated. Application of the lessons learned from the ATC civilian contract operation at Vance AFB and application of the principles of the innovative Production Oriented Maintenance program to base services and support could yield significant savings. As previously indicated, these matters will be explored further in the separate DMC staff issue paper on "Support Forces."

Conclusions and Recommendations

It is concluded that:

Integration of the Air Reserve Components into the Air Force structure in consonance with Total Force policy is commendable.

There are some opportunities for both immediate and long-term manpower savings, both within the Active Force and the Reserve Components, some of which have been addressed above and other which will be addressed in separate issue papers.

It is recommended that the Commissioners accept this paper and the foregoing conclusions as the basis, together with other related staff papers, for preparation of pertinent parts of the DMC Final Report.

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OVERVIEW OF THE RESERVE COMPONENTS
OF THE UNITED STATES ARMED FORCES

A Staff Information Paper for
the Defense Manpower Commission

by Hugh M. Walton
Requirements Group
Defense Manpower Commission Staff
October 1975
(With Appendix dated March 1, 1976)

EXECUTIVE SUMMARY

SUBJECT: Overview of the Reserve Components of the U.S. Armed Forces.

BACKGROUND: This informational paper is for background use in connection with other DMC staff papers concerning the Reserve Components and the Total Force.

CONTENT: This paper is designed to: (1) define the categories of Reserves; (2) present personnel strengths of the various categories of Reserves; (3) present overviews of the Selected Reserves of each Service (except the USMCR, which is covered in a separate overview paper of the Marine Corps), including: historical background, mission, administration and management, strength, composition and organizational structure, readiness, and full-time personnel support.

HIGHLIGHTS: The IRR is declining rapidly, with serious shortfalls projected, and is treated further in a separate DMC staff issue paper.

DOD programs project future Selected Reserve strengths at roughly present levels except in the USAR and USNR, where programmed levels are below Congressionally mandated minimum strength levels for FY76.

The USAF integration of its Selected Reserve units (Air National Guard and Air Force Reserve) has produced high readiness conditions. This high level of readiness has been maintained despite ongoing unit conversions to newer aircraft during FY75 through FY77.

The readiness condition of the major Army Reserve Component units is for the most part only C-3 (marginally ready) or C-4 (not ready). As a result of the Army reorganization of 1973, Active Army support of its Reserve Components has increased. The Affiliation Program (roundout and augmentation) has had a positive impact on improving readiness of participating units. However, the eight Guard divisions (four of which were C-3 and four rated C-4) are not included in the program.

CONCLUSION AND RECOMMENDATION:

No specific recommendation for action by the Commission can appropriately be made directly on the basis of this study. Issues concerning the Selected Reserve components and their support will be addressed in separate DMC staff issue papers.

It is recommended that the Commission accept this informational paper for background use in connection with other DMC staff papers concerning the Reserve Components and the Total Force.

OVERVIEW OF THE RESERVE COMPONENTS OF THE U.S. ARMED FORCES

INTRODUCTION

This is an informational paper on the Reserve Components of the U.S. Armed Forces, including (in Part I, below) information concerning the basic categories and strengths of the Reserve Components and (in subsequent parts) more detailed information about the Selected Reserve Components of the Army, Navy and Air Force, respectively. (There is no such separate section on the Marine Corps Reserve, the treatment of which is incorporated in the single Total Force overview paper on the Marine Corps.) These informational papers are for background use in connection with other DMC staff papers concerning the Reserves or the Total Force, and there are no issues herein which require a DMC decision. Matters concerning the Reserve Components which require the formulation of a DMC position are presented in separate issue papers.

PART I

RESERVE COMPONENTS--BASIC CATEGORIES AND STRENGTHS

1. Categories of Reserves: The Guard/Reserve Forces of the United States consist of seven components: the Army National Guard, the Army Reserve, the Naval Reserve, the Marine Corps Reserve, the Air National Guard, the Air Force Reserve and the Coast Guard Reserve.*

* The Coast Guard Reserve in peacetime is under the administrative and financial control of the Department of Transportation. In time of war or national emergency, the Coast Guard including the Coast Guard Reserve would come under the operational control of The Navy.

Reserve Component manpower assets are divided into three basic categories: The Ready Reserve, the Standby Reserve and the Retired Reserve.

Ready Reserve: The Ready Reserve consists of members on active duty,* unit end members of the Selected Reserve end members of the Individual Ready Reserve (IRR). The Ready Reserve is limited by law to 2.9 million personnel. Up to one million Ready Reservists may be ordered to active duty without their consent for 24 months upon a Presidential Declaration of National Emergency. The members on active duty cannot be considered a mobilization asset since they are already within the Active Force structure. The Selected Reserve end IRR represent the major manpower sources to augment the Active Force end are further described below:

(a) Selected Reserve: The Selected Reserve consists principally of individuals in units who have enlisted in the Guard or Reserve and who have served on active duty. Others in the Selected Reserve are fulfilling their obligation** to serve in a Selected Reserve unit from one to three years, following an initial active duty obligation. The minimum paid drill personnel strengths of each Reserve Component are authorized annually by the Congress.

* Ready Reservists on extended active duty are counted as part of the Active Force. As of March 31, 1975, there were 166,195 (125,566 officers, 40,629 enlisted) Ready Reservists serving in the Active Forces.

** Obligation terms in the Reserve Components are for a six-year period minus time served in the Active Forces. The obligor is assigned to the Ready Reserve when he completes his active duty term. When the period of active service plus satisfactory service in the Ready Reserve totals five years, personnel are, upon their request, transferred to the Standby Reserve for the remaining period of obligation.

Most Selected Reservists attend 48 drills and two weeks annual training each year for which they are paid (Pay Category A). Others attend 12 (Pay Category C), 24 (Pay Category B) or 36 (Pay Category M) drills and 12 to 14 days of annual training each year for which they are paid. The remainder of the Selected Reservists include nonprior service personnel currently on initial active duty for training (Pay Category F) and nonprior service personnel awaiting initial active duty for training (Pay Category P).

(b) Individual Ready Reserve: Each Reserve Component has an IRR element. The IRR consists of a pool of individuals who have recently served in the Active Force or Selected Reserve and who have some period of obligated service remaining, ranging from two to four years, of which one to three years are spent in the IRR. Most do not train, although a small percentage of Army IRR's have been called to two weeks active duty as fillers for Selected Reserve units during summer active duty training. However, Congressional opposition is forcing the Army to discontinue involuntary IRR summer training call-ups after 1975.

This manpower asset, which in part was draft related, is now diminishing. The IRR, which was 1.58 million in mid-1972, had decreased to 641,498 personnel in June 1975* and is expected to continue dropping for several years, following the decrease in the size of the Active Forces and also reflecting other factors, as discussed in the separate DMC staff Issue Paper on "Individual Reserves." The diminishing trend is expected to level off by the end of the decade (assuming the

* Official Reserve Manpower -- Strengths and Statistics, June 30, 1975, OASD(M&RA); Strengths of USCGR furnished by Hq USCG, Reserve Division (as of June 30, 1975).

present system remains in force), and there still will be a residual IRR of considerable size and potential.

Standby Reserve: The Standby Reserve consists of individuals who do not maintain minimum Ready Reserve participation, have completed the Ready Reserve and active duty portions of their statutory six-year military obligation, or have been transferred to the Standby Reserve on request. In practice, most of the members are in their sixth and last year of obligation. There is no legal limitation as to its size. Members of the Standby Reserve are not eligible for pay. The Standby Reserve may be called to active duty in the event of war or national emergency declared by the Congress, but only after an individual determination has been made by the Director of the Selective Service as to availability for active duty.

The Standby Reserve is divided into Active and Inactive Reservists. A small number of those in the former category, key Federal employees and certain others placed in the Standby Reserve for cogent reasons by the Secretary of the Service concerned, are permitted to participate in training and take correspondence courses for retirement credit and promotion.

Whenever an authority designated by the Service Secretary concerned considers that it is in the best interest of the Armed Force concerned, a member of the Standby Reserve who is not required to remain a Reservist, and who cannot participate in training, may be transferred to the inactive status list. Such a member is entitled under certain conditions to be returned to an Active status.

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Retired Reserve: The Retired Reserve consists of individuals in a retired status from either length of service or disability. Under certain conditions in time of war or national emergency declared by Congress, they are subject to call-up (U.S. Code, Title 10, Sect. 672a).

2. Composition and Strengths of the Reserve Components (Not on Active Duty)*

a. Total Reserve Components -- All Categories

ARNG	403,057
USAR	1,226,314
USNR	386,943
USMCR	133,616
ANG	95,759
USAFR	419,764
USCGR	<u>24,382</u>
TOTAL	2,689,835

b. Ready Reserve (Selected Reserve plus IRR)

ARNG	403,057
USAR	580,154
USNR	220,152
USMCR	90,766
ANG	95,759
USAFR	138,189
USCGR	<u>21,687</u>
TOTAL	1,549,764

*From Official Reserve Manpower Strength and Statistics, ODASD Reserve Affairs, June 30, 1975. Information on Retired Reserve is as of March 31, 1975, and was furnished by ODASD (Comptroller). Data on the Coast Guard Reserve was furnished by Hq U.S. Coast Guard, Reserve Division, and is as of June 30, 1975.

Selected Reserve

ARNG	394,720
USAR	225,057
USNR	98,235
USMCR	32,391
ANG	95,360
USAFR	50,691
USCGR	<u>11,812</u>
TOTAL	608,266

Individual Ready Reserve (IRR)

ARNG	8,337
USAR	355,097
USNR	121,917
USMCR	58,375
ANG	399
USAFR	87,498
USCGR	<u>9,875</u>
TOTAL	641,498

c. Standby Reserve

USAR	282,698
USNR	50,442
USMCR	40,698
USAFR	38,628
USCGR	<u>904</u>
TOTAL	413,370

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Standby (Active)

USAR	260,458
USNR	22,165
USMCR	40,420
USAFR	10,316
USCGR	<u>140</u>
TOTAL	333,499

Standby (Inactive)

USAR	22,240
USNR	28,277
USMCR	278
USAFR	28,312
USCGR	<u>764</u>
TOTAL	79,871

d. Retired Reserve*

USAR	363,462
USNR	116,549
USMCR	2,152
USAFR	242,947
USCGR	<u>1,791</u>
TOTAL	726,701

*Data as of March 31, 1975, ODASD (Comptroller)

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3. Authorized Strength of Selected Reserve

<u>Reserve Component</u>	<u>FY 75*</u>	<u>FY 76**</u>
ARNG	400,000	400,000
USAR	225,000	219,000
USNR	117,000	106,000
USMCR	36,703	32,481
ANG	95,000	94,879
USAFR	51,319	51,789
USGR	<u>11,700</u>	<u>11,700</u>
TOTAL	936,722	915,900

* Average strengths as prescribed in Public Law 93-365, Title IV-- Reserve Forces.

** Figures contained in the DoD Appropriation Law for FY1976, PL 94-106, October 7, 1975.

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PART II

ARMY NATIONAL GUARDSELECTED RESERVEHistorical Background

The National Guard traces its lineage back to local militia organizations dating from colonial times and the 230,000 militiamen who responded to General Washington's call for troops to fight the British in 1776. The modern image of today's National Guard began to emerge in 1903 when Congressional legislation established procedures for a more direct and active role for the Regular Army in organizing, training and equipping Army Guard units.

With the National Defense Act of 1916, the Army National Guard became a component of the Nation's organized peacetime military establishment, which when called into active Federal service, became an integral part of the Active Army. In World War I, some 423,000 Guardsmen were ordered to active duty. The Guard supplied 17 combat divisions and some 40% of the American Expeditionary Forces. In World War II, the Guard provided approximately 300,000 men and 18 combat divisions for the Active Army. Another 183,000 Guardsmen served in the Korean War. About 44,000 Army Guardsmen were mobilized during the Berlin Crisis in 1961 and some 12,200 more in 1968 for Vietnam.

In 1956, the various Federal laws relating to the Armed Forces and the National Guard were codified and all members of the Army National Guard were made members of the Ready Reserve. Public Law 90-168 of December 1, 1967, created within the Ready Reserve a Selected Reserve within each Reserve Component. The ARNG, made up entirely of units, is in the Selected Reserve. Army National Guard personnel strength at various intervals since 1950 is shown below.

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ARNG Personnel Strength*

(End of Fiscal Year)

1950 -- 352,883	1967 -- 420,565
1955 -- 378,046	1970 -- 409,872
1960 -- 407,549	1972 -- 388,384
1964 -- 389,067	1974 -- 411,603

Mission:

The Army National Guard has a dual Federal-State mission. In its Federal mission, the Army Guard is required to provide trained units and qualified individuals for active duty in the Army in time of war or national emergency, and at other such times as the national security requires. More specifically, upon mobilization the eight Army Guard divisions and 14 separate brigades provide land force elements primarily for deployment in a NATO or Pacific area contingency. Three other brigades are assigned to Special Mission Forces for deployment in defense of Alaska, Panama and the Caribbean Theater. One brigade is assigned to Central Support Forces to provide school troops for the CONUS training base.** In its state role, the Army Guard has the additional mission to provide a force for the internal protection of life and property and the preservation of peace, order, and public safety under competent orders of Federal or State authorities.

* Selected Manpower Statistics, OASD (Comptroller), May 1975.

** Reserve Forces Manpower Requirements Report, FY 1976, DoD, April 1975.

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Administration and Management:

The units of the Army National Guard are federally funded and administered by the National Guard Bureau (NGB), which is the legally designated channel of communication between the Department of the Army and the various states regarding ARNG matters. The Chief of the National Guard Bureau is the manager of the ARNG program and reports to the Secretary of the Army through the Chief of Staff of the Army. The Chief of the National Guard Bureau serves as the military's principal staff advisor on National Guard Affairs.* In the performance of its state mission, ARNG units are under the governor of the state concerned.

In the Army reorganization of 1973, Forces Command (FORSCOM) was established under Department of Army to supervise the unit training and combat readiness of all CONUS Army units, including the Army National Guard. The three Continental U.S. Armies (CONUSA) under FORSCOM carry out this function through nine Army Readiness Regions, which serve as the extensions of the CONUSAs to provide on-the-spot assistance to the ARNG units. The Army Readiness Regions are manned with Active Army personnel organized into functional specialist and branch assistance teams and unit advisors.

Strength, Composition and Organization:

The Congressionally authorized average minimum strength of the Army National Guard for FY 1975 was 400,000. On June 30, 1975, the actual strength of the ARNG's Selected Reserve totaled 394,720. Current plans call for personnel strength in the ARNG to remain at 400,000 through the remainder of the decade. This strength provides the ARNG the capability to maintain an overall personnel manning level of 93%.

*The National Guard Bureau is a joint bureau of the Departments of Army and Air Force, and serves in a similar capacity for the two departments with respect to the Army and Air Guards, respectively.

As of June 30, 1975, the force structure of the Army National Guard was composed of the following:

8 Combat divisions (5 infantry, 1 infantry (mechanized) and 2 armored)
 18 Combat Brigades (Separate) - (9 infantry, 6 infantry (mechanized) and 3 armored)
 3 Cavalry Regiments
 209 Other Combat Units
 1,027 Support Units

The programmed paid drill strength for FY 76 reflects the distribution of Army Guard personnel in the above categories of units.

Army National Guard*

(FY 1976)

	<u>Authorized Paid Drill</u>
8 Divisions	121,646
21 Brigades/ACRs	83,310
209 Other Combat Units	90,247
1,027 Support Units	<u>104,797</u>
TOTAL	400,000

Three major changes in organization structure have occurred during the past two years: (1) the implementation of the Army's "affiliation program," (2) the total elimination of the ARNG's Air Defense Artillery Nike-Hercules missile program; and (3) the relocation of several Army Guard divisions.

*Reserve Forces Manpower Requirements Report, FY 1976, DoD, April, 1975, Page b-3.

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Under the provisions of the Reserve Component Affiliation Plan, Army Guard and USAR combat units are "affiliated" with Active Army units. The Active unit provides training support to the affiliated Guard/Reserve unit, designed to improve and sustain the latter's combat readiness and capability for more rapid deployment. Command and control of the Guard/Reserve unit remains with its commander. The affiliation program includes only separate brigades and battalions which in the event of war would deploy with the Active Army unit with which they are affiliated. None of the Army Guard's eight combat divisions is included in the program.

At the present time, one ARNG brigade is affiliated with the Active Force division in Hawaii as a "roundout" brigade and constitutes the third brigade of that division. Two Separate Brigades of the ARNG are programmed for affiliation during FY 1976, as the Active Army builds to 16 divisions. Each of these brigades will "roundout" one of the three new Active divisions (these divisions will contain only two Active Force brigades instead of the usual three*). The roundout brigades will deploy and fight as an organic part of these divisions.

Another four separate Army Guard brigades are affiliated with Active Army divisions for training support in peacetime, while in wartime they can be deployed as a fourth brigade of the Active division with which they are affiliated.

Additionally, 43 separate battalions (5 armored, 8 infantry, 15 field artillery, 1 special forces, 10 combat engineer and 4 signal) are, or are scheduled to be affiliated with CONUS Active Army units by the end of FY 1976. Of these, 5 armored and 5 infantry are "roundout"

* A USAR separate brigade will "roundout" the third new division.

battalions to Active Army divisions which do not presently have a full complement of battalions in their active structure. Upon mobilization these roundout battalions will become organic parts of the Active Army divisions to which they are affiliated.

The inactivation of the last of the ARNG's Nike-Hercules battalion terminates a program which at its peak involved some 17,000 Guardsmen, manning 34 missile battalions in 15 states. The 1974 inactivations included the elimination of about 4,500 military spaces and more than 2,600 full-time technicians.

The division relocation program has involved four of the eight ARNG divisions, with the relocations designed to consolidate ARNG divisions within a single state. To date, the 30th Armored and the 30th Infantry Divisions have been inactivated, with their respective brigades becoming separate brigades. The new divisions, the 49th Armored and the 40th Infantry (Mechanized) Divisions, were activated in Texas and California respectively, and were constituted from separate brigades located in the two states. The 28th Infantry and 42nd Infantry Divisions, located in Pennsylvania and New York respectively, have been realigned so that all brigades of each division are located within the same state.

Training and Readiness:

At the beginning of Calendar Year 1975, all eight ARNG combat divisions were estimated to have the capability to meet or better the deployment objective time of 14 weeks. However, the readiness ratings varied. Two separate brigades were rated "substantially ready" (C-2); four divisions, nine separate brigades and two cavalry regiments were rated "marginally ready" (C-3), while the remaining four divisions, seven brigades and one cavalry regiment were not ready (C-4).

Shortages of equipment is a principal problem degrading Army Guard combat readiness and was given as the reason that half the Guard's combat divisions were rated C-4.* Moreover, the combat brigades did not have enough equipment to fulfill their mission, although there is a concerted effort to alleviate this condition for high priority units.

In the area of training, company level training proficiency was attained by 67% of ARNG companies by the end of Annual Training in 1974. An inherent problem affecting training readiness in the ARNG, as in all other Reserve Components, is the critical factor of time. The 48 four-hour drill periods per year of inactive duty training plus the annual two-week period of active duty provide but 38 days per year in which to accomplish training. It is primarily for this reason (assuming that equipment problems could be resolved) that it is unrealistic to expect any ARNG or USAR unit to reach and sustain the levels of readiness, prior to mobilization, that is expected of an Active Army unit.

ARNG Personnel:

Procurement of Army National Guard personnel is the responsibility of the ARNG, with the unit commander assigned the specific responsibility for the manning of his unit.

In FY 1975, 39% of all ARNG accessions were non-prior service personnel as compared to 32% for DOD's six Reserve Components. Enlistments for the last four fiscal years follow:

ENLISTMENTS IN ARMY GUARD**

	<u>FY 1972</u>	<u>FY 1973</u>	<u>FY 1974</u>	<u>FY 1975</u>
Non-prior Service	46,853	27,300	28,087	33,672
Prior Service	<u>37,896</u>	<u>41,119</u>	<u>71,575</u>	<u>55,780</u>
TOTAL	84,749	68,419	99,662	89,452

* Hearing before the Committee on Armed Services, U.S. Senate, 94th Congress, First Session on S.920, Part III, page 1188.

** From Briefing Charts, Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), June 30, 1975.

Black participation in the Army National Guard, which as of June 30, 1975 was 7.2% compared to 7.8% for the Reserve Components combined, has increased sharply in the all-volunteer force environment as shown below.

Black Participation in the ARNG*

(End of the Fiscal Year)

	<u>1972</u>	<u>1974</u>	<u>1975</u>
Number	7,680	22,377	28,515
Percentage	2.0%	5.6%	7.2%

Female participation in the Army National Guard, which was 1.6% on June 30, 1975, was less than the 3.4% average for the Reserve Components combined, nonetheless increased sharply during the past year. Female participation in the ARNG is shown below.

Female Participation in the ARNG*

(End of Fiscal Year)

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Number	52	518	2,779	6,384
Percentage	0.0%	0.1%	0.7%	1.6%

Sources of officer procurement include junior officers recently released from the Active Army, recent ROTC graduates and newly commissioned officers from State Officer Candidate Schools. An additional source of officers for FY 76 will become available through the Active Army RIF for FY 1976 which will affect approximately 2,200 company grade reserve and regular Army officers.

* From Briefing Charts, Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), June 30, 1975.

Full-time personnel support for the Army National Guard is provided by statutory tour officers, ARNG technicians and Active Army personnel. Currently, the ARNG has 50 authorized positions for statutory tour officers. These ARNG officers are on extended active duty tours in the National Guard Bureau, OSD, the Army Staff and major commands. An additional 95 ARNG positions were established following the 1973 CONUS Army reorganization to give Army commanders at the major and intermediate levels needed additional ARNG expertise to fulfill their missions. These tours are two-year Active Duty for Training Tours, and it is anticipated that the positions will become part of the Statutory Tour Authority when legislative relief from the Officer Grade Limitation Act is granted.

Army National Guard technicians are allocated to provide the day-to-day continuity in the operation of the ARNG. They are Federal employees under Civil Service (95% are "excepted" positions and 5% are "competitive") with the same rights, privileges and benefits as other Federal employees with a few notable exceptions. The "excepted" technicians must be a member of the ARNG as a condition of civilian employment and must be properly separated from technician employment upon loss of membership in the ARNG. The technicians who are "competitive" employees are secretarial and clerical personnel who are not required to be members of the ARNG.

As of June 30, 1975, the Army Guard had a total of 28,831 authorized technician spaces. The projected strength of ARNG technicians through FY 1979 follows.

Projected ARNG Technician Strength*
(End of Fiscal Year)

<u>1976</u>	<u>1977</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
28,203	29,203	29,203	30,550	30,550

* National Guard Bureau

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In addition, approximately 4,900 Active Army personnel provide full-time support to the Army Reserve Components (a breakout of this figure between the ARNG and the USAR is unavailable). The Active Army personnel are unit advisors, training instructors and evaluators at the CONUS field armies/Army Reserve Readiness level.

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PART III

UNITED STATES ARMY RESERVE (USAR)SELECTED RESERVEHistorical Background:

The Army Reserve began as an organized component of the U.S. military forces with the establishment in 1908 by the Congress of the Army Medical Reserve Corps. Legislation in 1912 provided for an Enlisted Army Reserve Corps, and the National Defense Act in 1916 set up an Officers' Reserve Corps. Units were organized for training, but U.S. involvement in World War I followed shortly thereafter and all available Army Reservists were called into active service.

Following World War I, Congress passed legislation establishing the Organized Reserve Corps (ORC), which included the old Officer Reserve and Enlisted Reserve Corps. Between World War I and World War II, ORC units attracted large numbers of officers, as compared to enlisted personnel, and many Reserve units consisted mostly of officers.

At the beginning of World War II, there were 132,000 officers and men in the 26 Organized Reserve Divisions when activated. By the end of World War II, some 202,100 Army Reserve officers had served.

Rapid expansion of the Army was required at the outbreak of hostilities in Korea in 1950. Approximately 240,500 Army Reservists and 969 Army Reserve units were mobilized. Other units and personnel were mobilized for ten months during the 1961 Berlin Crisis. In the 1968 partial mobilization of the Reserve Components, 5,200 USAR personnel in 45 company/detachment size units and 2,600 from the Individual Ready Reserve were ordered to active duty and returned to civilian life the following year.

The Reserve Forces Act of 1955 bolstered the Army Reserve program by prescribing an enlistment for six months of active training, followed by

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duty in a Reserve unit, to complete the military obligation. In 1963, PL 88-110 authorized a new Reserve Enlistment Program (REP-63), which established a six-year Ready Reserve obligation for young men between the ages of 17 and 26 upon enlistment in the Guard/Reserve, with the initial period of active duty for training a minimum of four months. This program was responsible for keeping the USAR manned at desired levels throughout the war in Southeast Asia.

The personnel strength of the USAR at various intervals since 1950 is shown below:

USAR Personnel Strength*

1950 - 186,541	1968 - 244,239
1955 - 163,137	1970 - 260,654
1960 - 301,081	1972 - 235,192
1964 - 268,524	1974 - 234,866

Mission:

The mission of the Army Reserve is to provide trained units and qualified individuals for active duty in the Army in time of war or national emergency. Upon mobilization, the USAR will provide forces for NATO or Pacific areas or other contingencies. Two brigades are assigned to division forces, and one brigade to Special Mission Forces with the specific mission to deploy for the defense of Iceland.

Administration and Management:

Within the Office of the Secretary of the Army, the Assistant Secretary of the Army (Manpower and Reserve Affairs), with a Deputy for Reserve Affairs, has overall responsibility for the Army Reserve. The Chief, Army

*Office Chief, Army Reserve, Comptroller Division.

Reserve, appointed by the President, leads the Office of the Chief, Army Reserve (OCAR), which provides direction to Army Reserve Planning. The Chief, Army Reserve, reports to the Secretary of the Army through the Chief of Staff of the Army. He serves as the military's principal advisor on Army Reserve matters.

Army Reserve activities and training throughout CONUS are under the general direction of Forces Command (FORSCOM)--except for individual and school training for individual Reservists, which is under the supervision of Training and Doctrine Command (TRADOC). FORSCOM exercises its supervision and control through the three CONUS Armies. Under the three Armies are nine Army Readiness Regions which maintain direct contact with the Army Reserve units in their respective areas. The Army Readiness Regions are manned with Active personnel organized into functional specialist and branch assistance teams and unit advisors.

Strength, Composition and Organization

To man all existing USAR units at 100% of the total structural requirement would require approximately 276,000. However, peacetime manning levels are lower, as will be described further below.

The Congressionally authorized average minimum strength of the USAR Selected Reserve for FY 1975 was 225,000 and for FY 1976 is 219,000.* On June 30, 1975, the actual strength of the Selected Reserve totaled 225,057. The programmed personnel strength for FY 1977 is 212,400.**

* The Administration originally requested an average strength of 212,400 for FY1976 and FY1977, based on an understated forecast for recruitment success. As the USAR appeared to be maintaining a strength level significantly above the Administration's requested level, the Congress was of the opinion that it would be inappropriate to accept the 212,400 figure with the inevitable loss in trained personnel, when a higher figure is sustainable. Thus, the Congress raised the FY 1976 figures to 219,000.

** As shown in the FY 1976-1977 budgets and subject to change in the FY 1977 budget.

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As of June 30, 1975, the USAR's Selected Reserve consisted of approximately 3,250 company/detachment size units. Major organizations in the troop structure follow:*

- 19 US Army Reserve Commands (AROCM's)
- 12 Training Divisions
- 2 Maneuver Area Commands
- 1 Military Police Command
- 2 Infantry Brigades
- 1 Mechanized Brigade
- 1 Theater Army Area Command
- 3 Transportation Brigades
- 3 Military Police Brigades
- 2 Engineering Brigades
- 3 Support Brigades
- 3 Civil Affairs Areas
- 4 Hospital Centers
- 5 Hospitals (1000 beds)
- 1 IX Corps (augmentation)
- 8 Maneuver Training Commands
- 98 Miscellaneous Hospitals
- 61 Separate Battalions

During FY 1976, pursuant to OSD direction, DA is supposed to continue efforts to identify marginal Selected Reserve units which are not needed in the event of mobilization. These units are to be deactivated or converted to units for which there is a deployment requirement. In related action, the medical structure of the Army Reserve is being re-configured to provide better medical care during wartime, while conserving airlift for the movement of combat units in the critical early days of a NATO contingency. The USAR's medical structure is being fashioned to accomplish more of the medical workload in CONUS and less in NATO. As a result, some hospitals currently scheduled to deploy will remain in CONUS. Some medical units will be eliminated. The same resources can be mobilized from the civilian sector.

* OCAR

Of special interest is the Army's "affiliation program," involving an increasing number of USAR units. Under the provisions of the plan, USAR and Army Guard combat units are "affiliated" with Active Army units. The Active unit provides training support to the affiliated Guard/Reserve unit, designed to improve and sustain the latter's combat readiness and capability for more rapid deployment.

During FY1976, one USAR separate infantry brigade may be affiliated (the definitive decision is pending) with one of the new divisions of the Active Army as the latter builds to 16 divisions. The Reserve brigade would "roundout" the Active division, which will only have two Active Army brigades. The roundout brigade would deploy and fight as an organic part of the division.

Additionally, 15 separate battalions (one armored, one infantry, three artillery, one Special Forces, eight engineer, and one signal) are, or are scheduled to be, affiliated with CONUS Active Army units. Of these, one infantry battalion is a "roundout" battalion to an Active Army division which does not presently have a full complement of battalions in its active structure. Upon mobilization, the USAR roundout battalion will become an organic part of the Active Army division with which it is affiliated.

Manning and Readiness:

A serious concern is the reduced level of personnel strength in USAR units. As a result, the President's budget for FY1976 proposed

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a minimum end strength of 212,400, a drop of 12,600 based upon the FY1975 Congressionally authorized average of 225,000. The proposal was to provide a personnel manning level for the USAR of 77%, instead of the normal 93%. This would allow a few selected units to maintain a C-1 manning capability, while other units would be manned at much lower levels. (As previously indicated, the Congress tempered this cut by mandating a minimum average strength of 219,000 for FY 1976.)

Existing equipment shortages in certain units continue to adversely affect readiness in USAR units. However, the Affiliation Program and the Army's Mutual Support Program have alleviated the situation somewhat by providing more USAR units with access to modern equipment for training purposes.

The minimum overall goal for most USAR units is C-3 (marginally ready). In early CY 1975 43 percent of USAR units had achieved or surpassed this goal while 57 percent were not ready (C-4). The overall readiness status of company size and larger units required to report follows:

Fully Ready (C-1)	--	15%
Substantially Ready (C-2)	--	10%
Marginally Ready (C-3)	--	18%
Not Ready (C-4)	--	57%

USAR Personnel:

Army Reserve recruiting has held steady since May 1974, with most of the increase in recruiting coming from prior service accessions, as shown below.

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Enlistment in the USAR's Selected Reserve

	<u>FY1972</u>	<u>FY1973</u>	<u>FY1974</u>	<u>FY1975</u>
Prior Service	25,883	28,467	35,315	38,324
Nor-Prior Service	<u>15,529</u>	<u>9,403</u>	<u>8,299</u>	<u>18,229</u>
Total	41,412	37,870	43,614	56,553

Black participation in the USAR has increased sharply in the All-Volunteer Force environment and is higher than the 7.8% average for DOD's six Reserve components combined.

*

Black Participation in the USAR

	<u>June 1972</u>	<u>June 1974</u>	<u>June 1975</u>
Number	6,869	16,866	24,998
Percentage	2.9%	7.2%	11.1%

Female participation in the USAR exceeds all other Reserve Components and was 7.0% on June 30, 1975, compared to an average of 3.4% for all the Reserve Components combined. Of the 30,881 women participating in the six DOD Reserve Components as of June 30, 1975, 15,682 were in the USAR.

*

Female Participation in the USAR
(end of fiscal year)

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Number	1,197	2,487	4,668	15,682
Percentage	0.5%	1.1%	2.0%	7.0%

* From briefing charts, ODASD (Reserve Affairs), June 30, 1975.

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The principal source of officer procurement include junior officers recently released from the Active Army and recent ROTC graduates. An additional source in FY1976 will become available through the Active Army's RIF program for FY1976 which will affect some 2,200 company grade Reserve and Regular Army officers.

Full-time personnel support for the USAR is provided by statutory tour officers, Army Reserve technicians and Active Army personnel.

A total of 43 USAR officers were on statutory tours of active duty (usually four-year tours) as of June 30, 1975. For FY1976, 51 statutory tour positions are programmed. These Army Reserve officers serve in OSD, the Army Staff and major Army commands. In addition, 96 USAR positions were established following the CONUS Army reorganization in 1973 to give Army commanders at the major and intermediate levels needed additional Reserve expertise to fulfill their missions. These tours are two-year active duty for training tours. Eventually, it is anticipated that these tours will be added to the present statutory tour program.

Army Reserve technicians are allocated to provide the day-to-day support to Army Reserve units in the field of administration, supply, maintenance and staff operations. The technician program is designed to help attain and maintain a state of training and readiness which will permit rapid mobilization and deployment.

In all areas except clerical, the Army Reserve technician is required to maintain a Reserve unit status that will insure full effectiveness in the event of mobilization. Being in the competitive Civil

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Service, a USAR technician may not be separated from his civilian employment as a result of involuntary loss of his military status. Lost military status through fault, however, is cause for termination. Of the 8,438 technician positions authorized, a total of 8,253 were filled as of June 30, 1975. * The number programmed through FY1977 follows.

*
Programmed Strength - USAR Technicians

<u>FY1976</u>	<u>FY1977</u>	<u>FY1977</u>
9,698	9,698	10,353

In addition, approximately 4,900 Active Army personnel provide full-time support to the Army Reserve Components (a breakout of this figure between the USAR and ARNG is unavailable). The Active Army personnel are training instructors and evaluators at the CONUS field armies/Army Reserve Readiness Region level and staff sugmentees for major USAR commands.

* Office of Chief, Army Reserve

PART IV

UNITED STATES NAVAL RESERVE (USNR)
SELECTED RESERVEHistorical Background

State Naval Militia organizations were established in 19 states in the late 19th Century and proved a valuable asset to the U.S. Navy in the Spanish-American War. However, a Federal Reserve organization did not come into being until 1916, when Congress established the Naval Reserve Force, which was organized into various parts including Fleet and Air Reserve elements.

During World War I about 30,000 Naval Reserve officers and 300,000 enlisted Reservists, including 12,000 women Reservists, served on active duty. Just prior to World War II, the drilling Naval Reserve totalled just over 11,000 officers and enlisted personnel. Another 19,500 were in non-drill status. By mid-1941 all Naval Reservists, except for deferred individuals, had been called to active duty. During the Korean conflict over 130,000 Naval Reservists from air and surface units were mobilized. Again, during the Berlin Crisis in 1961, 40 Naval Reserve ships with their crews and 18 Naval Air Reserve squadrons were activated. In the 1968 partial call-up during the conflict in Vietnam, six Naval Air Reserve squadrons and two Reserve Seabee battalions were mobilized to serve for a year on active duty.

The personnel strength of the Selected Naval Reserve at various intervals since 1950 is shown below.

USNR Personnel Strength*

1950 -- 148,793	1967 -- 131,958
1955 -- 148,069	1970 -- 128,381
1960 -- 117,727	1972 -- 124,098
1964 -- 123,277	1974 -- 114,864

* Bureau of Naval Personnel

Mission

The primary mission of the Naval Reserve is to provide trained units and individuals available for active duty in time of war, national emergency or when otherwise authorized to meet special contingencies.

More specifically, upon mobilization the Naval Reserve will provide both operational and support units. Those assigned to the Active fleets based on the East and West Coasts will participate in coastal defense operations and in the command missions to maintain open sea lanes and to provide tactical air and amphibious "projection" forces. Other units are for support activities.

The Naval Reserve also has the mission to provide personnel to assist in activation and manning of inactive ships, to augment personnel on Active and Reserve ships, and to provide manpower to support base and training facility expansion.

Administration and Management:

The Office of the Assistant Secretary of the Navy (Manpower and Reserve Affairs) has overall responsibility for the Naval Reserve. The Director of Naval Reserve in the Office of the Chief of Naval Operations is the principal advisor and staff officer on Naval Reserve matters for the Chief of Naval Operations. The Director of Naval Reserve also serves as the Chief of the Naval Reserve Command,

with the mission of organizing, administering, training and supplying the Naval Reserve. He has two Deputy Chiefs of Naval Reserve, one for the Naval Surface Reserve and one for the Naval Air Reserve.

The Naval Reserve Command, located in New Orleans, exercises direct supervision over Naval Reserve units through 22 Naval Reserve Readiness Commands throughout the country with a Naval Reserve Center in each Readiness Command. The Readiness Commander is responsible for the manning, training, and over all readiness of the Naval Reserve units within his command.

Commencing in 1973, the Naval Reserve was restructured into mission-capable, task-performing units specifically tailored to provide capabilities for the Active Navy, rather than the heavy emphasis on individual augmentation that previously existed. The new structure contains 11 programs: Submarine Forces, Mine Forces, Service Forces, Surface Combatant Forces, Air Forces, Cargo Handling Forces, Construction Forces, Amphibious Forces, Marine Corps Forces, Naval Inshore Warfare Forces, and Special and General Support. The first ten of these are major mission/platform programs, which are each divided into five functional groups: combat operations, mobile support, base support, operational staff and mission training. The eleventh program, the Special and General Support Program contains a number of sub-programs, each having a separate Reserve Program sponsor.

The basic unit types in the new structure are:

- (1) Complete Capability Response Units (CRU), which are self-contained units designed to provide complete capabilities upon

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recall. Selected Reservists fill all manpower requirements or provide significant portions of a composite crew for Naval Reserve Fleet ships or squadrons. CRU's are intended to have their own hardware or to employ pre-designated hardware upon recall.

(2) Ship or Squadron Reinforcement Units (SRU), which are task-performing units containing a mix of skills needed to bring an active Navy operation platform to full complement. Each SRU is tailored to a specific ship class or aircraft squadron type.

(3) Other Reinforcement Units (ORU), which are similar to SRU's except that they are tailored for activities other than ships and aircraft. They provide capabilities for such activities as ship-yards, air stations, or staff.

(4) Individual Reinforcement Units (IRU), which upon mobilization provide individual augmentees to a number of Navy activities.

Strength, Composition and Organization:

The actual strength of the Selected Naval Reserve as of June 30, 1975 was 98,235. The Congressionally authorized average minimum strength for FY 1975 was 117,000 and for FY 1976 is 106,000.* Current DOD plans call for a personnel strength of 92,000 for FY1977. **

The force structure requirements by number and type of units in each of the 11 programs of the Selected Naval Reserve, along with the personnel strengths programmed for FY 1976 follow.

*The Administration originally requested a drop of 20,790 paid drill spaces for FY1976 from the FY 1975 Congressionally funded strength of 112,790. The reduction was to include 9 of the 17 Seabee construction battalions. The Congress was of the opinion that the Navy's in-depth study of mobilization requirements in the Naval Reserve, which is near completion, establishes hard requirements for a higher personnel strength figure if all 17 Seabee battalions are retained. As the Congress was anxious that these units not be reduced, the mandated figure for FY 1976 was placed at 106,000.

** Subsequent to the completion of this study, DoD significantly changed its position on this matter. See Appendix 1.

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Selected Naval Reserve

<u>Programs</u>	<u>Number of Units</u>	<u>Total Average Strength</u>
Submarine Forces		
Mobile Support Units	31	1718
Operational Staff Units	<u>22</u>	<u>1217</u>
	53	2935
Mine Warfare Forces		
Minesweepers	22	1055
Mobile Support Units	26	690
Operational Staff Units	<u>9</u>	<u>135</u>
	57	1880
Service Forces		
Mobile Support Units	76	2734
Operational Staff Units	<u>12</u>	<u>533</u>
	88	3267
Surface Combatant Forces		
Destroyers	30	3592
Mobile Support Units	32	2147
Operational Staff Units	<u>54</u>	<u>458</u>
	116	6197
Air Forces		
Attack Carrier Air Wings	2	} 8825
Patrol Squadrons	12	
Fleet Support Squadrons	12	
Tactical Air Control Squadron	1	
Squadron Reinforcement Units	94	7341
Other Mission Reinforcement Units	<u>164</u>	<u>8750</u>
	285	24,916
Cargo Handling Forces	4	522
Construction Forces		
Mobile Support Group	16	7673
Base Support Group	24	780
Operational Staff Group	13	285
Mission Training Group	<u>11</u>	<u>478</u>
	64	9216
Amphibious Forces		
Assault Ships	3	748
Patrol Ships	8	245
Mobile Support Units	58	3404
Base Support Group	15	980
Operational Staff Group	<u>19</u>	<u>731</u>
	103	6108

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Selected Naval Reserve (cont'd)

<u>Programs</u>	<u>Number of Units</u>	<u>Total Average Strength</u>
Marine Support Combat Operations Group	31	1156
Naval Inshore Warfare Forces	29	2449
Special and General Support Program		
Medical	128	3706
Ship Systems	59	4670
Military Sealift	37	1344
Naval Control of Shipping	<u>76</u>	<u>1669</u>
	1130	70,035
Other Reinforcement Units for Augmentation of Fleet Support Activities (Shipyards, Air Stations, Operational Staffs, etc.)	<u>1000</u>	22,948
Initial Active Duty for Training		<u>989</u>
Grand Total	2130	93,972

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Principal Hardware in the Naval Reserve ForceSurfaceEnd FY 1975

10 Destroyers
31 Minesweepers

End FY 1976

30 Destroyers
22 Minesweepers
1 Amphibious Cargo Ship
2 Amphibious Personnel Carriers
7 Patrol Combatants

Air

2 Attack Carrier Air Wings
(7 Sqdn/Wing; average of
12-14 aircraft per Sqdn)
(F-8, A-4, RF-8, KA-3)

2 Carrier Anti-submarine
Aviation Groups (4 squadrons each)
(S-2E, SH-3A/G, E-1B)

2 Reserve Patrol Wings
(6 Sqdns each)(SP-2H, P-3A)

1 Reserve Tactical Support Wing
(6 squadrons)
(C-118, A-4L)

2 Attack Carrier Air Wings
(Same as FY1975 except each
wing will gain one squadron
of E-1B aircraft)

1 Reserve Helicopter Wing
(5 Squadrons)
(SH-3A/G, HH-3)

2 Reserve Patrol Wings
(Same as in FY 1975)

1 Reserve Tactical Support
Wing (same as in FY 1975)

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Naval Air Inventory

<u>Type Aircraft</u>	<u>End FY1975</u>	<u>End FY1976</u>
F-4B	24	24
F-8H/J	24	24
A-7A	48	48
A-4L	44	44
RF-2G	8	8
KA-3B	12	12
E-1B	8	8
SH-3A	24	24
SH-3C	8	6
HH-3A	0	6
S-2E	24	14
F-3A	81	90
SP-2H	36	24
C-118	30	30
	—	—
TOTAL	375	364

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During the past year, five overage NRF destroyers and nine coastal minesweepers were inactivated. Five augmentation units are being activated which are designed to produce 20 percent Reserve manning to augment the 80% Active Force manning on regular Navy destroyers. One amphibious cargo ship, two amphibious transports and eight combatant patrol gunboats are being added to the USNR's surface hardware units.

In the Naval Air Reserve, two Carrier Anti-submarine Air Groups are being phased out by retiring the obsolescent S-2 carrier-based anti-submarine aircraft by the end of FY1976. A new Reserve Helicopter Wing is being activated which will consist of a new combat search and rescue helicopter squadron and four helicopter squadrons from the two deactivated groups. Two Carrier Airborne Early Warning Squadrons, equipped with E-1B aircraft, which were in the deactivated Groups, are being transferred to the two Attack Carrier Air Wings.

Readiness:

Naval Reserve Force hardware units report readiness through the Force Status (FORSTAT) reporting system used by the Active Navy. The average Naval Reserve destroyer is in an overall C-3 (marginally ready) readiness condition. The average NRF minesweeper is in an overall C-2 (substantially ready) readiness condition. The five Coastal/River Squadrons/Divisions are C-2. The Inshore Undersea Warfare Units average overall C-3 in readiness, primarily due to lack of equipment.

The Seabees have equipment deficiencies, but in personnel, training command and control are considered sufficient for mobilization. Their units are in an average overall C-3 readiness condition.

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The Naval Air Reserve squadrons are utilizing similar type aircraft as the Active Fleet except for the C-9, F-14, S-3, A-6, and E-2 aircraft. There are no newly procured aircraft in the Naval Air Reserve inventory, and Reserve aircraft generally lack the modern sophisticated systems incorporated in the newer fleet aircraft.

The Naval Air Reserve squadrons average overall C-3 (marginally ready) in readiness. The primary factors preventing increased readiness are shortages in equipment and supplies.

The non-hardware units in the Naval Reserve do not report in the fleet FORSTAT system, although a similar system is used to measure the personnel and training stress. The overall rating in these units is good.

USNR Personnel

Naval Reserve recruiting has steadily decreased since FY 1972 as the Selected Reserve has decreased in manpower strength. New accessions are principally prior service personnel, as shown below.

Enlistments in the USNR's Selected Reserve*

	<u>FY 1972</u>	<u>FY 1973</u>	<u>FY 1974</u>	<u>FY 1975</u>
Prior Service	67,305	25,772	30,774	24,076
Non-prior Service	<u>14,931</u>	<u>19,355</u>	<u>2,205</u>	<u>3,037</u>
	82,236	45,127	33,179	27,113

Black participation in the USNR has lagged behind that of most of the other Reserve Components and is currently 4.4% of the Selected Naval Reserve, compared to the 7.8% average for DoD's six Reserve Components.

* From briefing charts, ODASD (Reserve Affairs), June 1975.

Black Participation in the USNR*

	<u>June 1972</u>	<u>June 1973</u>	<u>June 1974</u>	<u>June 1975</u>
Number	3,718	4,358	3,866	4,359
Percentage	3.0%	3.5%	3.4%	4.4%

Female participation in the USNR is increasing slowly and the current 2.1% is less than the 3.4% average of all the Reserve Components combined.

Female Participation in the USNR*

	<u>June 1972</u>	<u>June 1973</u>	<u>June 1974</u>	<u>June 1975</u>
Number	1,405	1,616	1,814	2,058
Percentage	1.1%	1.3%	1.6%	2.1%

Full-time personnel support for the Selected Naval Reserve is provided by officers and enlisted personnel in the TAR program (Training and Administration of the Reserve), augmented by officers of the Regular Navy. TAR's are Naval Reserve personnel on active duty who specialize in Reserve affairs. They are utilized to organize, administer, recruit, instruct and train the Reserve. Periodically, TARs receive refresher training or a tour with the regular establishment.

Currently, there are some 1,657 Reserve Program Billets for Officers. The majority may be filled by TARs or regular officers, others are designated for TARs only and approximately 100 billets are for regular officers only.

* From Briefing Charts, ODASD (Reserve Affairs), June 1975.

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As of the end of FY 1975 a total of 1,371 TAR officers were on active duty. Just over 1,000 were assigned to a reserve billet. Regular officers filled the remaining Reserve Program Billets. Enlisted billets are identified as TAR only and numbered 7,040 at the end of FY 1975. A total of 1,366 TAR officers and 7,459 TAR enlisted personnel are programmed to FY 1976.

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PART VAIR NATIONAL GUARDSELECTED RESERVEHistorical Background:

The initial involvement of the National Guard in aviation occurred in 1911 when New York's Signal Corps became the first Guard unit to get a plane off the ground. It was not, however, until 1915 that the Army Guard's first Federally recognized aviation unit, an Aero Company of the New York National Guard, came into being.

When President Roosevelt ordered the National Guard into Federal Service in 1940, some 4,800 men from the 29 Army Guard observation squadrons entered on Active Duty and helped form the nucleus of what was to become the great Army Air Force of World War II.

Following World War II, the National Guard was reorganized. On June 30, 1946, the 120th Fighter Squadron of Colorado was the first post-World War II Guard aviation unit to be granted Federal recognition. With the adoption of the National Security Act of July 26, 1947, the name Air National Guard (ANG) came into being, and since that time the National Guard structure has consisted of both the Army and Air National Guards.

Subsequently, elements of the Air National Guard have been mobilized and served in the Korean War, the Berlin Crisis in 1961, and in the war in Vietnam.

In 1956, the various Federal laws relating to the Armed Forces and the National Guard were codified and all members of the Air National Guard were made members of the Ready Reserve. Public Law 90-168 of December 1, 1967 created within the Ready Reserve a Selected Reserve within each of the Reserve Components under which priority is given in terms of personnel, training, and equipment for the Reserve elements which have the highest Reserve priority requirement for meeting the needs of the Department of Defense. The ANG, made up entirely of units, is in the Selected Reserve.

ANG personnel strength at various intervals since 1950 is shown below.

ANG Personnel Strength^{*}
(End of Fiscal Year)

1950 -- 47,084	1967 -- 83,758
1955 -- 61,306	1970 -- 89,847
1960 -- 70,820	1972 -- 89,237
1964 -- 73,217	1974 -- 94,892

Mission:

The Air National Guard has a dual Federal-State mission. In its Federal mission, the ANG forms an integral part of the first line of defense of the nation. It is required to provide air offense, air defense and support units, which are trained and sufficiently equipped, capable and ready for mobilization in time of war or national emergency to augment the Active Air Force.

* Selected Manpower Statistics, OASD (Comptroller), May, 1975.

More specifically in worldwide contingencies, the ANG's Fighter Interceptor Groups upon mobilization have the primary mission to restrict unauthorized over-flight of the United States. The Tactical Fighter Squadrons upon deployment have the mission to employ air power in coordination with ground and naval forces to gain and maintain air superiority in the objective area. The Tactical Airlift Groups, upon mobilization have the mission to provide immediate and responsive air movement delivery of combat troops and supplies directly into the objective areas and provide logistic support of theater forces.

In the performance of its state mission, the ANG provides, under competent orders by Federal or state authorities, protection of life and property and the preservation of peace, order and public safety. For example, during 1974, Ohio Air Guard units spent several weeks assisting tornado victims in Ohio, and over the last few years, Air Guard units from various states have provided vital communications in areas that have become isolated as a result of some form of natural disaster.

Administration and Management:

The units of the ANG are federally funded and administered by the National Guard Bureau. The ANG maintains aircraft and equipment valued at more than \$3.5 billion and has an annual federal appropriation of more than \$700 million. Military personnel costs in FY1974 were \$182.3 million and were programmed as follows: \$206.7 million in FY1975, \$213.2 million in FY1976, and \$61.1 million in FY1977.

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The National Guard Bureau, which is the legally designated channel of communication between the Department of Air Force and the various states regarding ANG matters, is the instrument through which Air Force policies and procedures are made applicable to ANG units. The Chief of the National Guard Bureau is the manager of the ANG program and reports to the Secretary of the Air Force through the Air Force Chief of Staff. The Chief of the NGB also serves as the military's principal staff advisor on National Guard Affairs.* In the performance of its state mission, ANG units are under the governor of the state concerned.

Although not part of the National Guard, the Air Reserve Personnel Center maintains the records of all Air National Guard officers and provides automated personnel data support to the Directorate, Air National Guard. The state personnel offices maintain the records of Air Guardsmen.

Strength, Composition and Organization:

The Congressionally authorized average minimum strength of the Air National Guard for FY1975 was 95,000.** On June 30, 1975, the actual strength of the ANG totaled 95,360 (11,635 officers and 83,725 airmen). Current plans call for personnel strength in the ANG to remain around 95,000, as reflected in the following table:***

* The National Guard Bureau (NGB) is a joint bureau of the Departments of Army and Air Force. Its relationship with the Department of Army Guard matters is similar to its relationship with the Department of Air Force.

** The FY75 average strength is prescribed in P.L. 93-365, Title IV, Reserve Forces. P.L. 94-106, October 7, 1975, prescribed average minimum strength for the Selected Reserve for FY 1976 and FY1977 of 94,900

*** Hearings before Committee on Armed Services, United States Senate, 94th Congress, First Session on S.920, Part 3, p. 1555.

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Projected Personnel Strength

	<u>End Fiscal Year</u>				
	<u>1976</u>	<u>1977</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
ANG	94,574	94,519	94,405	94,961	95,724

The ANG is organized into 24 wings, including 91 flying units (plus support units), and some 298 specialized non-flying ground support units. Approximately 80% of ANG personnel are assigned to the flying units.

The flying units of the Air National Guard follow.

Air National Guard StructureFlying Units

<u>Equipped Units</u>	<u>End FY1975</u>	<u>Programmed* FY1976</u>
Fighter Interceptor Groups (F-102, F-101, F-106)	15	11
Air Refuel Groups (KC-135)	0	4
Defense Sys. Eval. Groups (EB-57)	2	2
Tactical Fighter Groups (A-7D, F-100, F-104, F-105, A-37)	29	28
Tactical Recon. Groups (PF-101, RF-4)	7	9
Air Refuel Groups (KC-97)	9	8
Tactical Air Support Groups (O-2)	7	7
Tactical Elect. Warfare Groups (EC-121)	1	1
Rescue/Recovery Groups (HC-130/HH-3)	2	2
Tactical Fighter Trng. Groups (F-100, A-7D, F-105)	2	2
Special Operations Groups (C-119)	2	0
Tactical Airlift Groups (C-130, C-123, C-7)	<u>15</u>	<u>17</u>
Total Flying Units	91	91

* Reserve Forces Manpower Requirements Report, Fiscal Year 1976, DoD, April, 1975.

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All ANG units are assigned, for mobilization purposes, to the Active Air Force major commands: Tactical Air Command (TAC), Aerospace Defense Command (ADC), Military Airlift Command (MAC), Air Training Command (ATC), Alaskan Air Command (AAC), the Air University (AU), and AF Communications Service (AFCS). ANG units, for example, currently comprise 38% of TAC and 70% of ADC, thus providing a major portion of the air defense capability for Continental United States, Puerto Rico, and the entire air defense capability for Hawaii.

These "gaining commands" in peacetime provide the assigned ANG units with advisory assistance and are responsible for the supervision of training, safety programs, and inspections of the gained units. As a result of the "gaining command" concept, the Active unit commander has a vested interest that the gained ANG units meet Active Force standards, for upon mobilization the ANG units take their place in the organizational structure of their respective gaining commands.

Some ANG units are serving in peacetime as integral elements of the Active Air Force commands. For example, the ANG fighter-interceptor squadrons assigned to Aerospace Defense Command maintain a 24-hour runway alert at all times under ADC control. ANG tactical squadrons perform peacetime missions for TAC, such as "Creak Party" operations in which ANG tankers are periodically rotated to Europe for several weeks to provide mid-air refueling capabilities for USAF aircraft. Also, in support of the Active Force, ANG heavy transports carry cargo for MAC on a global basis.

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The 91 flying units include 54 assigned to Tactical Air Command (equipped with the F-100's, RF-101's, F-104's, F-105's, F-4's, RF-4's, A-7D's, A-37B's, KC-97L's, KC-135's, C-119's, EC-121's and O-2's), 22 units assigned to Aerospace Defense Command (equipped with F-101's, F-102's, F-106's and EB-57's) and 15 units assigned to the Military Airlift Command (equipped with C-123J's, C-130's and C-7's).

Training and Readiness:

Members of the ANG are required to participate in 48 unit training assemblies each year, plus 15 days active duty for annual training. In addition, Air Guard pilots and aircrews receive up to 36 additional flight training periods to insure that the required levels of flight proficiency are maintained.

The criteria used in determining the combat readiness of the Air National Guard are identical to that of the Active Air Force. In March 1975, some 90% of the flying units in the ANG were combat ready.* This high level of readiness was expected to be maintained despite on-going unit conversions to newer aircraft during FY1975 through FY1977, including unit conversions to C-130's and A-7D's, the conversion of prop-driven KC-97L tankers to KC-135 jet tankers, and several units from old series fighter aircraft to RF-4C Phantom reconnaissance aircraft.

ANG Personnel:

Procurement of ANG personnel is primarily the responsibility of the ANG itself, although increasing assistance is being provided by the

* Statement by MG LaVern E. Weber, Chief of the National Guard Bureau, before the Subcommittee on Military Personnel, HASC, March 20, 1975.

USAF Recruiting Service. Procurement for a specific unit is the assigned responsibility of unit commanders. While both non-prior service personnel and active duty separates are needed to meet manning requirements, the emphasis in the ANG has been on the acquisition of prior service personnel and on the retention of ANG members whose experience and training represent a sizeable investment.

In FY1975, 33.5% of all ANG accessions were non-prior service personnel as compared to 32% for DOD's six Reserve Components. Enlistments in the ANG for the last four fiscal years follow.

Enlistments in Air National Guard*

By Fiscal Year

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Non-Prior Service	7,873	4,139	2,281	6,446
Prior Service	<u>10,768</u>	<u>9,244</u>	<u>14,353</u>	<u>12,818</u>
Total	18,641	13,383	16,634	19,264

Black participation in the Air National Guard, which was 3.8% on June 30, 1975, was less than the 7.8% average for the Reserve Components combined. Nonetheless, it is increasing significantly in the All-Volunteer Force environment, as shown below.

* From briefing charts, Office of the Deputy Assistant Secretary of Defense (Reserve Affairs), June 30, 1975.

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Black Participation in the ANG *

	<u>End of Fiscal Year</u>		
	<u>1972</u>	<u>1974</u>	<u>1975</u>
Percentage	1.4%	2.9%	3.8%
Number	1,225	2,704	3,086

Female participation, which was 3.2% on June 30, 1975, was only slightly below the 3.4% average of the Reserve Components combined.

Female participation in the ANG is shown below.

Female Participation in the ANG *

	<u>End of Fiscal Year</u>			
	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Percentage	0.7%	1.1%	1.4%	3.2%
Number	600	996	1,277	3,086

The rated inventory of the ANG is composed primarily of prior-service officers. A reduction in active duty rated officer production in a given year will appear in the ANG some years later. The majority of prior-service gains in the ANG, that is, active duty rated officer separatees, are realized at year groups (years of commissioned service) 7 and 8 for rated officers.

There are two groups of full-time ANG personnel who play a major role in bridging the gap between the ANG and the Active force in the implementation of Total Force management -- (1) the statutory tour officers and (2) the Air Guard Technicians. Currently, the ANG has

* Ibid.

115 authorized positions for statutory tour officers of which about 90% are manned. These officers are on extended active duty tours in OSD, the Air Force Staff, the National Guard Bureau and major Air Force commands. The Air Technicians, which numbered 22,550 on June 30, 1975, provide day-to-day continuity in the operation and training of ANG units.

Air Technicians are allocated to the ANG primarily in support of particular weapon systems. They are Federal employees under Civil Service with the same rights, privileges and benefits as other Federal employees, with a few notable exceptions. The Air Technician must be a member of the ANG as a condition of civilian employment and must be promptly separated from technician employment upon loss of membership in the ANG.

The key role of the Air Technicians is apparent, for not only do technicians make up one-fourth of the personnel strength of the ANG, but they are the commanding officers of over half of the 91 flying units in the ANG. The projected strength of ANG Technicians through FY1979 follows.

Projected ANG Technician Strength*

<u>End of Fiscal Year</u>				
<u>1976</u>	<u>1977</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
22,273	22,273	22,413	22,550	22,587

The Active Air Force provides additional personnel support for the ANG. Some 1,039 Active Force personnel were assigned to the "gaining commands" in FY1975 as advisors to ANG units.

* Hearings before the Committee on Armed Services, United States Senate, 94th Congress, 1st Session, on S.920, Part 3, p. 1555.

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Active Air Force Advisors To ANG

	<u>FY1975</u>
ADC	338
AFCS	197
MAC	44
TAC	350
Others	<u>60</u>
Total	1,039

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PART VIUNITED STATES AIR FORCE RESERVESELECTED RESERVEHistorical Background:

The first Air Reservists belonged to the Aviation Section of the Signal Reserve Corps, which was organized in 1916. Pilot training was conducted at civilian schools, with advanced training offered at Army flying schools. In 1917, the 1st Aero Reserve Squadron from the Governors Island Training Corps, a civilian pilot school in New York, was activated and sent to France. But it was not until after World War II that the Air Force Reservists became significant Reserve manpower assets.

The Air Force Reserve, composed of 430,000 World War II veterans who accepted appointment or enlisted in the Army Air Force Reserves, was established in 1946. In the revitalization of the Reserve Program in 1948, Continental Air Command (CONAC) was created to administer and manage the Air Force Reserve.

In the Korean War some 147,000 Air Force Reservists were mobilized to augment the Active Air Force. After Korea, the Air Force Reserve engaged in a rebuilding program, but by the end of the 1950's, it had been reduced to 14 wings equipped with C-119's and one wing with C-123's. In 1957, the Air Reserve Technician Program was implemented as a measure to upgrade readiness by providing each unit with a cadre of full-time,

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permanent, highly skilled personnel. Also in the late 1950's, the Air Force Reserve provided the Active Air Force with much-needed peacetime airlift augmentation.

In 1961, some 5,600 Air Force Reservists were mobilized and served on Active Duty during the Berlin Crisis. During the Cuban Crisis the following year, eight troop carrier wings and six aerial port squadrons, in all over 14,000 personnel, were recalled to active duty.

Although there was no formal recall until 1968, Air Force Reservists were active in Southeast Asia from 1965 until the end of the U.S. involvement in 1973, with Air Force Reserve units routinely flying Military Airlift Command missions to and within Southeast Asia. In 1968, some 5,600 USAFR personnel were recalled to Active Duty.

In 1960, the management of the Air Force Reserve was changed. Responsibilities for inspection and supervision of training were transferred from CONAC to the "gaining commands", which would gain the Air Reserve unit upon the latter's mobilization. Reserve Regions were created which gave the Reservists a greater role in their own management programs. In 1968, P.L. 90-168 established the Office of Air Force Reserve as the Reserve advisory and coordinating agency on the Air Staff. Headquarters Air Force Reserve was also created to replace CONAC, which was inactivated.

Personnel strength of the Selected Air Force Reserve^{*} at various intervals since 1950 is shown below.

* The Selected Reserve was not established until 1968. Figures prior to that time consist of those elements of the Ready Reserve which subsequently became the Selected Reserve.

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Selected USAFR

(End of Fiscal Year)

1960 -- 58,370	1970 -- 50,290
1964 -- 60,832	1972 -- 47,755
1967 -- 46,265	1974 -- 46,338

Mission:

The mission of the Air Force Reserve is to organize and maintain operationally-ready units and qualified individuals to be available for immediate active duty in the USAF in time of contingency or national emergency to support augmentation requirements and to perform peacetime missions as an adjunct of training.

More specifically, in worldwide contingencies, the Air Force Reserve's Tactical Fighter Squadrons upon mobilization have the mission to provide reinforcement of tactical air capability. The Tactical Airlift Squadrons have the mission to provide airlifts and airdrops of personnel and equipment. The mission of the Associate Military Airlift Squadrons is to provide aircrew augmentation to active duty military airlift wings. The mission of the Aerial Port Squadrons is to perform air terminal services and inspection of cargo. The Prime Beef units (engineers) provide fire protection and support in special operations, disasters and other emergencies.

Administration and Management:

The Office of the Air Force Reserve, headed by the Chief of Air Force Reserve, is the advisory and coordinating agency on the Air Staff for all Air Force Reserve matters. The major field element in the manage-

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ment structure is Headquarters, Air Force Reserve (AFRES) which is located at Warner Robins AFB, Georgia.* Since Headquarters AFRES is geographically separated from the Office of Chief, Air Force Reserve, the objective of single management of the Air Force Reserve is accomplished by designating the Chief concurrently to be the Commander, AFRES.

Headquarters AFRES exercises command jurisdiction over assigned personnel, facilities, property and funds and provides operational, logistical, administrative and personnel support for all units and individuals. It has a subordinate structure which divides the country into three Air Force Reserve Regions. Each Regional Command exercises command supervision over Air Force Reserve units and personnel within their geographic areas of responsibility.

Strength, Composition and Organization:

The Congressionally authorized average minimum strength of the USAFR for FY1975 was 51,319.** On June 30, 1975, the actual strength of the USAFE Selected Reserve totaled 50,691 (11,479 officers and 39,212 airmen). Current plans call for personnel strength in the Selected Air Force Reserve to gradually increase to just over 56,000, as the result of receiving KC-135 tankers from the Active Force (see

* The Air Force Personnel Center (ARPC) located at Denver, Colorado, is designated a separate operating agency and is not in the chain of command of the Air Force Reserve management structure. However, it is under the technical guidance and supervision of the Chief of Air Force Reserve. It administers and participates in the development of policies, plans and programs applicable to personnel management, mobilization and personnel administration of Air Force Reserve personnel not on extended active duty.

** The FY1975 average strength is prescribed in P.L. 93-365, Title IV, Reserve Forces. P.L. 94-106, October 7, 1975, prescribed average minimum strength for the Selected Reserve for FY1976 and FY1977 of 51,800.

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below). The projected personnel strengths are shown in the following table.*

Projected Personnel Strength

(End of Fiscal Year)

	<u>1976</u>	<u>1977</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
USAFR	53,210	53,743	55,240	56,163	56,163

The USAFR is organized into 53 flying units and some 136 non-flying units as of June 30, 1975. Approximately 60% of USAFR personnel are in flying units, 25% in non-flying units, and most of the remainder assigned as individual mobilization augmentees.

The programmed personnel strengths will provide for 94% manning in Fiscal Year 1976 and 1977, and 97% in FY 1977 in flying units and 92% manning in Fiscal Years 1976 and 1977, and 96% for FY 1977 in non-flying units.

All USAFE units are assigned for mobilization purposes to the Active Air Force major commands. These "gaining" commands in peacetime provide advisory assistance and are responsible for training standards, safety programs and inspections of the gained Reserve units.

The 18 "associate" squadrons operate under a concept which was initiated in 1968. Each associate squadron flies and maintains Active Air Force aircraft. Each associate unit is co-located with an Active MAC unit. Upon mobilization, the Active and Reserve units fully integrate into one combat ready force.

The structure of the Selected USAFR follows.

* Hearings before the Committee on Armed Services, United States Senate, 94th Congress, 1st Session on S.920, Part 3, p. 1555.

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USAFR Force StructureFlying Units

<u>Equipped Units</u>	<u>End FY1975</u>	<u>Programmed[*] FY1976 and FY1977</u>
Tactical Airlift Squadrons (C-130)	1.	14
Tactical Airlift Squadrons (C-123)	4	4
Tactical Airlift Squadrons (C-7)	2	2
Aerospace Rescue & Recovery (HH-1/HH-3/HC-130)	4	4
Air Weather Service (WC-130)	0	1
Special Operations Squadrons (CH-3)	1	1
Special Operations Squadrons (AC-130)	0	1
Airborne Early Warning & Control (EC-121)	1	1
Tactical Fighter Squadrons (A-37)	4	4
Tactical Fighter Squadrons (F-105)	3	3
<hr/>		
Total Equipped Units	35	35
<hr/>		
<u>Associate Units</u>		
Military Airlift Squadrons (C-141)	13	13
Military Airlift Squadrons (C-5A)	4	4
Aeromed Evacuation Squadrons	1	1
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Total Associate Units	18	18
Total Flying Units	53	53

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Non-Flying Units

Air Logistical Center Augmentation Squadrons	6	6
Aeromedical Evacuation Squadrons/Flights	20	20
Medical Service Units	13	13
Aerial Port Squadrons	44	47
Civil Engineer Flights (Prime Beef Flights)	35	35
Maintenance Squadrons	7	7
Civil Engineer Heavy Repair Squadrons (Red Horse)	1	1
Supply Squadrons (Mobile)	7	7
Air Force Reserve Region Headquarters	3	3
<hr/>		
Total Non-Flying Units	136	139

* Department of Defense, Reserve Forces Manpower Requirements Report for Fiscal Year 1976, April, 1975.

The programmed changes in the force structure of the USAFR during FY1976 will include the conversion of one unit to AC-130 gunships for the Air Reserve Special Operations Force and one unit to a weather reconnaissance squadron of WC-130's which will be a MAC-gained unit. The activation of three Aerial Port squadrons are the only changes programmed for non-flying units in FY1976.

Beginning in FY1977, the Air Force Reserve will add a strategic air refueling role to its operational mission for the first time with the transfer of 24 KC-135's from the Active force to the USAFR. Three Reserve squadrons will convert to KC-135 refueling units.

Readiness:

The criteria used in determining the combat readiness of the Air Force Reserve are identical to that of the Active Air Force and are measured in the areas of personnel, equipment and supplies, aircraft operationally ready and training. Air Force readiness standards for USAFR units are set by their Active force gaining commands which, through readiness inspections equal to those given their Active units, determine if the standards have been met. Training to meet these standards, however, is the responsibility of the Air Force Reserve.

As of June 30, 1975, all flying units, with the exception of a previously combat ready unit beginning conversion to AC-130 gunships, are combat ready.

USAFR Personnel:

Primary responsibility for the procurement of personnel rests with the USAFR itself, although increasing assistance is being provided by the USAF Recruiting Service. Unit commanders are charged with the

specific responsibility for procuring required personnel.

While the Air Force Reserve needs both non-prior service and prior service personnel to meet manning requirements, emphasis has been on the acquisition of prior service personnel and on the retention of Air Force Reservists. This, in turn, aggravates the problem of retaining first-termers who are discouraged because of limited grade progression.

In FY1975, 85% of all USAFR accessions were prior service personnel, as compared to 68% for DOD's six Reserve Components. Enlistments in the Air Force Reserve for the last four fiscal years follow.

USAFR Enlistments^{*}

(By Fiscal Year)

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Non-Prior Service	3,042	1,441	2,121	2,907
Prior Service	<u>11,373</u>	<u>10,767</u>	<u>13,324</u>	<u>17,051</u>
Total	14,415	12,208	15,445	19,958

Black participation in the Air Force Reserve, which was 8.1% on June 30, 1975, exceeded the 7.8% average for the Reserve Components combined, and has increased significantly in the All-Volunteer Force environment as shown below.

Black Participation in the USAFR^{*}

(End of Fiscal Year)

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Percentage	3.3%	4.2%	5.6%	8.1%
Number	1,452	1,838	2,615	4,111

* From briefing charts, ODASD (Reserve Affairs), June 30, 1975.

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Female participation, which was 6.5% on June 30, 1975, also exceeded the 3.4% average of all the Reserve Components combined. Female participation in the Air Force Reserve is shown below.

Female Participation in the USAFR^{*}

(End of Fiscal Year)

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
Percentage	2.2%	3.0%	3.9%	6.5%
Number	1,069	1,328	1,809	3,281

The rsted inventory of the Selected USAFR includes some 2,400 pilots and 700 navigators, of which approximately 90% are prior service officers.

Full-Time Personnel Support Personnel:

Four categories of personnel provide full-time personnel support for the Air Force Reserve -- statutory tour Reserve officers, Air Reserve Technicians (ART's), Active Air Force personnel, and civilian personnel exclusive of Air Reserve Technicians.

The statutory tour Reservists on extended active duty tours totaled 108, as of June 30, 1975. They are assigned to the Air Staff, OSD, Headquarters Air Force Reserve and the major Air Force commands for the purpose of advising and assisting in the development and implementation of Reserve policies, procedures and programs.

The Air Reserve Technicians, which numbered 6,548 as of June 30, 1975, have a dual role as civilian employees and Air Force Reservists in the same unit. They provide continuity in the administration,

* Ibid.

operation and training of USAFR units. About three-fourths of the ART's are employed in aircraft maintenance.

Air Force Reserve Technicians make up about 13% of the personnel strength of the Selected USAFR. The projected strength of the Air Force Reserve Technicians through FY1979 follows.

USAFR Technicians

(End of Fiscal Year)

<u>1976</u>	<u>1977</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
7,217	7,217	7,207	7,345	7,345

In addition, there are about 4,700 civilian employees of the Air Force Reserve who differ from the Air Technician in that they are not military members of the Selected Air Force Reserve. For the most part, they are secretarial, clerical, maintenance and other support personnel. Authorizations for this group of personnel are programmed to remain at the current level as indicated below.

USAFR Non-Technician Civilian Employees

(End of Fiscal Year)

<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
4,790	4,768	4,768	4,768

The Active Air Force also provides personnel support for the Air Force Reserve. As of June 30, 1975, 41 officers of the Active Force were assigned to major commands as advisors to the Air Force Reserve. The same number are programmed for FY1976, as indicated below.

Active Force Officer Advisors to Air Force Reserve

	<u>End FY1975</u>	<u>Programmed for FY1976</u>
Headquarters AFRES	1	1
ADC	1	1
TAC	9	9
MAC	<u>30</u>	<u>30</u>
Total	41	41

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March 1, 1976

APPENDIX - 3

In the President's budget for FY 1977 which was forwarded to the Congress in January 1976, the Administration proposed a drastic reduction of the Selected Naval Reserve to 52,000 from the 102,000 drill spaces the Congress appropriated for FY 1976. As the major part of this cut, the DoD plans to transfer some 40,000 shore establishment billets to the IRR, which would save drill pay but which would seem to be of questionable practicality. It runs counter to the testimony given to the Congress in 1975 and to the information presented in the major new study on the Naval Reserve completed by the Navy in late 1975.

The force structure requirements by number and type of units in each of the 11 programs of the Selected Naval Reserve, along with the personnel strengths programmed for FY 1977 follow (similar information for FY 1976 is included in Part IV of this paper).

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NAVAL RESERVE FY 1977

<u>Number of Units</u>	<u>Description</u>	<u>TOTAL AVERAGE STRENGTH</u>
	<u>SUBMARINE</u>	
31	Mobile Support Units	1684
	<u>MINE WARFARE</u>	
22	Minesweepers	1034
4	Mobile Support Units	183
7	Operational Staff Units	49
<u>33</u>		<u>1266</u>
	<u>SERVICE</u>	
66	Mobile Support Units	2269
	<u>SURFACE COMBATANTS</u>	
30	Destroyers	3496
57	Mobile Support Units	2944
5	Operational Staff Units	60
<u>92</u>		<u>6500</u>
	<u>AIR</u>	
2	Attack Carrier Air Wings	} 9819
13	Patrol Squadrons	
11	Fleet Support Squadrons	
1	Tactical Air Control Squadron	
89	Squadron Reinforcement Units	6512
29	Other Mission Reinforcement Units	4476
		<u>20807</u>

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<u>Number of Units</u>	<u>Description</u>	<u>TOTAL AVERAGE STRENGTH</u>
<u>CONSTRUCTION</u>		
8	Mobile Support Group	6096
5	Operational Staff Group	127
1	Mission Training Group	208
<u>14</u>		<u>6431</u>
<u>AMPHIBIOUS</u>		
3	Assault Ships	733
5	Patrol Ships	150
55	Mobile Support Units	2649
<u>63</u>		<u>3532</u>
4	CARGO HANDLING	512
28	NIW (Naval Inshore Warfare)	2352
34	MILITARY SEALIFT	1194
74	NAVAL CONTROL OF SHIPPING	1287
1	SHIP SYSTEM PROGRAM	177
31	MARINE SUPPORT COMBAT OPERATIONS GROUP	1340
<u>636</u> TOTAL		<u>49351</u>
<u>TOTAL Other Units</u>		
38	Other reinforcement units for augmentation of Fleet Support Activities.	1749
<u>724</u> TOTAL		<u>51100</u>
	Initial Active Duty for Training	<u>900</u>
	GRAND TOTAL	52000

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WORKING PAPER

NOT AN OFFICIAL POSITION OF THE DMC

SELECTED RESERVE ISSUES

A STAFF ISSUE PAPER

for the

DEFENSE MANPOWER COMMISSION

by Hugh M. Walton, Rey A. Dunn, Jr., and John D. Sitterson, Jr.
Requirements Group
Defense Manpower Commission Staff

November 1975

(With Appendix added March 1, 1976)

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EXECUTIVE SUMMARY

SUBJECT: Selected Reserve Issues

- ISSUES:**
- Size and composition of the Selected Reserve Components of the Army, Navy and Air Force and Marine Corps.
 - Concept of employment of the eight Army National Guard Divisions.
 - Suitable additional missions for the Reserve Components.
 - Increased affiliation of Reserve Component units with active force units.
 - Reduction of management headquarters in Air Force Reserve Components.

BACKGROUND: DMC staff was directed to prepare an issue paper which would focus on the size and composition of the respective Selected Reserves of the Armed Forces and related readiness issues.

ANALYSIS: The size and composition of the Selected Reserves of the Reserve Components should be based, within acceptable financial constraints, not only on the mobilization requirements for augmentation of the active force but on the ability of the Reserve Components to provide units which can reach and maintain a highly ready military posture and can be available for early deployment in the event of mobilization.

The Army's Affiliation Program gives special assistance to affiliated units, and the use of round-out battalions and brigades is being tested. Beyond that, it is very difficult for the combat units of the Army Reserve Components to sustain levels of training proficiency above company level. A new concept for unit training and employment may be required if this mobilization asset is to achieve its full potential. Upon mobilization, many of the large Army Reserve Component units might be considered a source of "building blocks," with the basic unit a battalion.

The size and composition of the Selected Naval Reserve remains a highly controversial subject. It is difficult for the DMC to propose changes, given the Congressional action in FY76, the lack of access thus far to the Navy's new study on Reserve requirements and OSD decisions on it, and the experiments in the active/Reserve mix which will be taking place through FY77. The Navy should continue to strive to structure its Reserve units keyed to reinforce specific active Navy mission and force units.

Despite current efforts to improve readiness, there are additional opportunities for up-grading Reserve readiness through an expansion of the affiliation concept. Appropriate Reserve units could be assigned to active operating ships while they are in port for fleet service functions, maintenance and/or minor overhaul.

Additional associate missions might be productive in the Air Force components with Tactical Air Command units and in the Undergraduate Pilot Training Program.

The management structure of the Air Force Reserve Components appears to be larger than necessary. A recent Air Force study suggests manpower savings approximating 15% are possible in the Air National Guard State headquarters. With regard to the Air Force Reserve, if the major operational commands of the Active Force successfully function with two subordinate headquarters, the Air Force Reserve could do likewise.

Active Air Force advisors are especially valuable to Reserve Component units during transition to a new weapons system. The scope of this requirement diminishes markedly when the ANG or Reserve unit advances to readiness condition of C-3 or better.

The 4th Marine Division is in a period of transition in terms of concept of employment and organization. Its major difficulty is in achieving desired manning levels.

CONCLUSIONS:

The size and strength of the Selected Reserves of the Army, Air Force and Marines should continue at current levels. Pending availability of the new Navy Study on Naval Reserve Requirements, DMC should not recommend any changes in the manpower levels of the Selected Naval Reserve.

The eight Army National Guard Divisions should be kept intact during peacetime, but their brigades and battalions included in the Army's Affiliation Program. Upon mobilization, the divisions should function as training divisions, losing trained battalions for early deployment and training new battalions activated to replace the lost units.

Potential additional missions for the Reserve components would be: manning anti-tank guided missile battalions by the ARNG and USAR; ASW missions for the Naval Air Reserve in helicopters aboard merchant ships; associate program expansion in the Air Force Reserve Components; and assignment of Naval Reserve units to operational ships that are in port for maintenance and light overhaul.

Management headquarters in both Air Force Reserve Components should be reduced. Support functions at Reserve Force bases with more than one unit should be consolidated and the non-deployed elements of the operational organizations should be reviewed with a view toward civilianization.

The number of Active Air Force advisors for the Reserve Components should be reduced.

The key to overcoming manpower shortages in the Marine Corps Reserve is in recruiting non-prior service personnel. Maintenance of incentive programs and adequate recruiting funding would materially assist the Marine Corps Reserve in reaching manpower objectives.

RECOMMENDATIONS:

The DMC accept this paper and its conclusions as a basis for pertinent sections of the final report.

SELECTED RESERVE ISSUES

PURPOSE:

The purpose of this paper is to identify and discuss issues concerning the size, composition, and certain other aspects of the Selected Reserves of the Armed Forces on which the Defense Manpower Commission should establish a position.

BACKGROUND:

The DMC staff was directed to prepare an issue paper which would focus on the size and composition of the Selected Reserves of the Armed Services, and related readiness issues. Background information pertinent to this paper, especially definitions and the personnel strength, composition and organizational structure, is contained in the DMC paper entitled, "Overview of the Reserve Components of the U.S. Armed Forces."

PART I

ARMY RESERVE COMPONENTS

The size and composition of the Selected Reserve of the Army Reserve Components should be based, within acceptable financial constraints, primarily on the mobilization requirements for augmentation of the Active Army, but are also affected by the ability of the Reserve Components to provide units which can reach and maintain a highly ready military posture and can be available for early deployment in the event of mobilization. The Army has undertaken numerous actions during the past two years to upgrade its Reserve Components as a mobilization asset.

Efforts are being continued in FY76 to identify marginal units in the Army National Guard and Selected Army Reserve which are not needed in the event of mobilization. These organizations are to be inactivated or converted to units for which there is a deployment requirement. The USAR's medical structure is being reconfigured to provide better medical care in wartime and to accomplish more of the medical workload in CONUS, thereby conserving air lift in the critical early days of an overseas contingency. But perhaps the most significant development has been the implementation and expansion of the Army's Affiliation Program.* All indications are that the Army has increased its support of its Reserve Components and has used initiative and resources to implement Total Force Policy.

As of June 30, 1975, the Army National Guard had an actual personnel strength of 394,720. The Congressionally authorized minimum strength for FY76 is 400,000, and current plans tentatively call for it to remain at this level through the remainder of the decade, although this is under continuing review. This strength provides the ARNG the capacity to maintain an overall personnel manning level of 93%.

* The Army's Affiliation Program, as described in the DMC information paper "Overview of the Reserve Components," pertains to the peacetime affiliation of Reserve Component units with Active Army organizations (divisions, etc.) for training (at least annual field training) and other related assistance. Virtually all of these affiliated units in the program thus far are supposed to become able, as an objective, to deploy and fight with the Active Army units with which they are affiliated. The use of an affiliated Reserve Component brigade to round-out each of the active Army's hybrid divisions has been treated in detail in the separate DMC staff issue paper entitled, "U.S. Army - Total Force Overview and General Purpose Force Manpower Requirements Issues." The DMC staff strongly endorses the affiliation concept and, with reservations, has recommended that the round-out concept, fully supported, be continued long enough to be thoroughly tested, with further decision then depending on the outcome of such testing.

In the Selected Army Reserve personnel strength has been a subject of controversy. Actual strength on June 30, 1975, was 225,057. The Administration originally requested an average strength of 212,400 for FY76 and has programmed for FY77 at the same level. The Congressionally authorized average minimum strength for FY75 was 225,000 and for FY76 is 219,000. The USAR appeared to be maintaining a strength level significantly above the Administration's requested level, and the Congress, for its own reasons, notwithstanding lower requirement levels stated by the Army and DOD, took the position that it was inappropriate to accept the 212,400 figure with the inevitable loss in trained personnel, when a higher figure is sustainable.

To man all existing USAR Selected units at 100% of the total would require approximately 276,000. A reduction to 212,400 was to provide a personnel manning level for the USAR of only 77%. This would allow a few selected units to maintain a "ready" manning capability, while other units would be manned at lower levels. This places reliance on the Individual Ready Reserve for filling in the event of mobilization. (Problems regarding the IRR are discussed in a separate DMC staff issue paper on the "Individual Reserves.")

Reserve Component units for which there is no mobilization requirement should be eliminated or converted to units for which there is a requirement. There have been units in the Army's Reserve Components structure that were excess to the requirements calculated under the governing scenarios. It was on that basis that the Army identified thousands of excess spaces in the USAR Selected Reserve in recent years and, quite properly under that logic,

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recommended reductions in paid drill strength. Subsequently, however, in reconfiguration of the Total Force structure to go with the expanded force of 16 active divisions plus the Selected Reserve in the event of mobilization, it now appears that that Army actually needs the higher Selected Reserve strength levels authorized, assuming that the unnecessary units can be converted to needed ones. This latter should be reviewed annually, in orderly planning and programming processes. For the present, however, it seems appropriate to continue the presently authorized levels for the Army Selected Reserve--the USAR as well as the Army National Guard. In the same vein, planned changes in the composition of the Army Reserve Components which would eliminate unnecessary units and convert the manpower spaces to units for which there is a deployment requirement are not only justified but should be expedited.

There remains a lack of readiness in the Army Reserve Components, which in no small part has been due to the inevitable result of low priority treatment with respect to equipment and other resources. Better equipment support is needed, with priority to the "round-out" units, if reliance is going to be placed on early deployment of these units in the event of mobilization. Even assuming that the equipment problems can eventually be resolved, there remains the critical factor of training time and its adverse effect on readiness. It can be concluded that it is unrealistic under present conditions to expect the Army Reserve Component units to reach and sustain the high levels of readiness, prior to mobilization, that are expected of active units.

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It follows that a new concept of employment of the Army Reserve Components may be required if this mobilization asset is to achieve its full potential. Under present conditions (limited training time, equipment problems, as well as geographic dispersion, etc.) it is extremely difficult for the combat elements of the Reserve Components to sustain training proficiency above the company level. A few selected units have occasionally attained battalion proficiency, although more are hoped for under the Affiliation Program. In 1974, 67% of ARNG companies attained company level training proficiency by the end of Annual Training, and it was anticipated that 80% would reach that level in 1975. However, a Guard/Reserve battalion with proficient companies should be able to achieve overall proficiency as a battalion fairly rapidly once assembled as an entity and given facilities as well as time for further training and exercising of all elements together as a team. Obviously much longer times are required to achieve proficiency, successively, at the brigade and division levels--and therein lies the problem.

Except for the separate brigades now in the Army's Affiliation Program, the Army Reserve Components could be considered as a source of "building blocks" upon mobilization, with the basic unit a battalion. This would alter the "unit integrity" concept which is especially strong and considered "inviolable" throughout the Army National Guard. However, authoritative senior Army general officers are aware that early deployment of any of the eight Army National Guard divisions would hardly be feasible from the standpoint of readiness. Yet the eight Guard divisions unquestionably are major assets in the Army's Total Force arsenal, after the active divisions. In light of the above, an effective utilization of the eight

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Guard divisions would be to keep them intact during peacetime, but include them (at the brigade and battalion level) for training purposes and support, in an expansion of the Army Affiliation Program, insofar as they can be accommodated by the active Army. Upon mobilization, the National Guard divisions would continue to function and could be kept intact, depending on their readiness and the situation, but if needed could be used to provide battalions ("building blocks") as required for early deployment. New battalions might be reconstituted to replace the detached units. In effect, the divisional structure under these circumstances would serve as a training division, at least in the early months of a conflict while and until it could be brought to the level of readiness for deployment as an entity.

In the DOD Total Force Study, a major effort was made to establish a program for improving the U.S. antitank capability. In the light of the Warsaw Pact's some 20,000* main battle tanks in peacetime operational service (12,400 of which are Soviet) in Central Europe, provision for destruction of large numbers of these tanks are imperative if defense of the NATO area is to be successful. The Total Force Study findings have resulted in a decision for the Army in FY77 to begin testing and developing doctrine and tactics for battalions (or other size units), designed around the Army's new anti-tank guided missiles which are far superior to any previous anti-tank weapon.

* "The Military Balance, 1974-75," The International Institute for Strategic Studies.

As pointed out in the Total Force Study, Reserve battalions which now have lowest priority for issue of modern equipment and for deployment to Europe should be prime candidates for conversion. The Army Reserve Components are well suited to take on the function, as it would be relatively easy for them to train, maintain the weapon system, achieve and maintain a high readiness posture and achieve a capability for rapid deployment. This potential mission for the Reserve Components is highly desirable and efforts should be made to expedite the programmed test.

Conclusions (with respect to the Army Reserve Components):

1. The size and manpower strength of the Army Reserve Components (the Army National Guard and the Selected Army Reserve) should be continued at current levels.
2. Planned changes in the composition of the Army Reserve Components which would eliminate unnecessary units and convert the manpower spaces to units for which there is a deployment requirement should be expedited.
3. It is unrealistic under present conditions to expect the Army Reserve Components to sustain levels of readiness, prior to mobilization, that are expected of active units.
4. The eight Army National Guard divisions should be kept intact during peacetime, but their brigades or battalions should, as can be accommodated, be included in an expansion of the Army's Affiliation Program.
5. Upon mobilization, the eight Army Guard Divisions can continue to function as divisions, but could be used as a source of trained units, providing battalions ("building blocks") as required for early deployment.

In effect, the divisional structure would function as a training division in the early months of a contingency.

6. A potential additional mission, highly suitable for the Army Reserve Components, would be the manning of anti-tank guided missile battalions. The testing and development of doctrine and tactics for such units, which the active Army will begin in FY77, should be expedited. If the tests are successful, major programs to activate such units in the Guard and Reserve should have high priority.

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PART II
NAVAL RESERVE

The size and composition of the Selected Naval Reserve has been a highly controversial subject in recent years. Currently, the Naval Reserve is completing the process of restructuring initiated in 1973. Further, the Navy's in-depth study of mobilization requirements in the Naval Reserve (which reportedly is near completion, but not yet available to the DMC) and OSD decisions on that study can be expected to have major impact on the size and composition of the Naval Reserve in the next few years.

As of June 30, 1975, the Selected Naval Reserve had an actual strength of 98,235. The Congressionally authorized average minimum strength for FY75 had been 117,000 but paid drill spaces were funded for 112,790. For FY76 the Department of Defense originally requested a reduction to 92,000 paid drill spaces for FY76 on the basis that that was all the Navy could produce hard requirements for.

The cuts principally involved elimination of nine of the 17 Seabee construction battalions, elimination of overage destroyers, coastal minesweepers and obsolescent air elements, and reduction in manpower for base support, operational staff groups and special and general support units. But the Congress, for its own reasons, nevertheless objected to the magnitude of such cuts. In particular, the Congress in the 1976 Defense Appropriations Authorization Act overruled the DOD proposal to eliminate nine of the 17 Seabee construction battalions. After Senate-House Conference action, the authorized minimum average strength for FY76 finally was placed at 106,000 in the Authorization Act (subject to subsequent appropriation actions). *

* For subsequent developments on the size of the Selected Naval Reserve, see Overview of the Reserve Components of the United States Armed Forces, Appendix 1.

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Meanwhile, the Navy is testing new concepts for manning Active Navy ships, using various Active/Reserve manning levels (comparing 80% Active/20% Reserve and 65/35 with 100% Active manning). The outcome of these tests will affect the future Active/Reserve mix which the Navy should use on some of its ships, where use of Reserves is practicable at all, and therefore will be a factor in determining the proper future size of the Naval Reserve.

Looking toward the future years, FY77 onward, it is difficult now for the DMC to propose any further changes in the Naval Reserve--given the Congressional action in FY76, the lack of access thus far to the new Naval Reserve study and OSD decisions on it, and the experiments in the Active/Reserve mix which will be taking place through FY77. Some of the considerations affecting future Naval Reserve manpower levels are described here.

There are serious manning problems in the Active Navy which bear on Reserve requirements. In the planning for the Active Navy for FY77, there is a conscious DCD/Navy decision, no doubt forced by fiscal constraints, to underman by some 15,000 billets under full wartime requirements. Even though the Navy asserts most ships deploy in "an essentially combat ready status," such shortages, combined with the strenuous operating tempo of the Navy in recent years, are bound to impact seriously on readiness and on the Navy's capability to meet surge requirements in the event of war.* Moreover, the shortfalls are not

*For further discussion, see PMC staff paper entitled, "U.S. Navy Total Force Overview and General Purpose Force Manpower Requirements Issues."

evenly distributed and the Navy has asserted that there are some serious skill mis-match problems with, for example, a 29,000 petty officer deficit in 45 underway operations during FY75.

Considering the manning problems of the Active Navy, it would appear now that the Navy has a more compelling need for augmentees to bring Active ships to full manning, assuming this is a practical system, than was apparent when, in January 1975, the Administration requested a reduction of the Selected Naval Reserve to 92,000 for the end of FY76, with the same level projected for FY77.* Also, it is questionable if certain exotic ratings (security, cryptographic and other specialist ratings) which were to be dropped from the Selected Reserve can be fulfilled from the Individual Ready Reserve (IRR). It seems only prudent that training billets in the Selected Reserve for such specialists be retained in order that expertise in these areas can be assured in the event of mobilization.

Finally, the Active Navy's force structure is planned to increase from 490 ships in FY76 to 509 by the end of FY77, with a 17,000 increase in the FY77 manning requirements over FY76. Further increases in the fleet are programmed in subsequent years as the Navy works toward an ultimate goal of 600 ships (not yet approved by the Administration or the Congress).

Such programmed and possible expansion of the Active Navy and its manpower requirements would seem to make it more important than ever to achieve the best cost effective Active/Reserve mix and to ensure that an adequate Naval Reserve is available for this purpose.

Accordingly, it would seem imprudent for the DMC at this time to recommend reductions in the Naval Reserves available to help man the fleet in the event of mobilization.

* Subsequent to the completion of this study, DOD significantly changed its position on this matter. See Appendix 1, dated March 1, 1976.

As to the composition and use of its Reserves, the Navy should continue to strive to structure Naval Reserve units keyed to reinforce specific Active Navy mission and force units, a difficult task at best in view of the changing size and composition of the Active Force. Reserve elements for which there are no longer mobilization requirements should be converted to elements for which there are requirements. A policy of long-range resignments should be undertaken and efforts made to avoid loss of trained personnel.

Innovative ideas which are practical and can effectively upgrade the Naval Reserve as a mobilization asset should be pursued while Reserve force structure realignments are undertaken. One such proposal which is expected to be tested in the near future would assign a new mission to the Naval Air Reserve, designed to supplement the protection of the seaways for merchant shipping.* The merchant ship would carry a pick-up kit or portable decking arrangement for helicopters configured for anti-submarine warfare (ASW) missions. The Naval Air Reserve would be assigned the manning function. The mission is well suited for implementation by the Naval Air Reserve and units of this type would constitute a valuable mobilization asset.

Meanwhile, the Navy has implemented or programmed several actions which are designed to increase its support of the Naval Reserve and further Total Force Policy in an effort to improve readiness and up-grade the Naval Reserve as a mobilization asset. For example, the expansion of carrier training of the two Reserve carrier air wings, and testing their capabilities to meet requirements of the carrier tactical air mission. Additionally, the previously mentioned tests of different Active/Reserve

* "A New Naval Reserve Mission," by Rear Admiral John B. Johnson, USNR-Ret. The Officer, RJA, April 1973, page 25.

manpower mixes on surface combatants will take place in FY76-77. The Reserve complement would join the Active crew during Reserve training periods and would be assigned to that same ship upon mobilization. If the tests reveal that the ships can be maintained in a ready material condition, and crews can be kept sufficiently trained so that upon augmentation the ships can quickly reach combat readiness, the concept will be significantly expanded among surface combatants which are not deployed in the forward areas.

However, there are additional opportunities for the Active Navy to effectively upgrade Reserve readiness through an expansion of the affiliation concept. It would appear that a major breakthrough could be effected by taking various Reserve units out of the training center classrooms in the 22 Readiness Commands and move them to appropriate naval ports to work and train on naval hardware under the tutelage of Active Force personnel. There exists a huge Active Fleet pool of expertise in all facets of management and maintenance in port areas like San Diego, Norfolk and Charleston, etc., which should be tapped for the mutual benefit of both Active and Reserve Forces.

Appropriate Reserve units could be assigned to Active operating ships while they are in port for Fleet service functions, maintenance

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and/or minor overhaul. In this way units,* such as those CRUs which do not have their own hardware, SRUs and IRUs, could be provided on the job training aboard ship, by assisting in overhaul, servicing and management activities, while the ship's crew would have increased opportunity in port for leave, school training, or other temporary duty assignments. The Reserve unit relationship to the Active Force crew would be similar to the Reserve/Active relationship under the Associate program in the Air Force Reserve whereby the Reserve unit operates and maintains Active Force aircraft. Also, like the Army's Affiliation Program, the Active unit personnel would be available to provide training support and advisory assistance. Perhaps, if not the ship's Active complement, an Active Force shore unit could be appropriately assigned responsibility for the supervision of training and inspection and evaluation of the Reserve units, as is the case with the Air Force Gaining Command's relationship with the gained Air Force Reserve Component unit.

While such a Naval Reserve program might, because of transportation limitations, of necessity be limited to areas readily accessible to the port areas, its implementation would not only upgrade training readiness in the Naval Reserve but would provide the Reservist with stimulating,

*The basic unit types in the structure of the Naval Reserve are:

- (1) Complete Capability Response Units (CRUs), which are self-contained units designed to provide complete capabilities upon recall. Selected Reservists fill all manpower requirements or provide significant portions of a composite crew for Naval Reserve Fleet ships or squadrons.
- (2) Ship or Squadron Reinforcement Units (SRUs), which are task-performing units containing a mix of skills needed to bring an active Navy operation platform to full complement. Each SRU is tailored to a specific ship class or aircraft squadron type.
- (3) Other Reinforcement Units (ORUs), which are similar to SRUs except that they are tailored for shore activities.
- (4) Individual Reinforcement Units (IRU), which upon mobilization provide individual augmentees to a large number of Navy activities.

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interesting, meaningful training which would have a positive impact on retention.

Further, such a program would aid the Active Force by alleviating Fleet manning problems of operational ships in port. It also would lessen the requirement for Reserve Training Centers and probably would permit the closing of several.

Conclusions (with res, ct to the Naval Reserve):

1. There is a need for the Navy to make better use of the Naval Reserve, particularly the surface elements.
2. Pending availability of the new Navy Study on Naval Reserve Requirements, the DMC should not recommend any changes in the manpower levels of the Selected Naval Reserve.
3. Continued restructuring, however, is appropriate as Naval Reserve units must be more closely keyed to reinforce specific Active Navy missions and force units.
4. Appropriate additional missions are available for assignment to the Naval Air Reserve.
5. Current actions and programs to further the Total Force Policy and increase integration of Active and Reserve elements should improve the Selected Naval Reserve as a mobilization asset. However, there appear to be opportunities for a significant expansion of the affiliation and association concepts whereby Reserve units would train aboard Active ships in port under programs which would be mutually beneficial to both Active and Reserve Forces.

PART III

AIR FORCE RESERVE COMPONENTS

Air Reserve Force units provide an equipped, ready, well-trained force to augment active duty forces. These components contribute to the Total Force in peacetime as well as providing mobilization forces. Their authorized strength for FY76 is 94,900 in the Air National Guard and 51,800 in the Air Force Reserve. The Air Force Reserve is programmed to increase to about 55,000 in FY77 and the Air National Guard will remain essentially level. The outstanding characteristic of the Air Force program is readiness. Units can deploy in a matter of days rather than going through a long period of equipping, build up and training. This is not without cost. Reserve units on the average cost roughly between 60%-75% of a comparable active duty unit to operate. The question that arises is not whether the reserve units are capable or needed, but rather whether we are getting the best value from this resource. The discussion following will address some areas where value might be enhanced.

The Associate Program

The associate program is presently found only with the Air Force Reserve and the Military Airlift Command. It has proved to be a successful program and has inherent economic and operational advantages. First, the Reserve unit is always trained on first line operational Air Force equipment and it receives precisely the same training as the active duty organization. Secondly, the Reserve unit

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has a smaller overhead structure and does not require funding for provision or maintenance of additional equipment. Finally, it is productive in both peacetime and when mobilized (witness the 1973 Israeli resupply mission in which reserve crews flew about 20% of the missions). There are, however, difficulties in administration of the program on both sides. For example, the active unit commander deals with his regular military personnel, civilians and reservists in carrying out his mission. He also has an additional training load thrust upon him. On the Reserve side, career progression becomes a problem and difficulties arise in management of the Reserve personnel within the active duty unit.

On balance, however, it would appear that a diligent search for additional associate missions would be productive. For example, could not reservists be used as flight instructors, maintenance or support personnel in the Undergraduate Pilot Training Program? It would be possible also to associate reservists directly with active duty tactical fighter or reconnaissance squadrons to provide a portion of the wartime surge capability that the present 1.25 crew ratio provides. TAC could thereby reduce its current heavy training requirement, and reduce peacetime manning during which the higher ratio is not necessary. Both of these associations would make optimum use of highly qualified separating active duty personnel and, in many cases, could continue them in precisely the same duty position they occupied at separation.

The Management Structure

The organization of Air Reserve Force units differs from that of the Active Force only to the degree needed to accommodate units

located at several bases and usually separated from their parent unit. The management structure of the Air National Guard is designed to comply with the dual federal-state role prescribed by statute. It is first a state force and when mobilized becomes a federally designated and recognized reserve component of the Air Force. The Air Force Reserve is a federal force with an unbroken peacetime, as well as wartime, chain of command to the Chief of Staff, USAF.

The Air National Guard in peacetime is under state control and is managed through its state headquarters. They assure that the ANG provides subordinate units capable of mobilization. During mobilization, the units come under federal control and the state headquarters are charged with security and management of facilities and equipment left behind and insure control of individuals not mobilized. They also must perform a reverse function upon demobilization. In short, they have a valid peacetime and wartime mission.

A recent USAF/ANG Study of Air National Guard State Headquarters (20 June 1975) revealed that few were actually manned to authorized strength or envisioned to be so manned. In addition, there was little standardization in organization or relationship of strengths to mission or workload, although common functions were identifiable. The study group drafted an overall state headquarters mission statement and functional statement for the common functions identified. It further recommended a standardized manning guide based upon accomplishment of necessary functions, adjusted for population to account for varying workloads. The exact manpower savings have not been determined, but could result in manpower savings approximating 15% if the study is

approved for implementation. The staff has reviewed the study and endorses early consideration of the findings and recommendations.

The Air Force Reserve is managed by the Chief, Air Force Reserve, with a small staff at Hq. USAF and a major Active Force headquarters at Robins AFB, Georgia. Under this headquarters are three Air Force Reserve Regions.

These organizations are charged with the day-to-day administration of Air Force Reserve units and personnel within their geographic areas of responsibility. Additionally, they serve many of the same functions as the ANG state headquarters during the mobilization and partial mobilization periods, including domestic emergency, disaster relief, and in periods of partial mobilization, as the management headquarters for remaining organizations. During full mobilization, the Reserve Regions are the designated Air Force agents for participation with the U.S. Army for the defense of the United States.

After considerable study of this structure, we conclude that there is little cogent reason for three Reserve Regions. The major operational commands of the Air Force successfully function with two subordinate headquarters and it is our opinion that the Air Force Reserve could do likewise, with concurrent manpower savings on the order of 25%-30% in this level of management.

Unit Support Overhead

The operational elements and direct support components of the Reserve Forces are comparable to the active force; that is a squadron has the same number of pilots as a like Active unit, the maintenance

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manpower requirements are computed on the same basis, etc. However, there is a difference caused by the geographical separation of the units. Each isolated unit has its own management structure and, in many cases, must provide for its own operating support. This is costly in terms of manpower, for while the deployment package for a Reserve unit is the same as for an Active unit, the support requirements frequently are much heavier. For example, an Active A-7 wing which is a host unit with minor tenant responsibilities has about 3,000 personnel. An Air National Guard unit in similar circumstances has 2,606 personnel, including 740 full-time technicians. Both deploy the same number of personnel, about 1,800. The difference in strength is caused by the additional requirement for personnel support by the Active unit somewhat offset by the heavier management and support requirements of the dispersed ANG wing.

Several initiatives have been taken to reduce overhead. The Air National Guard is studying consolidation of support functions at bases that have two squadrons. They estimate a total possible saving of about 1,200 spaces. The concept for use of the KC-135's now going into the Reserve Forces is to have them stand their refueling alert at existing SAC bases, thereby avoiding costly command and control and support requirements. In the air defense units, there is consideration of forming a single composite squadron of primary mission personnel to eliminate some of the management structure of the present functional organization. These initiatives indicate that savings can be effected.

The consolidation of support functions at Air Force Reserve facilities with more than one squadron should also be undertaken. Similar order of magnitude savings could be effected at the eight bases that fall in this category. Further, deployment requirements provide the base line

for military manning requirements in the Reserve Forces, just as in the Active Force and opportunities exist for civilianization and contracting for services, just as in the Active Force.

Active Duty Advisors

There are approximately 1,300 active duty advisors assigned by the gaining commands to the Reserve. They perform primarily a liaison function between the Reserve organization and its active duty counterpart. During transition to a new weapons system, they, along with the augmentation package provided by the Active Force, are invaluable in providing advice, assisting with problems and trouble-shooting. As the unit reaches its desired readiness status, however, the scope of their duties and requirement for assistance diminishes markedly. The staff recommends, therefore, that the requirement for advisors in every unit be reviewed, and that when a unit is declared operationally ready (C-3 or better) that no more than one advisor be assigned. This action would result in an immediate saving of approximately 50% with no, or minute, loss in effectiveness.

Conclusions (with respect to the Air Force Reserve Components):

1. The current and programmed manpower levels of the Air Reserve Components are adequate and should be sustained.
2. The Air Force Reserve Associate Program should be expanded to other missions.
3. Management headquarters in both the Air Force Reserve and the Air National Guard should be reduced.
4. Support functions at Reserve Force bases with more than one unit should be consolidated and the non-deployed elements of the operational organizations should be reviewed with a view toward civilianization.
5. The number of active duty advisors should be reduced.

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PART IVMARINE CORPS RESERVE

The Marine Corps Reserve is composed of two elements; the Selected Reserve (sometimes referred to as the Organized Reserve) and the Individual Reserve. A third component, the Fleet Marine Corps Reserve does not play a significant part in Marine Corps planning and is not treated here.

The Selected Reserve is made up of the 4th Marine Division (augmented) and the 4th Marine Air Wing. The division is organized in essentially the same manner as an Active division except that for peacetime control, it is augmented by the attachment of non-divisional ground elements of the Marine Reserve.* The air wing does not mirror an Active wing in that it does not have an all-weather attack capability or the same numbers or groups and squadrons found in an Active wing.

The concept of employment of the two components likewise differs. The 4th Division is planned to be employed as a division although it is recognized that some units might have to be used to augment Active Force shortfalls. The Marine Corps, however, is taking a new look at the structure of the division with several objectives in mind. First, they are evaluating the best structure for combat in the NATO area. Concurrently, they are considering orientation of the division toward the needs of one particular Active Marine organization, in this case, the Fleet Marine Force, Atlantic and may modify the division structure to fit their particular requirements. This could take the

* These are the non-divisional "Force Troops" which in the active forces would be a Fleet Marine Force (for example, heavy artillery and non-divisional tank units).

form of augmented armor units or perhaps an increase in TOW capability to counter the heavy Warsaw Pact armor strength. In any case, the 4th Marine Division is in a period of transition in terms of concept of employment and organization. Its major difficulty is in achieving desired manning levels. The table of organization calls for approximately 29,900 personnel; current manning is about 5,000 short. In addition, distribution of grades is not in consonance with requirements, major shortfalls being in the lower three enlisted grades. Further, recruiting for the combat arms is more difficult than for, say the motor transport units, so the cumulative effect is that shortages are concentrated in the lower grade infantry area.

The air wing is essentially up to strength (at 10,900) and capable of meeting its commitments. There is some mal-distribution in enlisted grades, but essentially this results in a more qualified organization. The concept of employment in this case is to provide ready squadrons upon mobilization which can be used as needed in addition to maintaining a viable if somewhat smaller air wing. The only concern the staff has is that there are not enough spaces available to accommodate all the highly skilled aircrew and specialists who complete active duty commitments. We recommend, therefore, that the Marine Corps consider an associate program for those personnel, assigning them directly to active duty organizations for continuation training. This could materially increase their surge capability and provide a replacement pool in this critical area.

The Individual Reserves, and specifically the Individual Ready Reserve (IRR), are said by Marine Corps Headquarters to be sufficient to meet present Marine Corps Requirements. Their IRR projections indicate

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no shortfall in the near future but again there is an excess of middle and upper grade enlisted personnel and shortages of the lower grades where the majority are needed. However, DMC staff analyses show that the IRR pools of the Services are dwindling at a critical rate, and the future IRR projections of the Marine Corps, like those of the Army, need further examination.

Non Prior Service Accessions

The only issue the staff takes with respect to the Marine Corps is that, if it is to achieve and maintain desired levels, quality and grade distribution in the Reserve, it needs help. There are two aspects to this. The first has to do with recruiting. The Congress has fiscally constrained recruiting to a level of 8,000, below the Marine Reserve requirements. The Marine Corps has been able to alleviate this somewhat (2,000 spaces) by recruiting personnel and delaying entry into initial active duty training until the next fiscal year. Key to this has been the incentive program in which high school seniors are recruited and in effect payed a retainer until they enter training. The second aspect of the problem has to do with how the strength is computed, and solution to this lies within the Department of Defense. The Marine Corps wants to man Selected Reserve units at 90% of authorized strength. In doing this they do not count those in initial active duty training or the backlog of trainees mentioned above. Their reasoning is simple; these personnel would not be readily available upon mobilization. By counting them they would be forced to stop recruiting at about the 85% level and would be further delayed in attaining desired manning. Added to this is the fund limitations placed upon recruiting programs which further aggravates

the Marine Corps Reserve problem. Non prior service reservists are recruited through the regular Marine recruiting program. Any reduction in level of effort in recruiting will therefore first impact on the Reserve in competition with the regulars for acquisitions.

In consideration of the serious impact of these factors the staff would support any action that could temporarily alleviate the fiscal constraints presently inhibiting reserve recruiting and further recommends that the Department of Defense accede to the Marine Corps in the matter of accounting for reserve strength levels as applies to new acquisitions. In the longer term, we endorse a continuing adequately funded recruiting level to permit maintenance of a ready, quality Marine Reserve structure.

CONCLUSIONS (with respect to the Marine Corps Reserve):

1. The Individual Reserve pool of the Marine Corps Reserve is reported adequate for the present but the trend is sharply downward and future projections should be reviewed.
2. The Selected Reserve, particularly the 4th Marine Division, is experiencing significant manpower shortages.
3. A key to overcoming shortages in the Selected Reserve is in recruiting more Non Prior Service personnel.
4. Maintenance of incentive programs and adequate recruiting funding would materially assist the Marine Corps Reserve in reaching its manpower objectives.

Added
March 1, 1976

APPENDIX - 1

In the President's budget for FY 1977 which was forwarded to the Congress in January 1976, the Administration proposed a drastic reduction of the Selected Naval Reserve to 52,000 from the 102,000 drill spaces the Congress appropriated for FY 1976. As the major part of this cut, the DoD plans to transfer some 40,000 shore establishment billets to the IRR, which would save drill pay but which would seem to be of questionable practicability. It runs counter to the testimony given to the Congress in 1975 and to the information presented in the major new study on the Naval Reserve completed by the Navy in late 1975.

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WORKING PAPER -
NOT AN OFFICIAL POSITION OF THE DMC

FULL-TIME PERSONNEL SUPPORT FOR THE RESERVE COMPONENTS

A STAFF ISSUE PAPER
for the
DEFENSE MANPOWER COMMISSION

by
Hugh M. Walton
Requirements Group
Defense Manpower Commission

November 1975

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EXECUTIVE SUMMARY

- SUBJECT:** Full-Time Personnel Support for the Reserve Components
- ISSUES:**
1. Levels of Active force personnel in support of the respective Reserve Components.
 2. Replacement of Army and Air Force Reserve Components technicians with active duty Guardsmen/Reservists.
- BACKGROUND:** The DMC staff was directed to prepare an issue paper to focus on Active military and civilian personnel in support of the Reserve Components.
- ANALYSIS:**
1. Time for mission essential training is in short supply for the Reserve Components (30 days per year minus distractions from mission essential training for inspections, recruiting, etc.). Thus, there is a requirement for superior training management at all levels of command to obtain desired readiness levels.

Active force personnel can supply needed support to upgrade training readiness.

Principal problem has been in the Army Reserve Components. Army is aware of problem and a pilot program is due to commence in February 1976. Augmentation of 200 Active force personnel will act as training managers, training assistants and evaluators whose efforts will be directed toward upgrading inactive duty training.

Active Force support for the Naval Reserve is below the optimum level, while in the Air Force Reserve Components and the Marine Reserve there is no need for an increase.
 2. Army and Air Force Reserve Component technicians give day-to-day continuity to the operation of Guard/Reserve units. The programs are designed solely to provide a nucleus of full-time personnel to increase the mobilization readiness of units.

The technician occupies "dual status" (a Civil Service civilian and a military member of the unit) for, in effect, the same job. The compensation of the technician (civilian plus military) exceeds what an active duty military man would receive for the same job.
- CONCLUSIONS:**
1. Some increase in Active personnel assigned to the Army Reserve Components and the Naval Reserve can provide the means to improve training management and upgrade readiness. These increases appear necessary only in units which are not affiliated with Active force units.

In the case of the Air Force Reserve Components and the Marine Reserve, there appears to be no need to augment Active support.

2. Replacement of Army and Air Force Reserve Component technicians with Guardsmen/Reservists on extended active duty would accomplish the objectives of the present technician programs at significant savings which are estimated to exceed \$270 million per year in manpower costs.

Proposed change must be effected through a long-range plan which would not impact on readiness or impose undue hardship on the technicians now in the programs.

RECOMMENDATION:

The DMC accept this paper and its conclusions as a basis for pertinent sections of the final report.

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FULL-TIME PERSONNEL SUPPORT FOR THE RESERVE COMPONENTS

PURPOSE: The purposes of this paper are to discuss the current system of full-time support personnel for the Reserve Components and to suggest changes that could increase readiness of units and long-range changes that could reduce costs of the present personnel support programs as they pertain to technicians.

BACKGROUND: The DMC staff was directed to prepare an issue paper to focus on Active military and civilian personnel in support of the Reserve Components. Additionally, the full-time support accorded the Army and Air Force Reserve Components under the technician programs is also examined.

1. ACTIVE FORCE SUPPORT FOR THE RESERVE COMPONENTS

It is unrealistic to expect all Reserve Component units to reach and sustain the levels of readiness, prior to mobilization, that are expected of Active units. The reason for this, assuming that continuing equipment problems could be resolved, is the critical factor of training time. This inherent problem impacts on training readiness to varying degrees in each of the Reserve Components. The 48 four-hour drill periods per year of inactive duty training, plus the two-week period of annual active duty, provide 38 days per year in which to accomplish training.

The time constraint on Army Reserve Component training is a case in point. Of the 38 days a year a unit may train, only 14 days (annual active duty training) are available for concentrated continuous training. The remaining 24 days are broken down into 4-hour unit training assemblies,

so that units meet on two separate days twice a month or by combining into multiple unit training assemblies (MUTAs) on one weekend once a month.

During these fragmented unit training assemblies, preparations for the exercises and tests of the summer active duty phase must be made and commanders must be allowed adequate time to prepare for mission essential training. Distractions from unit mission training, further, typically include two training assemblies for Annual General Inspection, two assemblies for recruiting, one assembly for domestic disturbance training, one assembly for maintenance, one assembly for administration, time needed for security, MOS training, travel and ceremonies.

It follows that time for mission essential training is in short supply and ways must be found to maximize it. This implies a requirement on the Guard/Reserve commander for superior training management. Major improvement in this area requires thorough education/training in the details of sound training management at all levels of command. This can most readily be accomplished by assigning full-time management specialists from the Active force at all levels of command -- perhaps one to four such personnel, depending on the size of command.

Of the Services, the Air Force has been the most successful in attaining a high condition of readiness in its Reserve Component units (Air National Guard and Air Force Reserve). Integration of the Active and Reserve forces has been achieved through the "gaining command concept" under which Reserve units are preassigned in peacetime to the organizations with which they will serve upon mobilization. Among other things the "gaining commands" provide assigned units with advisory assistance and are responsible for the supervision of training. The system is

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functioning effectively as reflected in the high readiness posture of Air Force Reserve Component units. Thus, there appears to be no need to augment Active force support of the Air National Guard or Air Force Reserve at this time.

On the other hand, the situation in the Army Reserve Components is different. There has been a major effort during the last few years to upgrade Guard/Reserve readiness. However, current readiness conditions of most units do not meet the desired levels which would permit their early deployment.

The Army is aware of its need to strengthen the management and evaluation of Army Reserve Component training, especially for Inactive Duty Training (IDT). As a result, a pilot program is due to commence in February 1976, involving some 200 Active Force and 50 civilian personnel. These individuals will act as training managers, training assistants and training evaluators whose efforts will be directed toward up-grading IDT as a means of improving training readiness. If successful, it is anticipated that the concept will be expanded.

Currently, the Army has approximately 4,900 Active force personnel who provide full-time support to Selected Reserve units of the Army Guard and USAR. Most of these are located at the CONUS field armies/Army Readiness Region level, while others are augmentees for major USAR commands or advisors in Army Guard units. It is anticipated that a relatively small augmentation of these Active force personnel would significantly ameliorate the training problem of the Army Reserve Components.

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It would appear, however, that units which have a highly successful Affiliation Program have little requirement for Active force augmentation personnel to effect improvements in training management. Under the Affiliation Program, priority assistance and support are provided the Reserve Component unit by the Active unit with which it is affiliated. The sponsoring Active force unit provides advice and assistance in all areas impacting on readiness, including training management.

The results of the test program to commence next February will not be available before the DMC completes its final report. Meanwhile, the DMC should endorse the initiative of the Army, with the provision that wherever possible sponsoring Active force units under the Affiliation Program provide the necessary training management expertise and assistance to their affiliated Reserve units. Thus, assuming the pilot program tests confirm the desired outcome, the number of Active force personnel required in any expansion of the program could be considerably reduced.

Beyond the Army's present program, it might make sense to make use of some Active Army personnel as full-time assigned members of some Selected Reserve units in place of Federal technicians. (The technicians will be fully discussed later in the paper.) A main example would be in training jobs, although there might be others. Rotational assignment of a full-time Active Army Training NCO in the S-3 section of each Selected Reserve battalion would offer many advantages in increased effectiveness--especially important since the problem of meaningful training is central to the readiness of Army Selected Reserve units. This assumes that the

Active Army NCO would be carefully selected and have appropriate prior training and comparable experience in an Active Army unit. This should be tried, on a test basis, especially if the Federal technician programs continue as they are and the major change proposed later in this paper is not adopted.

In the Navy, the reorganization of 1973 was designed to improve the Naval Reserve as a mobilization asset. Since that time several actions have been taken or programmed to further Total Force Policy. For example, the tests involving various Active/Reserve mix manning levels for surface combatants (comparing 80% Active/20% Reserve and 65/35 with 100% Active manning and including a test of a 35% Active/65% Reserve mix) reflect efforts to advance Active/Reserve integration. Likewise, the provision for the two Reserve carrier air wings in the Naval Air Reserve to spend their active duty training on board a carrier promotes Total Force policy.

However, these programs involve only a small number of the 106,000 Selected Naval Reserve force programmed for FY76. An expansion of Active Force support of Naval Reserve units and Active/Reserve integration must involve the major elements of the entire Selected Reserve, if Reserve readiness is to be significantly up-graded.

As the Department of Defense has not released the nearly completed Navy's in-depth study of mobilization requirements in the Naval Reserve, it would seem inappropriate to suggest at this time specific requirements for any augmentation of Active Navy personnel in direct support of the Naval Reserve programs. Nevertheless, there does appear to be a requirement for the Active Navy to significantly increase its support

of the Naval Reserve through maximum affiliation of Reserve elements with Active force units as a means of up-grading Reserve readiness. (See the DMC staff paper entitled "Selected Reserve Issues" for the development of this issue.)

In the case of the Marine Corps, the problem of full-time support is not an issue. There are some 4,000 Active force Marines assigned to the Marine Reserve--approximately 1,500 to the ground element and 2,500 in Aviation units. These Active force personnel provide a full-time cadre for the 4th Marine Division and its 4th Marine Air Wing and there would be no advantage to increase the number of Active Force personnel assigned to the Marine Reserve. However, there may well be merit in a proposed "Affiliation Program" of Marine Reserve units with the two Active divisions and their air wings. (See paper on Selected Reserve issues.)

Conclusions

Full-time support for the Reserve Components by Active force personnel, designed to help raise Guard/Reserve readiness to required levels, is believed to be at optimum or at least satisfactory levels in the Air Force and Marines. However, some increase in Active personnel assigned to the Army Reserve Components and the Naval Reserve might provide those Reserve Components with the means to improve their training management and up-grade unit readiness. These increases in Active force personnel appear to be necessary only in units which are not affiliated with Active force units.

2. FULL-TIME SUPPORT UNDER THE TECHNICIAN PROGRAMS

The basic programs for full-time personnel support to provide day-to-day continuity in the operation of Reserve Component units vary widely. The Army and Air Force Reserve Components use civilian

technicians who are Federal Civil Service employees. The comparable support for the Naval Reserve is provided by personnel in the TAR program (Training and Administration of the Reserve). TAR's are Naval Reserve personnel on active duty who are utilized to organize, administer, recruit, instruct and train the Reserve.

On the other hand, the Marine Corps Reserve uses some 4,000 Active Force personnel, supplemented by a small cadre of active duty Reservists, to organize, administer, recruit, instruct and train the Marine Corps Reserve. In effect, the Active Force personnel serve as a permanent active duty cadre for the 4th Marine Division and its Air Wing, which if mobilized would be brought up to full strength by Marine Reservists. In the Coast Guard Reserve, the full-time personnel support is provided by less than 100 Reserve Program Administrators, who are Reserve officers on extended active duty.

Despite advantages and disadvantages in each of the programs, it can be said that each has proved successful in providing full-time personnel support in the day-to-day operations of units of the respective Reserve Components. The issue to be treated here pertains only to the technician programs and long-range changes designed to reduce costs.

The programmed personnel strength of Army and Air Force Reserve Component technicians for FY76 and the approximate percentage of technicians in each Reserve Component follow.

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	<u>Technician Strength</u>	<u>Approximate Percentage of Technicians</u>
ARNG	29,203	7%
USAR	9,698	4%
ANG	22,273	23%
USAFR	7,217	14%*

The Army and Air National Guard technicians, the Air Force Reserve technician and the Army Reserve technician differ slightly in their legal rights and privileges. It suffices to say that they are Civil Service employees with the same rights, privileges and benefits as other Federal employees with a few notable exceptions. They are required to be a member of the Reserve Component unit as a condition of civilian employment**and must be promptly separated from technician employment upon loss of membership in their Guard or Reserve unit.

The sole function of the technician programs is to provide a nucleus for each Army and Air Force Selected Reserve unit which will increase the mobilization readiness of that unit. The military character of the technician programs is paramount, for the ultimate goal of each Reserve Component is to provide ready military units available for use in the event of mobilization.

The requirement that the technician also be a member of the Guard or Reserve unit is for the purpose of providing full-time command,

* If the 4,700 civilian employees of the Air Force Reserve, who are secretarial, maintenance and other support personnel and who differ from the Air Technician only in that they are not military members of the Selected Reserve, are counted with the Air Technicians, the percentage would be roughly equal to that of the ANG.

** There is a small percentage of technicians who are employed as secretarial and clerical personnel who are not required to be members of the Guard/Reserve unit.

control, administrative, maintenance and/or training support to the unit, with continuation after mobilization.

The technician is compensated, as are other Guardsmen and Reservists, for both their civilian and military service. However, the technician occupies "dual status" (civilian and military) for the same job. An alternative way of accomplishing many of the same objectives as in the technician program would be to replace the technician with full-time active duty Guard/Reserve personnel. This would eliminate dual pay and dual retirement for what in essence is the same job.

Although dollar and strength by grade figures have not been computed for each of the technician programs, we estimate that large net savings could be achieved per year if technicians were replaced by active duty Guardsmen/Reservists.* For example, the Air Force Reserve technician program was \$103,200,000 in civilian pay for FY75. In addition, the cost of military pay for the same Air Force Reserve technicians totaled \$10.9 million. Their civilian and military pay thus totaled \$114 million. The comparable direct pay costs of a comparable active duty force are estimated at \$78 million. It follows that some \$36 million in direct pay costs would have been saved had the technician force consisted of Air National Guardsmen on active duty.

The Air National Guard technicians outnumber the Air Force Reserve technicians by about three to one. Thus, it can be assumed that comparable savings in direct pay for the ANG would be in the vicinity of \$100,000,000. The number of technicians in the Army Reserve Components

* The use of Guardsmen/Reservists would preserve the citizen-soldier composition of the Guard and Reserve forces.

outnumber those in the Air Force Reserve Components, but on the conservative assumption that savings from employing active duty Guardsmen/Reservists in place of technicians would no more than equal those in the Air Force Reserve Components, total savings in direct pay would approximate a figure in excess of \$270,000,000 per year. Moreover, the technician's dual retirement is generally in excess of the active duty retiree. However, no attempt has been made to project future savings in retirement that would accrue should the technician be replaced by an active duty Reservist. More complete cost comparisons, including the support manpower requirements generated by Active military personnel, are quite complex and have not been computed in this instance. However, the figures already cited are structure of the order of magnitude of the potential savings.

Another aspect of the technician system is that over half of the Guard and Reserve technicians currently are represented, like many other Civil Service employees, by national labor unions. In this situation there is an inherent potential for undue union influence in the strictly military functions of the technicians, resulting in a dilution of military command authority and adversely affecting the responsiveness and discipline of Guard and Reserve units.

Relative to all the foregoing is the basic fact that most of the technician positions in the Reserve Components are hardly bona fide civilian type positions. They simply have reflected an effort to find a formula for full-time manning of certain essentially military positions. The alternative of creating a special category of full-time Guardsmen and Reservists on active duty would involve some minor problems due to their special status compared to other active duty personnel. Nonethe-

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less, the proposed change appears far preferable and most cost-effective than continuation indefinitely of the present arrangement.

The elimination of the technician systems must be approached with extreme caution. For any disruptive influence could have a serious negative impact on readiness. Moreover, the National Guard technician program is established by law and any proposed radical change could be expected to encounter political resistance. However, the proposed replacement of the technicians by active duty Guardsmen/Reservists could be implemented under a gradual, long-range program, which would provide the technician the opportunity to convert to an active duty status in his unit, or if he opted to continue in a civilian capacity a fair and equitable time to phase out of the program. Perhaps all those who had been in the program over 10 years would be allowed to continue until they were eliminated by attrition. In any event, an equitable, long-range solution of the problem could be worked out.

Conclusions: The replacement of the technicians in the Army and Air Force Reserve Components with Guardsmen/Reservists serving on extended active duty would accomplish the objectives of the present technician programs at significant savings which are estimated to exceed \$270,000,000 per year in manpower costs.

The change should be adopted and implemented through a long-range plan which would not degrade readiness or impose undue hardship on the technician now in the program. (Note: Refer also to the Conclusions under Part 1, above.)

3. RECOMMENDATION

It is recommended that the Defense Manpower Commission accept the analysis and conclusions of this paper as a basis for preparation of pertinent sections of the DMC Final Report.

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INDIVIDUAL RESERVES

A Staff Issue Paper for
the Defense Manpower Commission

A multifunctional paper by
John D. Sitterson, Jr. and William A. Lindsay, Requirements Group,
with portions by
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Defense Manpower Commission Staff

October 1975

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EXECUTIVE SUMMARY

ISSUE: Individual Reserves

BACKGROUND: The Commission has adopted a "Total Force" approach in its analyses that requires consideration of all elements of Reserve manpower as part of the "overall manpower requirements of the Department of Defense."

The Defense Department has taken new initiatives toward improved mobilization manpower planning, including use of the individual Reserve systems (Individual Ready Reserve, Standby Reserve, and Retired Reserve). As a result of the 1975 OSD study on "The Guard and Reserve in the Total Force," DOD is proposing legislation for a total (active and reserve) obligation through age 28, averaging about 9½ years compared to the current six.

PROBLEM: If it were necessary to mobilize, several critical problems would have to be overcome:
(1) Planning for use of individual reservists has been inadequate and must be improved even beyond recent DOD initiatives. (2) The pools of IRR and Standby Reservists are declining rapidly. (3) Regardless of the total strength of the pool, some individual reservists could not be effectively used in wartime service. (DOD estimates using 70% of the IRR, 50% of the Standby Reservists and 10% of Nondisability Retired and Fleet Reserve personnel.)

In all, there are projected to be critical shortages of manpower before the draft pipeline flows, especially in Army combat arms enlisted men. However, the requirement itself was calculated on the basis of 100% fill of all units, which is questionable. Further (see Appendix A), the DMC staff believes DOD has overestimated the future size of the IRR/Standby pool; and the DOD remedy, extending the total military obligation for new enlistees to age 28, will not solve the problem adequately.

ALTERNATIVES: Among possible remedies for the deficiencies in the manpower mobilization system are the following:

1. DOD legislative proposal to extend the IRR obligation and stop transferring IRRs to Standby.
2. Reassess the requirements for individual reservists to fill Army units to 100% wartime strength.
3. Improve management of the individual reserve system, including training requirements, to increase effectiveness and the wartime utilization rates.
4. Fill more units in peacetime.

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EXECUTIVE SUMMARY (cont'd)

5. Consider use of some unit replacements rather than using all individuals as wartime replacements.
6. Women, as well as men, should incur reserve obligations after active service and be added to the pool of mobilization personnel.
7. Consider cross-utilization of military personnel during the emergency period. (Other Services have excess individual reservists over their requirements, and some could help the Army.)
8. Increase the size of the IRR/Standby pool by offering incentives for voluntary extension and reducing the current high level of prior-service enlistments in the Selected Reserve.
9. A return to two-year combat arms enlistments in the Army and Marine Corps would help alleviate combat arms shortages in IRR.
10. Institute a draft to fill the IRR. (Discussed but seen as politically infeasible.)
11. Accept the risk of some IRR shortfall, as an alternative to a draft.

CONCLUSIONS &
RECOMMENDATION:

The DOD proposed legislative change should be deferred pending a review of projected IRR/Standby strength levels and requirements for each Service. Then consider it and also Alternatives 2 - 9 above (in some combination) as remedies for the recognized inadequacies of the current manpower mobilization system.

Individual Reserves

PURPOSE

The purpose of this paper is to address the issues of the requirements for, and the management, reliability and utilization of, individual reserves in the event of actual mobilization. This paper will describe pertinent aspects of military manpower requirements in a full mobilization situation; analyze the capability of the current individual reserve system to effectively meet those requirements; and, with respect to the individual reserve system, consider courses of action to remedy certain deficiencies that are identified. This paper treats primarily the Individual Ready Reserve (IRR), with consideration also to the Standby Reserves and Retired Reserve; however, the paper also goes on to consider aspects of the Selected Reserve and the Active Forces, as related parts of Total Force manpower resources (as explained further in the paper).

NOTE: Functional DMC staff areas involved in this paper are Requirements, Utilization, Management and Recruitment. Requirements Team has had the lead and the overall responsibility for the paper, in coordination with the other teams. The other named teams, besides coordinating and consulting regarding the entire paper, have been the primary contributors of specific sections, which are identified.

BACKGROUNDLegislative History and Previous DMC Actions

Section 702 of P.L. 93-155 specified that "It shall be the duty of the Commission to conduct a comprehensive study and investigation of the overall manpower requirements of the Department of Defense on both a short-term and long-term basis with a view to determining what the manpower requirements are currently and will likely be over the next ten years, and how manpower can be more effectively utilized."

The Commission has adopted a "Total Force" approach in its analyses concerning Defense manpower that requires the consideration of all elements of Reserve manpower as part of the "overall manpower requirements of the Department of Defense."

The DMC staff paper on "Framework of Manpower Requirement Analysis," approved by the Commission on March 14, 1975, pointed out that the mobilization situation therein (Situation 3) "is limited to initial mobilization of the 'Total Force,' and we do not treat casualty losses and replacement requirements." Subsequently, however, in its action on April 18, 1975 on the Requirements Background and Issues Paper, the DMC decided that the Individual Ready Reserve (requirements for, and management and utilization of) should be addressed.

OSD Total Force Study and Implementing Legislative Proposals

Department of Defense has already taken new initiatives in addressing the need for improved mobilization planning with respect to the use of the Reserve Components, including the several individual reserve systems. Particularly relevant is the major classified study on The Guard and

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Reserve in the Total Force, OSD, June 1975, SECRET (hereafter referred to as the "Total Force Study"). That study states on unclassified pages that by FY80 or earlier, given the declining size of the Individual Ready Reserve, there will be a serious shortfall in the numbers of individual reservists available to meet mobilization requirements, particularly in the Army combat arms. (The requirements were calculated to fill all Active & Reserve units to 100% wartime manning and provide initial casualty replacements.)

As a result of that study, the Secretary of Defense directed the DOD General Counsel to prepare proposed legislation providing for people entering military service to have a Ready Reserve obligation as a member of a Selected Reserve unit or as a member of the IRR through age 28 compared to the present six-year total obligation, active and reserve combined, and eliminating the present requirement that after five years reservists be transferred to the Standby Reserve upon request. Thus DOD already has been actively working on the subject addressed in this DMC staff paper, and this paper uses the DOD Total Force Study as a basic reference. However, this DMC paper goes beyond the DOD Total Force Study, reexamining the problem and the approaches to deal with the problem.

DISCUSSION

General Premise

Total Force military manpower available for mobilization ought to be programmed to provide and sustain the levels of wartime strength requirements envisioned by the most demanding scenario in approved defense planning guidance (assuming for the purposes of this paper that that guidance is accepted). It is reasonable to assume that if this

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most demanding requirement can be met, any lesser requirement will also be, at least in terms of total numbers. Even assuming that an effective standby Selective Service draft system is in being and promptly activated, the new draftees will not start flowing out of the training centers in quantity for 4-5 months after M-Day or longer (depending first on how fast the draft system sets into operation and how effectively it functions-- and on the amount of training time required for various skills).

Therefore, the total requirement for previously trained Total Force manpower available for prompt mobilization has to include coverage of the gap until the trained draftees become available. Since the Total Force requirement exceeds the personnel level that the United States will maintain on active duty in peacetime, it is necessary to determine the appropriate mix of active and reserve forces that should comprise the Total Force. Further, it has not been thought either feasible or necessary to have all needed reservists in paid drill status. For the balance, therefore, the Department of Defense is relying heavily on individual reservists who are supposedly available for mobilization but mostly do not have to be paid unless mobilized.

Problem

The problem to be addressed includes the following parts:

1. What is the total initial mobilization requirement for wartime manpower?
2. What is the appropriate mix of active and reserve manpower that is cost effective and yet adequate for rapid mobilization?
3. How well does the present system of providing manpower for mobilization meet these criteria and what needs to be done to remedy deficiencies, with emphasis primarily on the individual Reserve Components?

4. What should be the DMC position with respect to the approaches being pursued by the Department of Defense?

The Current System

The current system for providing mobilization manpower is complex and includes a large number of personnel, but it was not entirely designed to meet requirements and is not necessarily responsive to national defense needs. A signal factor is that the IRR has been declining, following and in relation to the lower Active Force levels of preceding years, and is projected to decline further for the next several years. Table 1, below, shows the categories of available manpower and the numbers for each Service in FY 75. Table 2 shows comparable DOD projections (in the OSD Total Force Study) for FY80, which is selected for examination as a critical year. (The DMC staff questions the DOD future projections of the individual reserves, as will be discussed further below.) A brief discussion of each category follows below Table 2.

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TABLE 1

Military Manpower Available for Mobilization, 1975

(000)

	<u>Total</u>	<u>Army</u>	<u>Navy</u>	<u>Marine Corps</u>	<u>Air Force</u>
Active*	2,129.0	785.0	536.1	196.4	611.5
Ready Reserve**					
- Selected Reserve	896.1	619.7	98.2	32.3	145.9
- Individual Ready Reserve	631.3	363.3	121.9	58.3	87.9
Standby Reserve**	412.2	282.6	50.4	40.6	38.6
Retired Reserve***	820.2	363.4	194.3	19.6	242.9

* Programmed FY 1975

** Actual, as of June 30, 1975

*** Includes Nondisability Retired and Fleet Reserves, as of March 31, 1975.

TABLE 2

FY80 Military Manpower Available for Mobilization

(000)

	<u>Total</u>	<u>Army</u>	<u>Navy</u>	<u>Marine Corps</u>	<u>Air Force</u>
Active	2,124	793	543	198	590
Ready Reserve					
-Selected Reserve	897	612	92	41	152
-Individual Reserve	526	288	110	64	64
Standby Reserve	311	172	49	53	37
Retired Reserve*	986	310	273	47	356

* Includes Non-disability Retired and Fleet Reserve

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- Active - Military personnel already on active duty before mobilization.

- Ready Reserve - Consists of two categories:

- Selected Reserve consists principally of personnel who are in Guard and Reserve units and attend drills (typically 48 a year, less in some categories) and two weeks summer camp, for which they are paid. There also is a small number of individual Selected Reservists designated as individual mobilization augmentees. The Selected Reserve includes the paid drill elements of the Army and Air National Guard, the Army Reserve, the Naval Reserve, the Air Force Reserve, the Marine Corps Reserve, and the Coast Guard Reserve.

- Individual Ready Reserve consists of personnel who have served on active duty and are now serving the residual part of their six year total obligation but have not chosen to affiliate with a unit. Some do attend drills voluntarily for which they are not paid but may earn retirement points. The Army has been calling up about 10,000 IRR personnel (most of them involuntarily) to attend summer camp with Selected Reserve units (ARNG and USAR) each year, for which they are paid. All Ready Reservists are subject to mobilization under Congressional or Presidential declaration of national emergency. The projected drop in the IRR from 1975 to the FY80 levels, particularly in the Army, should be noted as a main point for subsequent discussion.

- Standby Reserve - Personnel who have completed a satisfactory five years of active or Ready Reserve service may, under present law, transfer to the Standby Reserve for the sixth

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year of their obligation; and in practice these transfers have been automatic on request. These reservists are not required to drill and are not paid; but, again, some drill voluntarily for retirement points. Standby Reservists may be called up only with a Congressional declaration of war or national emergency and they must be declared available by the Director of Selective Service (so processing of Standby Reservists must be accomplished in addition to the drafting of new men by the Selective Service system).

- e Retired Reserve - Personnel on retired status are subject to recall under different mobilization conditions, depending upon the Service from which they are retired. As a minimum, all are subject to recall by a Congressional declaration, which is what is assumed in this paper. The numbers shown in Tables 1 and 2 are those shown on the OSD Actuary Reports as in the Nondisability Retired and Fleet Reserve categories. These appear to be those most likely to be available and useful considering health, age, and years since active service. Even so, the DOD study recognized, of course, that the "Retired Reserve" has many people in it who may not, in fact, be available or useful for mobilization purposes. On the other hand, good use could be made of some members of the Retired Personnel (DOD estimates about 10% of the Nondisability Retired and Fleet Reserve categories) who could be recalled for active duty in the event of mobilization.

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Functioning of the System under Actual Mobilization

The guidance provided by the Secretary of Defense (based on national security policies) directs the Military Services to base their force planning on the assumption of a major war requiring full mobilization. Full mobilization is defined by DOD directives as:

"Expansion of the active armed forces resulting from action by Congress and the President to mobilize all units in the existing approved force structure and all individual reservists and the material resources needed for these units."

Upon such mobilization, all Services would activate their reserve units, fill units (both active and reserve) to wartime manning levels and begin the organization of manpower pools to replace losses. (The OSD Total Force Study assumed that all units (both active and reserve) would be 100% filled immediately, with no differentiation in priorities, but this will be questioned later in this study.) The draft would be reactivated, but, as previously noted, about 4-5 months or more would pass before the first trained draftees would be available for deployment in an overseas theater. During that critical period, therefore, especially considering the possibility of large-scale, intensive combat between ground forces, an effective reserve system would be needed to provide the further military manpower to meet the requirement. The Defense Department plans to use the existing individual reserve systems, especially the IRR. This is most important in the case of the Army, which currently mans both active and reserve units at less than 100% of wartime strength (and even has totally unmanned units in the approved force program) and will most probably suffer the highest casualty levels.

If there is sufficient strategic warning before the outbreak of major hostilities and if the United States acts on that warning by mobilizing in time--i.e., to the extent that M-Day precedes D-Day--the

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the crucial gap that needs to be filled by previously trained individual reservists is correspondingly reduced. However, if D-Day follows M-Day very closely, within a time below the 4-5 months required for the draftee pipeline, then there will be a crucial gap, as one key feature of the most demanding scenario for manpower mobilization, previously alluded to.

If it were necessary to mobilize the reserve manpower (Tables 1,2) to meet mobilization requirements, several critical problems would have to be overcome. First, it appears clear that heretofore DOD and the Services have not planned adequately for use of the individual reserves (other than members of the Selected Reserve), although OSD in 1975 has given new impetus to this subject. The requirements for fillers and replacements have not been sufficiently well determined, either in aggregates or in the detail needed for effective management; and no adequate plans have been made to use effectively the IRR resources that are available or to remedy shortfalls in specific skill categories, although progress is being made. If all of this would have to be done after mobilization, it would take a lot of time at best--partly defeating the purpose. Second, the pools of IRR and Standby Reservists are declining rapidly as the last of the men who served in the longer forces during the Vietnam conflict complete their six-year obligations and as other factors take their effect. Although the IRR/Standby pools may level off at their lower levels in the FY79-80 period, those lower levels and the yields expected from them will be critically short of the worst case requirements. Finally,

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concerning those yields, not all reservists can be expected to be available for timely mobilization assignment for a variety of reasons-- health, critical wartime occupation, family hardship, inability to locate quickly, or simply failure to show up when called. Availability rates which have been considered reasonable by DOD under the present system are: 95% for the Selected Reserve, 70% for the Individual Ready Reserve, 50% for the Standby Reserve, and perhaps 10% for retired personnel. These are the rates used in the OSD Total Force Study. With respect to individual Reservists, those rates are estimates which may or may not be accurate. In any case, the yields are subject to management and dependent upon management.

With respect to the declining size of the IRR and Standby Reserve pools, the OSD study projected that within the next few years they will be insufficient to meet the needs of the Army for fillers and replacements in the gap period before draftees and new recruits could be trained after mobilization. The Army's problem is the worst because of its reliance on IRR fillers to bring units to full strength and because the Army would probably take the most casualties. From unclassified parts of the DOD study, it could be estimated that under the present system, the Army would be short about 140 thousand or more enlisted men in FY 80, mostly in the combat skills, comparing assumed IRR yield against requirements. Further, there will be problems of imbalances of IRR Reservists available in some Services and in some skills in excess of requirements but not usable to meet critical requirements in other Services and skills. DOD, quite rightly, is requiring the Services to produce new detailed projections for comparing requirements, by skill, with the projected individual reserve resources.

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DMC Staff Analysis of DOD IRR Projections: A Different Estimate of
Future IRR Availability

As part of the multifunctional team approach to this subject, two members of the DMC staff (Recruitment team) have conducted an independent review and evaluation of the DOD projections of future IRR availability (as published in the OSD Total Force Study). This Recruitment Team paper is attached to this paper (Appendix A, entitled "The Availability of Individual Ready Reservists (IRR) Upon Mobilization").

The attached staff analysis (Appendix A) indicates that the projections in the Total Force Study seriously underestimated the rate of decline in IRR strength over the next several years--i.e., seriously overestimated the projected levels of the IRR pool during the critical years ahead, FY79-80 and beyond. Whereas the Total Force Study indicated the Army's FY80 shortfall in enlisted IRR yield at about 140,000 (difference between requirements and estimated yield), Appendix A estimates the shortfall in FY 80-81 to be far greater, by an order of magnitude. Further, if Appendix A is correct, then serious questions are raised as to the adequacy of the prospective DOD legislative proposals to deal with the coming mobilization manpower shortage. Indeed, serious questions are raised as to the adequacy of the IRR projections in the 1975 OSD Total Force Study as a basis for official action or new legislation, even though that study was a highly commendable and long-needed new initiative which was an essential start in dealing with this problem.

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The difference between the 1975 OSD Total Force Study and Appendix A can be resolved by the Department of Defense. Meanwhile, all can agree that a major IRR shortfall is in prospect, and it is now seen as probably even more critical, particularly in impact on army mobilization capabilities, than previously realized.

Problems and Courses of Action

Following is a discussion of the basic problem discussed above, plus further aspects of the subject, together with possible course of action which are presented where appropriate. (The central subject of what to do about the critical Army shortfall will be left until toward the last.)

1. Reliance on and Utilization of the Individual Reserve System

While there is a clear need for an effective individual reserve system, ready for mobilization, there are serious questions about the efficacy of the present system. It is essentially untested. The extent of the reliance on the IRR presently projected for the Army appears to be highly questionable, given the predicted shortfalls in the size of the pool and problems of yield rates that are estimated but may not be reliable, plus problems of skill mismatches and people not being located, not reporting promptly when called, being out of condition, not trained on current weapons and equipment, etc. The patterns revealed by recent Army experience in calling up some IRR's involuntarily for summer training is hardly encouraging. In CY 1974 the Army mailed 81,600 selection notices to IRR personnel for two-week training with ARNG or USAR units, out of which 35,853 were actually trained after losses, most of which were excusals for one reason or another. The usefulness of some

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former draftees who were recalled against their will left much to be desired, but undoubtedly would be much better under genuine mobilization. Of course, there are notable exceptions and it would be grossly wrong to criticize many fine and well-motivated individual reservists who have already served their country well on active duty and stand ready to do it again if called. It is the system we are questioning, not the people in it.

As a disturbing revelation from this study, it is doubtful that this aspect of mobilization manpower requirements (the requirements for individual replacements and the impact of lower active forces and ending the draft on the individual reserve system) was even taken adequately into consideration when the political decision was made, perhaps inevitably, to abandon the draft and go to an All-Volunteer Force in peacetime. Meanwhile, great efforts have been focused on making the visible parts of the All-Volunteer Force a success, while the under-the-surface problems addressed in this paper have received scant attention until the OSD initiatives which produced the 1975 Total Force Study.

Notwithstanding the misgivings expressed above, there is an individual reserve system in this country, as has been described, and the Department of Defense is planning to use it, in the absence of any more effective solution (such as larger, more costly active forces). Accordingly, the ensuing discussion focuses on how to deal with the problems involved in the individual reserve system so as to make that system more adequate and effective.

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2. Mobilization Manpower Planning and Management

a. General. It has become apparent that there is a need for improvement in virtually all aspects of mobilization planning, not just reserve manpower, and in the overall coordination between the various aspects of it. It achieves little to make a tremendous effort to solve the mobilization manpower problems if the equipment is not available, the ammunition runs out, and the other problems of readiness and deployments are not also resolved in light of the threat and also considering the roles of the Allies. However, we focus here only on the manpower aspects within the scope of the subject of this paper and the charter of the DMC.

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b. Use of Individual Reserve Systems. There are fundamental inconsistencies among the Services in the way each plans to use mobilization manpower assets. The Army requires almost 300 thousand individual reservists as fillers to bridge the gap between peacetime and wartime strength of their active and reserve units. The Marine Corps requires some mobilization fillers, but not nearly so many. The Navy and the Air Force use very few IRR's as fillers because they man their units at or near 100% of wartime strength or use paid drill Reservists to achieve the necessary fill. Some economies could be made if they were to reduce paid drill spaces and use IRR personnel for some of the post-mobilization fill as the Army does. There appears to be a need for a more consistent DOD policy on this issue.

c. Basic Planning for Individual Reserve System. If the individual reserves are going to be relied on, there is a need for better planning at all levels as to how they will be obtained and used, and it must take place before mobilization. The specific requirements should be identified and records continually checked to assure that the needed personnel are available; modern data systems should make this feasible. Perhaps those to be assigned as initial fillers should be pre-assigned to their units and receive some training with those units (e.g., summer camp). The Department of Defense, the Army in particular, needs to maximize the useable yield from the individual reserve system, so as to get a much better yield from the IRR and the Standby Reserve than the

currently estimated 70% and 50%. In regard to the Standby, so long as there is one, it should be determined that Selective Service has the capability to process them rapidly; or, better, new legislation should be sought to remove the requirement for Selective Service to do it at all. Why not let the recall of Standby Reserves be administered totally by DOD? Finally, the growing pool of retired personnel should be carefully analyzed to determine how many of them could and should be used to assist in mobilization emergencies.

d. Organization, Mechanisms and Procedures in DOD for Management of Manpower for Contingencies*. Although OSD has recently (in 1975) undertaken major new initiatives to improve mobilization planning, many problems remain with respect to the management system. The management of Department of Defense manpower for contingencies (including total mobilization) is charged to the individual Services, under OSD guidance and consonant with and supportive of approved operational plans of the Joint Chiefs of Staff. Review and evaluation of the Services' efforts are charged by OSD directive to the Joint Chiefs of Staff, and by JCS directive to J-1 (Deputy for Personnel). Insofar as we are able to determine, the review and evaluation are not actually being performed by J-1.

The Services acknowledge their need to perform the function; however, they are each at varying levels of achievement, somewhat commensurate with their varying success in overall management of the manpower function. Critical to the accomplishment of the function is a data system to match

*This section was authored by the Management Team (led by Norbert R. Kaus) of the DMC staff.

requirements and manpower resources (inventory). Each of the Services has a detailed data base on the current inventory side, and a great effort is currently being expended on analyzing the resource. Common to OSD and

each of the Services is a concern over the validity of the requirements statement and the articulation of the necessary details (by skills, etc.), and studies are underway in each Service to answer these questions. Meanwhile, the Services are under guidance from OSD on managing a questionable future part of the projected inventory (Individual Ready Reserve) to meet the suspect requirement. Despite the obvious faults, this guidance nevertheless has been a start toward a solution and a useful stimulant for the Services, in the light of the absence of previous management of this function from the JCS or Service staff level of the Army, Navy and Marine Corps (the Air Force has done better). However, the situation is somewhat confused (as of the fall of 1975) and the job of the Services very difficult. It would seem more productive for OSD to issue standard guidance for a contingency manpower management system and require the Services to produce such a system, with justification for any deviations, and to produce the necessary numbers in the process.

3. Individual Reservists' Grade Structure and Training & Utilization Considerations.*

a. Grade Structure. Unless there are radical changes to the active duty and Selected Reserve enlisted promotion systems, the grade structure (distribution) of the individual reserve pools (which flow from the active and Selected Reserve forces) will probably remain about what it is today. The USAR enlisted IRR is now about 70% E-4, 15% E-5, and most of

*This section was authorized by the Development & Utilization Team (lead by Raymond L. Pittman) of the DMC staff.

the remainder, E-3 or below. The Army Standby Reserve is about 54% E-4, 36% E-5. The remainder, except for a scattered few at E-6, are in the lower grades. Whether the combat arms differ appreciably is not known.

The grade distribution would cause some awkwardness if larger numbers were called to fill rifleman and similar positions. Many of the recalled reservists would rank their squad leaders and sometimes their platoon sergeants. There are those who treat this problem lightly, saying that in a combat situation this would make little difference. Others think not -- that morale would suffer, thus combat capability. This problem should be better understood and taken into account in estimating yields and in planning utilization.

b. Cross-Utilization within the Army. This area presents a great challenge. While acute mobilization shortages are foreseen in the combat career groups, some compensating overages exist within the Army IRR pool in other specialties.

A great number of the people in these other specialties once had at least basic individual training as infantry riflemen; some had actual combat experience. There are several career fields in which some overages exist that would lend themselves to relatively rapid conversion; e.g., military policemen to riflemen, artillerymen to mortar men or tank gunners.

Other specialties would pose perhaps more difficulty in conversion, but a double change could be considered, such as administration to military police, thus freeing the latter for combat duty conversion. Physical condition and capability must, of course, be a consideration. Nevertheless, there may be a sufficient usable number in the total Army and Individual Reserve pools to help toward meeting the Army's combat arms mobilization requirements.

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c. Potential for Cross-Service Use of Reservists. There is, at least theoretically, a potential for cross-service utilization of reservists, since the Navy and Air Force do not contemplate a great need for fillers, but do have IRR pools. In some instances fairly direct transfers of occupational skills could be made. For example, a former Air Policeman should be readily usable as an Army MP; certain supply and engineering jobs are similar enough; and so on with cooks, clerks, medics, drivers and many others. The other Services' individual reservists could seldom fill directly the Army's needs in the combat arms; however, a double switch in such instances in common specialties could be accomplished. If the Army pool of, say, truck drivers and clerks were depleted by conversion to combat skills, it could be manned by truck drivers and clerks from the other Services at least temporarily.

Opposing this idea is the fact that presently a person enlists for a particular Service, and his subsequent IRR status is tied to that particular Service. At present, therefore, it apparently could be considered as a breach of contract to transfer a Reservist involuntarily to another Service. However, it would seem that that obstacle could be gotten around under the emergency conditions of mobilization--perhaps, for example, by recalling personnel to their parent Service and then assigning them elsewhere "on loan" as needed, even retaining the affiliation with and uniform of their parent Service. Changing the enlistment contract to provide more directly for cross-service utilization of further enlistees would be feasible but could have an adverse impact on recruiting.

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d. Role of Women. Because statutory restrictions now eliminate women from military obligation beyond active duty terms, they must presently be discounted as part of the individual reserve pool. Should this situation change and the Army reach its goal of 10% plus improved reserve accession from women, they would then comprise a significant part of the pool and could replace men needed in the combat arms.

c. Training. There are problems about the state of training of individual reservists, depending on their skills and the amount of time since their last duty in the active force or Selected Reserve. There have been, and will continue to be, changes in weapons, equipment, organization and procedures. Some quick re-training would seem to be needed for many individual reservists on recall to active duty; and the need would be greater in the cases of minor skill mismatches, or cross-utilization, or the longer periods of obligation which would apply under the prospective DOD legislative proposal. As a further step in the overall coordination of mobilization planning, after the necessary preceding steps have been completed, OSD should require each Service to analyze its requirements for any post M-day re-training of individuals and, if applicable (at least in the case of the Army), to make plans accordingly.

The training problem highlights the significance of the program the Army already has, whereby a number of individual Reservists are recalled each summer (many involuntarily) for active duty field training with Selective Reserve units. This sharpens the training status of at least some of the participants and also serves to fill out the receiving Selected Reserve units so as to make their unit field training operations more meaningful and effective. Obviously there have been some problems in the

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involuntary recall of former Vietnam era draftees in the new "all volunteer" atmosphere; many called have requested to be excused for any number of reasons and some not excused have failed to show up. (OSD and the Army have detailed statistics.) Many who have shown up have been so poorly motivated as to question their worth. Yet many individual Reservists called for such training have performed well. If reliance is going to be placed on the individual reserve system and the period of obligation extended, the requirement for peacetime training will have to be given further impetus. A requirement for all individual reservists to attend some training, say two weeks every two years, either with Selected Reserve units or at an Active Army training activity, would seem appropriate where there is a plan, as in the Army, to utilize those reservists. (There is no sense in calling up for training any people who would not be mobilized.)

4. What Can Be Done about the Army's Shortfall?

It has been seen that, in the absence of effective new measures, the Army will have critical shortfalls in immediate mobilization manpower, particularly enlisted men in the combat arms, becoming critical before FY 80 as the IRR pool continues to drop rapidly and then levels off at new, low levels far short of "requirements." The critical measure is the difference between the requirements on one hand, and the projected usable yield from the individual enlisted reservist pool, on the other. Each side of this equation will be addressed below.

a. Requirements: Reassessing and Reordering. The Services' projections of FY 80 requirements for individual reservists for fillers and replacements, as used in the OSD Total Force Study, were a "rough cut," which is understandable in view of the changing details in projected force structure. Subsequently these "requirements" quite rightly have been in the process of being reviewed, revalidated and worked out in greater detail.

Under the guidance that applied, the Army's future requirements were calculated on the basis of 100% fill of all existing Active and Selected Reserve units in the approved wartime force structure (even including some planned Selected Reserve support units now totally unmanned). Many Active Army units now have peacetime manning below 100% wartime authorizations. In the Selected Reserve, the DOD programs for the ARNG and USAR in FY 76-77 set paid drill strength manning at 93% and 77%, respectively. Filling all these units to 100% on mobilization accounts for a major portion of the projected Army requirements for individual reservists.

In light of the critical shortfalls now projected, the "requirements" should be reassessed in terms of at least two priorities -- distinguishing between units essential to fill quickly to 100% of wartime strength and those less essential which could function for a while at lower levels and whose fill to 100% could await the availability of draftees. Also, an assessment should be made of the impact of combat units having to function at something less than 100% strength for a while after suffering combat losses and receiving less than one-for-one replacements. The foregoing does not mean that the ideal objective should be any less than 100%, but such reassessments would provide a clearer picture of the "requirements", distinguishing between the degrees of essentiality and provide a better basis for planning. Such further analyses are essential before any drastic measures should be adopted to deal with the problem.

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b. Increasing the Peacetime Fill of Units. In view of the projected future shortfall in Army enlisted individual Reservists, one logical measure would be to reduce the shortfall by filling equivalent spaces (combat arms) in peacetime in the force structures of the Active Army and the Selected Reserve. This would add many thousands of troops to the Active and Selected Reserve force structure and would increase costs accordingly. This runs counter to the savings the DMC hopes to produce but hopefully could be offset, at least in part, from savings from other measures recommended by the Commission. Also, increasing the force levels would increase recruiting problems, which are already serious in the Reserves and which could develop again in the Active Army in the years ahead. On balance, nevertheless, this is clearly a practical solution. It should be adopted, in the view of the DMC staff, to the extent that the shortfall in initial mobilization manpower is not otherwise resolved.

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c. Replacement by Units. Given the projected shortfalls of individual reservists, consideration should be given to making some use of unit replacement. This would mean authorizing some additional combat units in the approved structure, the main purpose of which would be to furnish replacements to the combat theater. Besides helping to reduce the shortfall in individual replacements, a principal advantage of this system is the flexibility that it would provide to the wartime theater commander. He could send in fresh units (with their equipment) to replace any decimated (in equipment as well as personnel) during the intense combat phase or he could use them as a pool of individual replacements when that was appropriate to the situation.

These new units probably should be infantry and/or armor battalions, assuming that equipment is provided for them. Such units need not be earmarked as to purpose, simply adding them to the General Purpose force structure, thus providing maximum flexibility for their employment. However, the exact nature of these units should be worked out by the Army, subject to OSD guidance and perhaps the views of the JCS. Probably they would be Guard or Reserve, rather than active units, although some active replacement units may be needed for earliest deployment into the theater. Spaces for new reserve units might be provided by eliminating some marginal units currently in the Selected Reserve structure. If this measure results in a net increase in the Selected Reserve paid drill strength, then it would, of course, add to costs and reserve recruiting problems.

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d. Increasing the Size of the Individual Reserve Pool and Yield.

Some possible courses of action to resolve Army shortfall by increasing the IRR size and yield are as follows:

(1) Maximize the Yield. The OSD projections, as previously cited, center around estimates and assumptions of the most probable yields being basically around 70% of the IRR pool, plus 50% of the Standby Reserve and 10% of the Retired Reserve -- all subject to some further degrading for mismatches in skills, etc. Obviously the whole problem could be alleviated to a significant degree if the usable IRR yield could be raised to, say, 80% or better. We see no reason why this could not be achieved with better management of the IRR, and we see no serious disadvantage unless standards are sacrificed significantly.

(2) Stop Automatic Transfers from the IRR to the Standby Reserve. This refers to the present provisions wherein a reservist having the six-year military service obligation transfers to the Standby Reserve for his sixth and (currently) last year. The prospective DOD legislative package would stop this. This has the advantage of adding one whole year group to the IRR, with a higher net yield from the group and without the cumbersome procedures involving the Selective Service System that would have to be used under present legislation. Little disadvantage is seen, although one can speculate that there might possibly be a small impact on recruiting. Accordingly, this is, in general, definitely a move in the right direction and should be supported by the DMC.

Some details need to be resolved. First, when could this needed change be made effective? This change is different from the other proposal

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to extend the total obligation beyond six years, which clearly should not apply retroactively to persons enlisted before enactment of the legislation. It would appear that the transfers to the Standby could be stopped without waiting five years after enactment of the change - i.e., could be made applicable to persons already serving in the active forces or the Selected Reserve. If this is legally feasible and acceptable to the Congress, then this change should be put into effect so as to stop the automatic transfers starting in 1977, in time to help counteract the impending IRR shortfall.

One criticism of this proposed change is that it changes the individual reserve systems of all the Services just to solve the Army problem. A variation, if the Standby is to be retained at all, would be for the Secretary of Defense (or, by delegation, the Service Secretaries) to retain authority to control transfers from the IRR to the Standby Reserve in accordance with the varying needs of the Services. That way, Navy and Air Force reservists could still be allowed to transfer to the Standby, while the Army and Marine Corps reservists could be held in the IRR. The difference in treatment might make the Army and Marine recruiting problems even harder. Another variation would be to stop the formal transfers the same way in all the Services but do the necessary further controlling internally -- using modern data systems to place the IRR reservists in categories, depending on the needs of the Services, and to notify them individually of their standings.

Finally, a further step would be to do away with the Standby Reserve altogether, in favor of a well managed IRR. This straightforward measure would appear to have much merit.

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The DMC position should be at least to support the general proposition of stopping the automatic transfers from the LRR to the Selected Reserve, leaving the further details discussed above for the Department of Defense to resolve and recommend to the Congress.

(3) Extend the Reserve Obligation Beyond Six Years (coupled with no Standby Reserve). In order to increase the size of the LRR pool the total six year period could be extended several years, or to an age calculated to meet the requirement. On the basis of the OSD Total Force Study, the Secretary of Defense directed that proposed legislation be prepared which would extend the obligation through age 28, which on the average (starting with enlistments at age 19-1/2) would mean about 9-1/2 years total obligation. The discussion below focuses on this proposed formula.*

The prospective DOD legislative proposal, if enacted by fall 1976, would produce further LRR increases starting by fall 1982 (additive to increases from the previously discussed change in the Standby) and increasing yearly for 3-1/2 years until a leveling off in FY 1986 (late calendar year 1985 or early 1986). Given the OSD projections of the LRR pool and a 70% yield, this would leave a serious gap in the FY 79-84 time frame, most critical in FY 80-81. Given the same DOD projections, the DOD formula would more than suffice after FY 84, even leaving a margin for mismatches and the possibility that some of the oldest LRR year group might even be excused in the Army, while few with over six years would have to be called in the Air Force and Navy. However, if the DMC Recruitment Team's analysis in Appendix A is correct, then the DOD formula, drastic as it is, still would not by itself ever completely resolve the shortfall below the requirements indicated in the 1975 OSD Total Force

*Subsequent to the completion of this Issue Paper, DOD decided not to forward this proposal to the Congress as originally conceived.

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Study. I.e., according to Appendix A, the prospective DOD legislative proposal would not accomplish what it purports to accomplish. However, this measure probably could solve the problem if used in conjunction with other measures suggested herein, especially if the Army's critical "requirements" are reassessed and adjusted downward.

A serious potential disadvantage of this measure would be the adverse impact on recruiting. The present six year obligation is one thing; extending it through age 28 or an average of 9-1/2 years obligation is quite another. How bad the impact on recruiting would be is hard to estimate, but the impact surely would be adverse to some degree. Further, the longer the IRR reservists are away from active duty and the older they are, the less ready for combat they generally will be. Even reducing the proposal by one year, taking the obligation only through age 27, would help on both scores. Using the pool projections in the Total Force Study and slightly reduced requirements, age 27 should suffice eventually if the DOD projections of the IRR are correct -- but not so if Appendix A is correct. Even with the lower IRR pool projections in Appendix A, however, the legislative proposal (through age 28) might suffice against reduced requirements if used in conjunction with other measures suggested herein.

In sum, the general idea of the prospective DOD legislative proposal to extend the IRR obligation has much merit. However, the foregoing discussion points up the necessity for DOD to reassess the Army requirements projections and re-do the IRR pool projections before such legislation could properly be considered for enactment by the Congress. Further, this proposal, even if enacted in 1976, could still leave critical shortfalls for a number of years from about 1979 onward until the new law produces its full results.

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(4) Offer Selective Inducements for Voluntary Extension of IRR

Obligations. This is conceived essentially as an interim measure aimed at filling the gap years from 1979 onward until a new law extending the obligation takes full effect, as previously discussed. However, failing the enactment of such a new law, this measure could be continued indefinitely, assuming it proves successful and cost-effective. This idea visualizes the offering of bonuses to selected, physically qualified individuals having needed skills, primarily for the Army, in return for a voluntary but binding contract extending the individual's IRR obligation (including a training obligation) and his vulnerability to involuntary recall in the event of mobilization. The period of extension, through age 28 or less, would correspond to DOD's proposed involuntary extensions applicable to new enlistees. This, if it is successful and the costs are bearable, would solve or help solve problems during the gap years, as it could be made applicable to enlistees already in the active Army or Reserves. The costs would be significant, to be determined by the interaction of supply and demand -- within limits. A bonus of "X" amount might be tried - for example, \$300 tax free for each extra year. That might not seem like enough for such a vital commitment, and indeed might not suffice, but it could add up over 3 - 3-1/2 years and could be appealing, considering the hopefully small chance that the individual will ever have to be mobilized. If a bonus of \$300 per year were paid to an average of 100,000 people over the interim years (after allowing for other measures), the bonus costs would average \$30 million per year for a few years (say five years). That would hardly seem an extreme cost to resolve such a vexing problem in the U. S. national defense posture, and

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even substantially higher amounts should not be unacceptable in the interim period.

This approach is wholly consistent with the philosophy of the All Volunteer Force of paying market costs for military manpower. A major problem is that we do not know the extent to which it would succeed in keeping in the IRR the right numbers of people with the right skills. In the absence of any better interim solution, however, this approach would seem to be worth trying.

(5) Possible Return to Two-Year Enlistments in the Army Combat Arms.

One of the factors contributing to the Army's projected IRR shortfall has been the termination of two-year enlistments. Three-year enlistments (as a minimum) generally are much better for the active forces, so long as recruiting goals can be met without sacrificing quality. However, there is a direct impact in reduced time remaining in the IRR. If the economy and recruiting conditions force a return to accepting two-year enlistments, the IRR pool will increase accordingly, helping to alleviate the projected shortage. A compromise might even be to accept two-year enlistments in the Army combat arms (and comparable Marine Corps skills), while holding to three years for skills requiring more in-service technical training. This is not advocated in this paper, because of the impact on the active forces, but it would help the IRR side of the mix and that factor should be taken into consideration in any future DOD decisions to change enlistment periods.

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(6) Limit prior-service (PS) enlistments/reenlistments in Army National Guard and Reserve Units. This would force a few more people into the IRR, increasing the IRR pool, which is especially needed if the increases are in the Army combat arms. Importantly, if properly regulated, it might even help rather than hurt the Army Selected Reserve, where there are some problems of imbalance between PS and non-prior-service (NPS) personnel. A number of properly assigned PS enlisted personnel are essential in the Army Guard and Reserve, to provide expertise and fill the higher NCO positions, but too many can cause stagnation as well as grade/skill mismatches and actually operate against the successful enlistment and retention of high quality NPS personnel. The suggested measure could not be carried too far without the balance swinging to hurt the already difficult problems of manning the Army Selected Reserve; and, assuming the Selected Reserve units have meaningful mobilization missions, they should take precedence over the IRR. Within those limits, this measure could be one of the "band-aids" considered to help meet the IRR problem.

(7) A drastic alternative: Draft for the IRR. If Appendix A is correct and all the other measures adopted would still leave critical shortfalls, then a drastic alternative would be to enact legislation providing for personnel to be drafted for the IRR, with provision for an initial period of active duty training (say six months, possibly more) and some subsequent summer training (say two weeks every two years). The draft could be selective, by lottery, calling only enough draftees to increase the IRR pool sufficiently to meet the shortfall (depending

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on the reassessment of the requirement and on other measures adopted). (See Appendix A for a discussion of numbers.) Some might propose that this be part of a larger system of Universal Service, and there also are some ideas about extending any draft, if there is one, to maintain the manpower readiness and quality of the Selected Reserves; but such further issues are beyond the scope of this particular paper.

Such an IRR draft would solve the problem of the Army's projected IRR shortfall. It could work in time to cover the critical years already identified. It also would provide additional advantages. It could be used in place of the proposed extension of obligated service, holding at six years and producing a younger, more viable IRR pool. It would increase the number of trainees already in the training pipeline, who would be added to the resources available for deployment during the critical initial months of mobilization. And it would exercise the Selective Service System, making it more ready to function fully, quickly and efficiently in the event of mobilization. On the other hand, the Army's authorized military personnel strength would have to be raised considerably, in order to accommodate both the trainees and some necessary increase in the Active Army training centers. The costs would be substantial, including also the costs of operating a revitalized Selective Service System.

The overriding consideration, however, is that it seems totally unrealistic to expect the Congress to enact the necessary draft legislation in this peacetime era of the All Volunteer Force--especially since the problem itself, however important, is not highly visible. Nevertheless, the listing of this course of action helps to sharpen the weighing of the alternatives.

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(8) An Alternative Possibility: Accept Part of the IRR Shortfall.

Depending on the revalidation of the requirement and the present IRR projections (Appendix A), and on which measures above are applied, there may still be a future IRR shortfall in the Army combat arms, assuming an IRR draft is excluded. In that case, one realistic course of action would be to accept the remaining shortfall. This would be like accepting the risk of letting insurance lapse. If the need for mobilization does not materialize, or if M-Day precedes D-Day sufficiently, then the impact of the IRR shortfall would be acceptable. And if there is little or no warning, the IRR would have little impact on the critical first weeks of fighting in Europe. Thereafter, assuming continued land battles, or earlier if mobilization is in time, the IRR makes a significant difference, and a serious IRR shortfall could jeopardize the capabilities of U.S. Army forces for sustained conventional combat and lower the nuclear threshold accordingly. Our strategic nuclear forces would not be affected by the IRR problems. Thus, and considering the doubts about heavy reliance on the IRR in the first place, it can be argued that some IRR shortfall could be accepted, with some increased risk, rather than adopt such drastic measures as an IRR draft.

CONCLUSIONS

1. The DMC should recognize the new initiatives by the Department of Defense to rationalize and improve the mobilization manpower system, but further measures are needed, as discussed in this paper.
2. The Defense Department calculations of requirements for individual replacements, particularly in the Army, should be reassessed and

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reordered, in terms of at least two levels of priority, differentiating the most urgently essential requirements for initial fillers from the requirements that could, if necessary, be deferred.

3. The Defense Department should review and revalidate or revise its projections of future IRR pools and shortfalls, based on the revalidated requirements and taking into account the factors raised in the DMC staff analysis attached hereto as Appendix A.

4. To remedy the prospective critical IRR shortfall, particularly in Army combat arms enlisted personnel, the Department of Defense should consider all the possible courses of action which have been suggested herein.

5. Pending the early completion by DOD of a better analytical base (Paras. 2, 3, 4, above), DOD should defer submission to Congress of the prospective legislative proposal to extend the IRR obligation beyond the present period of six years (including active duty).

6. DOD should issue a standard description for a contingency manpower system and require the Services to produce such a system, with justification for any deviation, and assure the availability of the required manpower. Much better mobilization planning and coordination by OSD and OJCS are clearly needed.

7. To the extent that DOD continues to rely upon individual reservists as fillers or replacements, the individuals needed should be identified by grade and skill, provided with any necessary training or retraining after active duty service, required to keep their Services informed of their whereabouts and availability, and given ample compensation to assure needed participation. Women as well as men should be a part of the obligated mobilization reserves.

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8. Continued heavy reliance upon the current IRR/Standby Reserve system by the Army cannot be recommended unless the problems which have been discussed are fully resolved, which seems doubtful. However, this resource can at least be considered a third echelon manpower reserve to help meet contingencies and of sufficient value to warrant consideration of the possible courses of action discussed herein.

9. The projected problems concerning the individual reserve system underline the necessity for strong active forces (which may need more military manpower than presently authorized), for adequate, rationally structured and well-supported Selected Reserve Forces, and for an efficient standby Selective Service System ready to go into effective operation immediately in the event of mobilization. (The Selective Service System and other manpower mobilization matters will be treated in a separate DMC staff paper.)

RECOMMENDATIONS

It is recommended that the Commissioners accept the foregoing conclusions as the DMC position on this subject.

Attachment
Appendix A - DMC Staff Paper (Recruitment Group) or "The Availability of Individual Ready Reservists (IRR) Upon Mobilization."*

*Published separately in the Defense Manpower Commission Staff Studies as the next paper following this one.

WORKING PAPER ONLY
NOT OFFICIAL POSITION OF DMC

THE AVAILABILITY OF INDIVIDUAL READY RESERVISTS (IRR) UPON MOBILIZATION

A DMC Staff Research Paper Prepared
for the Defense Manpower Commission

By
Kenneth J. Coffey and James W. Abellera
Recruitment Group
Defense Manpower Commission Staff

October 1975

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EXECUTIVE SUMMARY

TITLE: The Availability of Individual Ready Reservists (IRR) Upon Mobilization

BACKGROUND: The Department of Defense Total Force Study projected both size and expected mobilization yields from the Individual Ready Reserve for the FY 80 - FY 85 period. Based on these projections, a mobilization shortfall was recognized and corrective action was proposed. This paper challenges both the expected size of the IRR pool in the FY 80 - FY 85 period and the expected yields upon mobilization. The challenge is based on an assessment of various All Volunteer Force era changes in numbers of initial enlistees, terms of enlistment, reenlistment and attrition rates, numbers of female accessions (who do not have IRR obligations), and increased rates of recruiting prior service veterans by Selected Reserve units.

PROBLEM: To accurately project the size and expected yield from the IRR pool upon mobilization in the FY 80 - FY 85 period, and to develop adequate corrective measures.

ALTERNATIVES: Adjustments in Service accession policies and their impacts on the projected size of the IRR pool are assessed. The impact of the DoD proposal to extend Ready Reserve obligations for an additional period of about four and one half years also is assessed.

CONCLUSION: The changes in the "flow" pattern of accessions into the active forces and through their Ready Reserve period of obligation which have occurred in the AVF years have created IRR mobilization problems far in excess of those projected by the Total Force Study. Further, the proposed DoD solution of extending Ready Reserve service obligations would have only marginal impact and would not resolve the projected shortfall. Adjustments in Service accession and flow policies also would not resolve the shortfall problem, unless the Services returned to pre-AVF flow patterns, or developed new innovative recruitment/retention devices for the IRR pool.

RECOMMENDATIONS: The Department of Defense should abandon their efforts to extend Ready Reserve service obligations and conduct an across-the-board critical analysis of manpower mobilization problems and possible solutions. Consideration should be given to the creation of a volunteer paid reserve of IRR members in critical areas who would agree to serve for periods beyond their current statutory obligation.

NOTE: This paper in its original form was Appendix A to the DMC Staff Issue Paper, Individual Reserves, presented to the Commission in October 1975. Subsequently it has been up-dated and fixed so that it can stand alone as a separate paper.

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D. THE AVAILABILITY OF INDIVIDUAL READY RESERVISTS UPON MOBILIZATION

I. BACKGROUND

The recently released Department of Defense study on the Total Force (The Guard and Reserve in the Total Force, June 1975, Secret) states on unclassified pages that by FY80 there will be a shortfall in the numbers of Individual Ready Reservists required upon mobilization. As a result of this conclusion, the Secretary of Defense has directed the General Counsel to prepare proposed legislation providing for people entering military service to have a Ready Reserve obligation (as a member of a Selected Reserve unit or as a member of the IRR) through age 28, and to eliminate the requirement that after five years, reservists (other than members of six-month active duty reserve training programs) be transferred to the Standby Reserve upon request.

As current law obligates male enlistees for six years (active duty, plus remainder of five years in Ready Reserve, sixth year in Standby), the DOD proposal would increase current terms of obligated Ready Reserve service by about four and one-half years (based on an expected nine and one-half year obligation from today's average recruit who signs on at age 18-1/2). The extension of the Ready Reserve obligation was thought necessary in order to increase the size of the IRR pool to the level where it could meet possible military manpower contingencies in 1980 and beyond.

The requirement for this increase in the size of the IRR pool was based on the projection (prepared for the OSD review of Service Program Objective Memorandums) that the FY80 strength level of the IRR would be 595,000. The

requirement also was based on (1) the POD estimate (contained in the Total Force Study) that 70% of the IRR members who were called up in an emergency would be usable to meet mobilization manpower requirements, and (2) that a "insurance" factor of one and one-half years' worth of IRR obligation (contained in the 9 1/2 years of total obligation) would be necessary.

II. PROBLEM

The question that should be addressed by the DMC concerns the validity of the DOD projections of the future size and yield of the IRR pool and the capability of the proposed policy change to extend Ready Reserve obligation through age 28 to resolve projected manpower shortages.

III. DISCUSSION

With the current five-year limitation on the active service-Ready Reserve obligation, the size of the IRR pool in FY80 (June 30, 1980) will be determined by accessions into the active armed forces in FY76 and FY77.^{1/} In projecting these accessions through their five years of active and Ready Reserve service, it is the contention of the staff that several significant trends have developed in the AVF years that make the traditional methods of projecting future IRR strength obsolete. As these trends did not become clear until recently, the staff believes that they were not fully recognized during the period in which the projections used in the Total Force Study were prepared (early FY75).

The trends which have changed during the AVF years which impact on the FY80 size of the IRR concern the length of enlistment terms, the reenlistment rates, and the numbers of prior-service veterans who sign on for service with the Selected Reserve after completion of their active duty (thus depleting the IRR pool). In broad terms, with the

trend toward longer enlistments and shrinking force levels, fewer accessions are entering the Services, and each year fewer are completing their initial terms of service. Further, as more of those completing their first term of service are reenlisting, the numbers of men leaving active service with a remaining Ready Reserve obligation is diminishing. Also, because of longer average active service periods, those leaving have shorter remaining periods of Ready Reserve obligation. Last, more veterans with Ready Reserve obligations are affiliating with Selected Reserve units.

In recognition of these trends, the following discussion concerns the probably size of the IRR pool in FY80.

A. FY80 IRR Force Level Projections

The logic of the IRR projections begins with the recognition that accessions to active duty in FY76-FY77 will determine the IRR strength in FY80. The accessions figures for these two years are projected at 428,000 and 402,000, respectively.^{2/} Second, the distribution of enlistment terms determines when these people will be available for transition to Ready Reserve status. Enlistment terms have increased on average since 1971, and DOD goals for FY76 reveal that 41% of accessions should enlist for three years, and 59% should enlist for at least four years.^{3/} FY77 accessions will likely conform to a similar pattern of enlistment terms.

Third, the proportion of FY76-FY77 accessions completing their first term of service successfully, less the number who are expected to reenlist, will determine how many FY 76-FY 77 accessions will be assigned

to the Ready Reserve during FY80. Approximately two-thirds of accessions are expected to complete the initial term.^{4/} and the reenlistment rate is estimated to be 30% (up from the 18% average of the draft era).^{5/}

Fourth, the forecasted numbers of prior-service people who will be assigned to the Ready Reserve in FY80, less the number who elect to affiliate with Selected Reserve Units (up from 30% of Selected Reserve accessions in FY 70 to 70% in FY75),^{6/} represent the number of prior-service people who will be assigned to the IRR pool immediately following their active service. In addition, some of the men who elect to affiliate with Selected Reserve units will voluntarily transfer to the IRR during FY80, after varying periods of Selected Reserve service. This represents an additional flow of people into the IRR, although their periods of remaining IRR service (up to five years of total active, Selected Reserve and IRR time) will be diminished by their length of service with Selected Reserve units. Although prior-service personnel "enlist" in Selected Reserve units for 12-36 month terms, the vast majority sign-on for 12 month minimum terms. Of these, it is estimated that 60% remain affiliated with Selected Reserve units for the remainder of their military obligation, or longer.^{7/} Thus, the flow of prior-service personnel from Selected Reserve units to the IRR is limited to 40% of those who "enlisted" in the Selected Reserve after three year terms of active service (men with four or more years of active service who drop out of the Selected Reserve after 12 months have no remaining IRR obligation).

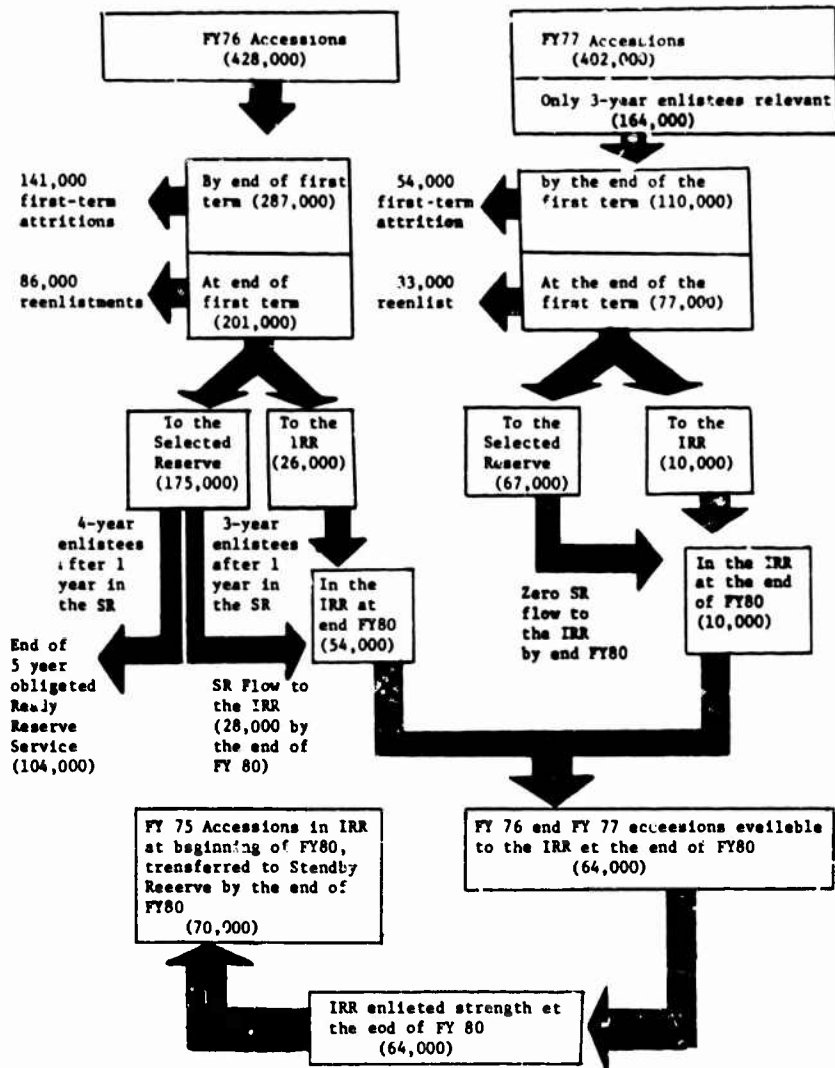
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By accounting for active duty accessions, enlistment terms, first-term losses,^{8/} reenlistments, affiliations of prior-service personnel with Selected Reserve units, and the flow of prior-service veterans from the Selected Reserve to the IRR, the total end strength of the IRR in FY80 should not exceed 64,000 enlisted personnel. In addition, the officer strength has been estimated to be 13,000,^{9/} for a total IRR strength in FY80 of only 77,000 personnel (this is 518,000 less than the DOD projection of 595,000). The following chart illustrates the impact of the FY76 and FY77 active duty accession groups on the FY80 strength of the IRR.

Note: Current legislation concerning service obligations applies only to men; female enlistees do not incur obligations for duty in the Reserve forces following the end of active duty service. While some prior-service women do in fact enter the Selected Reserve on a voluntary basis, the remainder of those women completing their initial enlistment term are not available for assignment to the IRR. Female enlisted accessions are projected at 32,600 in FY76 and 33,200 in FY77, approximately 8% of all NPS active duty accessions in each year. Even if it is assumed that these women will voluntarily enter the Selected Reserve at the same rate as their male prior-service counterparts, the DMC projection cited above will necessarily overestimate the IRR strength by about 8%.

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IRR Gains & Losses - FY80 (Unlisted)



B. Impact of the Proposed Legislative Change

Although the Total Force Study identified a major manpower shortfall in the IRR in FY 80 (beyond 595,000), the proposed legislative change to extend Ready Reserve obligation through age 28 would not impact on the strength levels of the IRR until the FY82-FY86 period. As currently drafted, the legislation would extend the obligation of those entering active service after passage. Thus, even assuming quick passage of the legislation by the end of FY76, the impact would not be noticed until those enlisted in early FY77 passed their five year point of service in early FY82. Thereafter, there would be a steady increase in IRR strength through FY86.

C. IRR Requirements of the Army in FY80

As the identified manpower problem upon mobilization occurs in the Army, the rate at which the Army IRR would increase is of vital concern. This rate can be estimated by relating the size of one year group in the IRR to the proposed extension (in years) of Ready Reserve obligation. The Total Force Study cites two unrelated figures for the size of one year group in the IRR (unclassified pages 11, 12 and 16 cite a strength figure of 172,000, unclassified page 29 states that the elimination of the Standby Reserve (one year's worth of Reserve personnel) would increase the size of the IRR by only 120,000). There is no ready explanation for this discrepancy, although it is possible that the lower figure was submitted by the Army at a later date as a correction to the Final Report and that it was not reflected throughout the study.

Utilizing the lower figure (120,000), OSD determined that an additional three years of IRR obligation (total of eight years obligation) would be minimally necessary in order to meet mobilization requirements

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Under the proposed nine and one-half year period would give them some margin for error, MOS mismatching, etc. Under a nine and one-half year obligation, the projected FY80 strength level of the Army (288,000) would be increased by 540,000 (four and one-half times 120,000) for a target IRR strength for the Army of 828,000 by FY80. Under a eight year obligation, the target IRR strength would be 648,000.

D. The Impact of Policy Changes on Army's FY80 IRR Strength Goal

The impact of extending Ready Reserve obligations through age 28, as well as the impact of making reasonable adjustments in active service accession, reenlistment and Selected Reserve accession policies, was examined in order to determine whether the Army FY80 IRR strength goal of 828,000 was possible.

First, the extension of IRR obligations through age 28 was examined, with no change in current policies on terms of enlistments, reenlistment rates and rates of affiliation of prior-service personnel with Selected Reserve units. With the Army's share of the IRR at about 40% of the total IRR strength, the Army IRR strength in FY80, as projected by the DMC staff, would be no more than 37,000 male veterans. Then, beginning in FY82, there would be progressive increases. However, the staff believes that the minimum figure supplied by the Army for the Total Force Study (120,000 for each year of IRR service extension) is too high in light of the factors discussed earlier.

For example, the 187,000 non-prior service active duty accessions scheduled for FY75 would produce a total out flow from active service (following three, four or more years of active duty) of 87,000 enlisted plus some officers. With today's first term attrition from active duty and reenlistment rates, this would be the maximum growth figure for each year the IRR obligation was extended. As it makes no provisions for discharges during the Ready Reserve period (medical, punitive, deaths, etc.), makes no

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provision for women (who do not have an IRR obligation), and make no provisions for those prior-service personnel who affiliate and remain with organized Reserve units, this estimate can be considered as high. However, using this figure, the DMC staff determined that the maximum IRR strength for the Army in FY86 would be approximately 300,000 (the FY80 strength of 37,000, with yearly increases beginning at 31,000 and climbing to 87,000 for the four and one-half year growth period of FY82-FY86).

Recognizing that the strength level of the IRR would be increasing during the FY82-FY86 period, the shortfall in the optimum IRR strength for the Army would be reduced from a shortfall of more than 790,000 in FY80 and FY81 to an FY86 shortfall of approximately 528,000.

Using the IRR strength goal which was based on an eight-year obligation, (648,000), the projected shortfall in IRR strength would be somewhat smaller, ranging from 610,000 in FY80 and FY81 down to an FY86 shortfall of approximately 348,000.

The actual impact of these projected shortfalls in IRR strength also can be calculated in terms of active duty personnel. As the Army's optimum IRR strength goal of 828,000 would allow for up to 180,000 personnel to be excluded from the IRR pool upon mobilization for MOS mismatching, etc., the yield from the remainder would parallel that from the 648,000 IRR pool which was projected for an eight year obligation period. Thus, using the 70% yield factor, the impact on the active forces following a mobilization would range from a shortfall of 350,000 to 375,000 active duty personnel in FY80 and FY81 down to a shortfall in active duty personnel in FY86 of approximately 200,000.

Regardless of whether the minimal or optimum strength size of the IRR is ultimately justified as necessary by the Army, the DMC staff projections support the conclusion that the proposed extension of Reserve service obligation would not resolve future manpower mobilization problems. Indeed, a severe manpower shortage would exist at least through FY86 and then beyond indefinitely at a reduced rate.

E. Other Possible Policy Changes

A number of approaches that might be implemented by the Service in order to reduce this severe manpower gap also were explored. First, the effect of a reduced rate of first-term reenlistments, from 30% to 15%, was examined. This policy change would have the probable effect of increasing the DMC projected FY80 IRR end strength by approximately 50%.

Second, a ceiling on the percentage of PS people accessed into the Selected Reserve was examined. It was assumed that 43% instead of the projected 87% of the PS pool completing their first term of enlistment would be permitted to enter the Selected Reserve. This assumption led to a new projection of approximately two and one-half times the DMC projected FY80 IRR end strength; however either of the two approaches still would result in a major requirements shortfall.

Third, it was assumed that active duty accessions in FY76 and FY77 (and FY78) would revert to the distribution of shorter enlistment terms characteristic of accessions during the early 1970's (29% two-year terms, 53% three-year terms, and 19% four-year terms or longer). In this approach, while the FY80 IRR end strength is projected to be about 50% greater than the DMC staff projected IRR end strength, a major shortfall would not be averted.

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Fourth, all three modifications to existing conditions (reduced reenlistment rates, ceilings on Selected Reserve procurement of prior service people, and reduced terms of enlistment) were imposed simultaneously. The cumulative impact is projected to be an IRR end strength still markedly lower than the DoD projection for the IRR, and significantly lower than the optimum IRR manpower level necessary to meet FY80 mobilization requirements.

Finally, if all three modifications to existing conditions were imposed simultaneously and the IRR obligation was extended through age 28, the DMC projected IRR end strength in FY80 still would be below that required for a major mobilization. However, with the growing impact of extended Reserve service obligations, the shortfall would diminish in the FY80 - FY85 period and would be eliminated by FY86.^{10/}

IV. ALTERNATIVES

Alternative #1 would recognize the probable error in the DOD projections, but would require no corrective actions.

The advantage of this alternative would be that a step would be taken (if Congress passes the proposed legislation) to resolve the mobilization manpower problems in the FY82-FY86 period.

The disadvantages of this alternative are multiple. First, the proposed solution does not impact whatsoever on the critical years from the late 1970s through FY81. Second, the impact of the solution, even in the out-years, is partial, with a resulting continuing mobilization problem. Third, the extension of service obligations for an average of four and one-half

years would have an immediate negative impact on Service recruiting, particularly in the National Guard and Reserve units.

Alternative #2 would require the DOD to manage the in-flow and out-flow of accessions during the FY76-FY80 period so that there would be a greater number of men entering the IRR pool. The management would take the form of requiring a set percentage of two-year enlistments, putting a ceiling on active service reenlistment rates, and limiting the recruitment of prior-service personnel by the Selected Reserve units.

The advantage of this alternative would be the positive impact on the size of the IRR pool.

The disadvantages would be multiple. The savings in costs and the increased professionalism recently achieved by the active forces because of longer term enlistments would be lost. Limitations on the percentage of reenlistments not only would increase the recruiting requirements for first-termers, but would adversely impact on the professionalism of the active forces. A limitation on the numbers of prior-service personnel who could be recruited by the Selected Reserve would mean that additional non-prior service personnel would have to be recruited. In today's market, without a large number of new and expensive incentives, it is unlikely that large increases could be made in recruitment levels of non-prior service personnel. The increased recruitment activities of National Guard and Reserve units would also impact adversely on the recruiting prospects for the active forces, with a possible result that extra active service incentives, or even a return to conscription, would be necessary in order to sustain active force levels.

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Alternative #3 would require the Secretary of Defense to withdraw the proposal for extension of reserve service obligations and to seek on a priority basis other more feasible solutions to the future military manpower mobilization requirements. Other solutions could include the possibility of creating a special mobilization pool within the Army (which is the only Service with critical mobilization manpower requirements), composed of men who volunteer for special incentives to remain on call beyond their current five-year period of Ready Reserve obligation. Other solutions could include a lowering of mobilization manpower requirements prompted by a critical reevaluation of Service needs as recommended elsewhere by the DMC staff, or even the realization that the IRR concept is not feasible in today's AVF era.

The advantages of this alternative would be reflected in the National Defense capability of the U.S. in future years. While the size of the IRR is not critical for mobilization in FY76, the policies implemented now impact on the mobilization capability of our country in the late 1970's and early 1980's.

The disadvantage of this alternative is that it would stop and delay what is at least a partial solution to severe future military manpower problems.

V. CONCLUSION

The DMC staff submits that the future size of the IRR pool has been under-estimated to a degree that the projected manpower gains from the IRR pool to the active forces upon mobilization would be significantly lower than the

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levels projected by OSD. Further, the staff submits that the proposed legislative change to extend Ready Reserve obligations through age 28 will have no impact on the strength level of the IRR until the FY82-FY86 period, that the impact of the legislation will not resolve the projected IRR strength level shortages, and that without alternative corrective actions, the shortage in the IRR strength level will continue for the indefinite future.

VI. RECOMMENDATIONS

The DMC staff recommends that the Secretary of Defense validate the correctness of the DMC methodology and preliminary estimates on the future size of the IRR pool and the impact of the proposed legislation. If this examination is positive, then the DMC staff recommends that the Secretary of Defense withdraw his proposal to extend Reserve service obligation through age 28. As an alternative, the DMC staff recommends that the manpower accession and retention policies of the active, Selected Reserve, and IRR components be analyzed on a Service-by-Service Total Force basis with the objective of meeting the Total Force mobilization requirements of FY80 and beyond. That in this process, the Secretary include consideration of creating a volunteer paid reserve of IRR members in critical areas, such as Army combat arms, who agree to serve for periods beyond their statutory obligation. Finally, that the Secretary on a priority basis ensure the implementation of all policy changes required to support a mobilization capability which can meet mobilization manpower requirements in FY76 and beyond.

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FOOTNOTES

1. With the current three-year minimum enlistment terms, men enlisted in FY 78 would still be on active duty in FY 80. Men enlisted in FY 75 and earlier years will complete their five years of active/Ready Reserve obligation by the end of FY 80. Thus, IRR members in FY 80 will be limited to those men who enlist in FY 76 and FY 77.
2. The FY 76 accessions figure is taken from a May 1975 presentation given by Mr. Brehm, Assistant Secretary of Defense for Manpower and Reserve Affairs. The FY 77 figure is taken from the OSD (M&RA) report on "Accessions Requirements and the Availability of Volunteers, 1975-1990," November 1974.
3. The enlistment term distribution for FY 76 is based on projections cited by Mr. Brehm in the May 1975 presentation noted in (2) above.
4. Analysis of DoD-wide enlisted personnel turnover prepared by a civilian contractor for the DMC shows that, while approximately one-quarter of all recruits are discharged involuntarily (drug abusers, substandard performers, disciplinary problems, etc.), almost one-third overall fail to complete the first term of enlistment for all reasons. The difference represents losses for other than involuntary reasons including medical discharges, enlisted entries into officer training programs, personal hardships, etc.
5. The reenlistment statistics are taken from the OASD (Comptroller) report on "Selected Manpower Statistics," May 1975 (page 59).
6. Prior service representation statistics among Selected Reserve accessions are based on DOD data contained in the June 30, 1975 report on the Selected Reserve, prepared by the Office of the Deputy Assistant Secretary of Defense for Reserve Affairs.

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7. The estimate on prior-service personnel who remain in Selected Reserve units beyond 12-month terms was provided by Personnel Division, National Guard Bureau.
8. It is assumed that first-term personnel discharged from active duty prior to completion of their first term are not normally permitted to transfer into the Ready Reserve. DOD Directive 1200.3, August 21, 1968 (Fulfilling the Military Obligation) supports this assumption.
9. The 13,000 officer strength figure is taken from the DOD Total Force Study referenced in the text above. The Total Force Study estimates a 13,000 officer strength for a 107,000 enlisted increment in IRR growth. Although the 13,000 figure probably is too high for DMC projected enlisted strength of 64,000, no analysis was conducted by the DMC to better relate officer strength to the projected enlisted strength level.
10. The modifications to existing conditions discussed by the DMC staff regarding terms of enlistment, reenlistment rates and rates of affiliation of prior-service personnel with Selected Reserve units would return these rates to the pre-AVF level. As the DMC staff projection of the impact of a return to these pre-AVF levels on the FY80 size of the IRR approximates the FY80 IRR size projected by the Services for the Total Force study, the pre-AVF levels probably were used by the Services in projecting the FY80 strength levels.

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WORKING PAPER
Not official position of Commission

U. S. AND SOVIET COMBAT-TO-SUPPORT RATIOS

A STAFF ISSUE PAPER
for the
DEFENSE MANPOWER COMMISSION

by John D. Sitterson, Jr. and Hugh M. Walton

Requirements Group
Defense Manpower Commission Staff

September 1975

EXECUTIVE SUMMARY

ISSUE: U. S. and Soviet Combat-to-Support Ratios

BACKGROUND: The DMC is required by P.L. 93-155 to give special attention to ". . . the number of support forces in relation to combat forces"; (and) ". . . the cost effectiveness and manpower utilization of the U. S. Armed Forces as compared to the armed forces of other countries."

This "combat-to-support" comparison is part of overall DMC staff efforts to comply with this requirement.

PROBLEM: There has been considerable Congressional pressure on DOD to reduce support and increase U.S. combat strength, as evidenced by the Nunn Amendment, comments found in the legislative history of P.L. 93-155, etc. The Soviet Army has been held up by some as an example of a force with a high combat-to-support ratio and was selected by the DMC as the foreign force most relevant for comparison with U.S. forces. Therefore, this paper which uses as a primary basis a contract study, for the DMC by the General Research Corporation, is designed to:

1. Define what is combat and what is support, under various pertinent definitions and methodologies.
2. Determine and compare the combat-to-support ratios of the U.S. and Soviet Armies.
3. Identify and examine the factors which influence the combat-to-support ratios of the U.S. and Soviet Armies and determine the significance of the differences in the ratios.

CONCLUSION:

1. The conclusions of the GRC study are:
 - a. There is strong evidence that U.S. and Soviet divisions have roughly the same percentage of men in combat and support functions.
 - b. In peacetime, the Soviet Army as a whole has a much smaller percentage of active duty men in support functions than the U. S. Army.

c. After mobilization, the Soviet Army may have about the same percentage of men in combat and support functions as the U.S. Army.

d. The trend in the Soviet Armed Forces is in the direction of increasing support manpower. The trend in the U.S. Army is toward decreasing support manpower.

e. Among the reasons for the higher peacetime combat-to-support ratio of the Soviet Army is its ability to mobilize and deploy quickly large numbers of support personnel for a war close to the borders of the USSR.

f. The combat-to-support ratio in the U.S. Army should be examined on its own merits, taking into account the Soviet threat and other strategic requirements, but without necessarily emulating the structure of the Soviet Army or any other foreign force.

2. DMC Staff commentary points out critical problems of U.S. force structure which are related to the discussion of combat-to-support ratios.

3. No specific recommendation for action concerning U.S. force structure can appropriately be made directly on the basis of this study.

RECOMMENDATION:

It is recommended that the Commission accept this DMC staff issue paper as an appropriate response to pertinent foregoing requirements of P.L. 93-155, to be considered together with other DMC papers concerning the composition of U.S. forces and the cost effectiveness and manpower utilization of the U. S. Armed Forces as compared to the armed forces of other countries.

NOTE: Other aspects of the proper composition of U.S. Forces are to be dealt with in other DMC papers, and the specific subject of U.S. combat-to-support ratio (Section 707(1) of P.L. 93-155) will be further addressed in material being prepared for the DMC Final Report.

U. S. AND SOVIET COMBAT-TO-SUPPORT RATIOS

Background

Public Law 93-155 requires the Defense Manpower Commission to give special attention to ". . . the number of support forces in relation to combat forces," (and) . . . the cost effectiveness and manpower utilization of the U.S. Armed Forces as compared to the armed forces of other countries."

As one part of the overall effort to comply with the foregoing requirements of P.L. 93-155, the DMC decided to undertake a "combat-to support" comparison of the U.S. and Soviet Forces. The Soviet Army has been held up as an example of a large, modern force with a high combat-to-support ratio and is the force most relevant for comparison with the U.S. Army.

It would appear that there is a presumption in the Congressional charge to the DMC that if an inordinately large portion of U.S. military manpower is engaged in support rather than combat missions, (when compared to other countries) we as a nation may not be getting as much "mileage" out of our manpower. Maybe the U.S. defense establishment has too much "fat"; maybe it is simply inefficient when it comes to using people; on the other hand, maybe a relatively high supporting establishment is consistent with valid mobilization plans. Whatever the explanation the charge to examine the number of support personnel in relationship to combat forces would appear by the law to be a question of effectiveness. In this larger context, the question of comparing U.S. and Soviet combat-to-support ratios is only one component of the larger subject.

Preliminary study of the entire subject included classified briefings by the Army Staff, the Defense Intelligence Agency, and the Central

Intelligence Agency, a study by the Army War College's Institute of Advanced Studies, and research of various other pertinent reports including several Brookings Institution publications and classified studies by the RAND Corporation. (Bibliography attached.)

It was evident at the outset that differences in geographical situations, strategic and doctrinal policies and economic societies have significantly impacted on U.S. and Soviet combat-to-support ratios. It also became apparent that there is a need to place such ratios in proper perspective. As a force development device, the combat-to-support ratio is of questionable value, as forces must be designed to provide an efficient mix of combat and support elements to accomplish specific tasks and missions, considering all the factors, rather than to meet an abstract concept like combat-to-support ratio. Effectiveness is the proper measure. On the other hand, such ratios are not without relevance, as those of a major potential enemy need to be analyzed for meaning in threat assessments, and major differences between their combat-to-support ratios and ours may signal a need to examine our own strategy and organization to deal effectively with the threat.

As the next step, the General Research Corporation, which has extensive background and expertise in the combat-to-support problem, was, through competitive procedures, awarded a contract to develop an unclassified study for the Defense Manpower Commission on "United States and Soviet Combat-to-Support Ratios." In practice, the study was confined essentially to the ground forces of the two countries, as sufficient comparable data for the other forces of the two countries proved to be unavailable in unclassified form. A copy of the GRC report is provided for each Commissioner, to accompany this paper. The GRC report

serves as the main vehicle for the Commission's consideration of this specific subject--with the DMC Staff comments and supplemental information provided herein.

Methodologies for Computing Combat-to-Support Ratios

It is essential and basic for meaningful combat-to-support comparisons to define with precision both terms and methodology of comparison because different definitions and computation terms can produce wide variations of combat-to-support ratios. There are some eight or nine recognized methods for computing combat-to-support ratios of ground forces, as listed in various publications of the Office of the Secretary of Defense, the Department of the Army and the Army War College. The GRC uses several of the most pertinent methods, which are summarized as follows:

1. Major Combat Units Method (Divisions Plus). This method treats as combat the entire division and all non-divisional combat elements (brigades, battalions, etc.) that close with the enemy or directly bring fire upon the enemy, such as corps artillery, separate infantry brigades, armored cavalry units, etc. All else is counted as support. This is an appropriate method for comparing combat-to-support ratios and is the one considered most meaningful by the DMC staff.

2. Division Method The category treats all personnel in combat divisions as combat and all other Army personnel as support. (Note: The GRC refers to the Division Method as the "division slice method" (page 36), thus giving the term "division slice" a different connotation from its customary meaning. The term is commonly used in the U.S. as a planning factor to cover the number of personnel in a

division in a theater of operations plus a proportionate share of other theater Army forces--including other combat units and combat support as well as services support. For some years the U.S. Army planning factor has been 48,000, although this number could be reduced substantially if separate brigades are counted each as equivalent to one third of a division as once suggested by William K. Brehm, Assistant Secretary of Defense, Manpower and Reserve Affairs.)

3. Battalion Method. This method, used in the so-called Nunn Amendment to the DOD Appropriation Authorization Act, FY 75, treats as combat only infantry, armor/cavalry, artillery, combat engineer, special forces, attack assault helicopter, air defense, and missile combat units of battalion size or smaller.

4. Combat Companies Method. This method counts as combat only the personnel in combat companies (using the same criteria as the Battalion Method, except that Engineers are excluded). All others are support.

5. Individual Jobs (MOS) Method. This method treats as combat only those individuals who are directly concerned with the loading and firing of a weapon or designating the target for a weapon. (This method cannot be used for the Soviet Army because of a lack of sufficiently detailed information.)

Basic Comparative Strength Information

U.S. Army. The U.S. Army has an authorized active military strength of 785,000. Out of this the Army in 1974 manned 13 active full-strength divisions (approximate personnel strengths: armored-16,500; mechanized-16,300; infantry-16,500; airborne-14,900; airmobile-17,700) and five separate brigades (total of 43 brigades). Through reorganization this

goes to 16 divisions and 4 separate brigades in FY 76 and thereafter (using some Reserve "roundout" units at least through FY 76), with a programmed total of 50 active brigades (a net increase of 7 active combat brigades over 1974).

Soviet Army. Estimates of total Soviet Army strength are somewhat controversial, depending not only on the intelligence estimates but also on details and definitions of Soviet organization and questions as to what should be included. The GRC report uses basically a total Soviet Army strength of 1,971,000; also discussed is a larger possible figure of 2,221,000, obtained by allocating to the Army's support elements not previously identified as part of the Soviet Armed Forces but mentioned by Secretary Schlesinger in his Report to the Congress, February 5, 1975. Out of that total strength the Soviet Army nominally gets some 167 "divisions" of various types, according to the GRC report and the International Institute for Strategic Studies report, The Military Balance, 1974-75. (While official estimates may vary somewhat, these unclassified figures seem sufficiently accurate for the purposes of this study.) The GRC breakdown of the 167 "divisions" follows:

66 Category I Divisions: (90% manned)	24 Tank (average strength 8,550)
	35 Motorized Rifle (average strength 10,800)
	7 Airborne (average strength 7,000)

49 Category II Divisions:
(about 2/3 strength)

52 Category III Divisions:
(about 1/3 strength)

(On mobilization, the Category II and III divisions are filled from the large Soviet reserve pools of manpower with previous military service. The Category II and III divisions have no counterpart in the U. S.

Forces, just as the U.S. National Guard and Reserve units have no direct counterpart in the Soviet Forces. The Soviets are also able to mobilize a very large support establishment.)

Highlights of the GRC Report

Highlights of the GRC combat-to-support analysis follow:

1. U.S. and full-strength Soviet divisions, although differing in size, have within them roughly comparable combat-to-support ratios, regardless of which of several methodologies is used.

2. In peacetime, the Soviet Army overall has had a much smaller percentage of active duty personnel in support functions than the U.S. Army; i.e., the Soviet Army has had much higher combat-to-support ratios than the U.S. Army, as shown below.

SOVIET AND U.S. COMBAT MANPOWER

(Percent of Total Strength)

<u>Definition</u>	<u>Soviet</u>	<u>U.S. Army (1974)*</u>
Division	61	32
Major Combat Units	65	42
Combat Battalion	46	25
Combat Company	33	16

(*DMC Staff Comment: In calculating the figures above, the GRC has used the 1,971,000 estimate of total Soviet Army strength. Higher estimates of Soviet Army strength, which may pertain as explained in the GRC report, would raise the support elements considerably and lower the Soviet combat-to-support ratio significantly. The U.S. Army ratios the GRC report uses were based on the 13-division Army of CY 1974, not the programmed 16-division force. Referring to the latter, in

testimony before a subcommittee of the Senate Armed Forces Committee on February 25, 1975, Mr. Paul D. Phillips, Deputy Assistant Secretary of the Army (M&RA), stated that the U.S. combat-to-support ratio will have improved to 53 percent in 1976. Apparently his ratios were computed using the Major Combat Units Method preferred by the Army.)

3. After mobilization, the Soviet Army may have about the same percentage of personnel in combat and support functions as the U.S. Army. (Although the GRC does not provide numbers and the exactness of the statement may be questioned, the general substance of the statement is predicated on the Soviet ability to rapidly mobilize large additional support forces as discussed on pages 46-47 of the GRC report.)

4. The trend in the Soviet Armed Forces is in the direction of increasing support manpower. The trend in the U.S. Army is toward decreasing support manpower.

5. Differences in geographical situations, strategic and doctrinal policies, economic societies and peacetime operations significantly impact on the development of U.S. and Soviet combat-to-support ratios.

6. The combat-to-support ratio in the U.S. Army should be examined on its own merits, taking into account the Soviet threat and other strategic requirements, but without necessarily emulating the structure of the Soviet Army or any other foreign force.

Differences in Individual Training Systems: DMC Staff Comments

The GRC study (pages 32-35) compares certain pertinent aspects of training in the U.S. and Soviet Armies. A major point is made that the Soviet Army, unlike the U.S. Army, sends inductees not requiring technical speciality training directly to operational units. GRC estimates that about 112,000 of these new inductees, short on individual training, normally are assigned to divisions and other major combat units at any one time. The Soviet system significantly increases the nominal combat-to-support ratio inevitably with some decrease in unit training status and combat readiness. GRC observes that the Soviet combat-to-support ratio could be viewed as lowered significantly (by as much as 6%) if these trainees and their trainers are counted as part of the support establishment, as in the U.S. Army. This could bring the Soviet combat-to-support ratio (computed on the basis of the higher estimate of Soviet forces) quite close to the future U.S. Army ratios Mr. Phillips projected for the 16-division Army. Meanwhile, the Soviets presumably could change or adjust this system at any time as they see fit--for example, raising unit readiness by holding trained personnel longer within their units or by transferring already trained personnel into priority units. By the same token, the U.S. Army could reduce its own training support establishment considerably and free manpower for operational duties by conducting more of its individual training in operational units instead of in training centers; but, as in the case of the Soviets, this also would affect unit training status and lower combat readiness. It also would reduce the mobilization training base

and training pipeline available to provide a flow of individual replacements in the event of hostilities. Thus far, considering the trade-offs, the U.S. Army has not chosen to go this route in peacetime.

Overall DMC Staff Comments

The GRC study systematically compares combat-to-support ratios of the U.S. and Soviet armies. It is especially useful in helping to lessen the gaps of understanding evidenced by misrepresentation and controversy over combat-to-support ratios. The study properly emphasizes the significant impact that differences in geographical situations, strategic and doctrinal policies, economic societies and peacetime operations have on the development of U.S. and Soviet combat-to-support ratios.

The GRC study in its treatment of trends points out that modern technology continues to increase the combat capabilities of both the U.S. and Soviet armed forces. Concurrently, more complex weapons and equipment have increased the requirements for supply, maintenance and transportation personnel. The Soviets are fully aware of this and indications are that the role of Soviet support troops is growing and will continue to grow. In contrast, the number of support troops in the U.S. Army has been decreasing, in part because of Congressional pressure. Given these trends, the GRC study states it is not impossible that the Soviet peacetime army may eventually have a lower combat-to-support ratio than the U.S. In any case, current trends clearly are that the U.S. combat-to-support ratio is increasing, that of the Soviet Army is decreasing, and the differences are becoming much smaller than

commonly believed. The trend in the U.S. Army is strikingly pointed up as the move to the planned 16-division force is implemented and U.S. support forces in Europe are reduced in compliance with the Nunn Amendment.

The implications for the U.S. Army constitute the real significance of the ratio comparisons. Beyond the GRC study, there remain the critical questions of the proper U.S. military force structure to deal, together with allies, with the threat, particularly the Soviet and Warsaw Pact threat to the NATO Central Region of Europe. Perhaps the central issue is how much of the U.S. military resources should be allocated to deterrence and initial defense in NATO, in what form, and how much should be organized for a longer conflict and other possible contingencies outside Western Europe. Key issues revolve around the question of a long or short war scenario. Soviet forces in Europe evidently are designed not only to project maximum visible combat strength in being, for political as well as military purposes, but to achieve, in the event of hostilities, a quick decisive blitzkrieg-type victory against the relatively shallow NATO defenses.

Soviet Forces also have a tremendous and rapid mobilization capability as a hedge against a longer war and, unless effectively interdicted, could reinforce in the critical Central European arena at a greater rate than the U.S. and its NATO Allies.

In the event of a conflict with the Soviet Union, all indications are that the initial stages will be violent in the extreme, with casualties in men and equipment and the consumption of ammunition and POL extremely high. This situation implies that the demands on the U.S. for reapply of men and materiel would be greater than ever before and within a much

shorter time frame than in past conflicts. But, if the combat elements already committed are insufficient and are overpowered by superior forces, then the matter of their subsequent support becomes academic.

Obviously, this matter involves more than the U.S. Army. It involves all the other U.S. Services (especially the Air Force and its role in Europe), and finally the subject of nuclear warfare, tactical and/or strategic.

Such are the problems which are highlighted by the U.S. and Soviet combat-to-support comparisons. However, the problems are not solved by emulating Soviet or other foreign ratios, relevant as they may be. Rather we agree with the GRC that the issues of U.S. force structure should be determined on their own merits, taking into account the threat, the role of Allies, resources available, strategic options, and all other pertinent factors.

The Commission has previously determined that it will conduct its manpower studies within the framework of existing U.S. national security policy and strategy. Within those parameters, however, other DMC staff papers will treat various issues concerning the size and composition of U.S. forces.

Recommendation

It is recommended that the Commission accept this DMC staff paper as an appropriate response to the pertinent requirements of P.L. 93-155--to be considered together with other DMC papers concerning the composition of U.S. Forces as compared to the armed forces of other countries.

Attachments

Supplemental Bibliography
GRC Report

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TACTICAL WARFARE OPERATIONS

CONTRACT REPORT OAO CR 116

Published July 1975

**United States and Soviet
Combat-to-Support Ratios**

by

Dr. Philip H. Lowry
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OPERATIONS ANALYSIS DIVISION

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NOTE TO THE READER

Common military terms often have different meanings and connotations in the Soviet Union and the United States. Readers familiar with Soviet writings as well as readers familiar only with US military writings may find some ambiguities in the terms used in this report. This note is designed to clarify these ambiguities. For example, "Soviet Army" in the USSR includes the Strategic Rocket Forces, National Air Defense Forces, Ground Forces and Air Forces, and sometimes the Navy. "Ground Forces" in the USSR is equivalent to the US Army, except for US air and missile defense units assigned to protect the United States. "Ground Forces" includes the Marine Corps in the US, but not the Naval Infantry in the Soviet Union.

Units with the same name in the US and Soviet armies may have different strength as shown:

	Number of Men	
	US Army	Soviet Union
Divisions	16,000	10,000
Battalions	500-800	250-450
Companies	100-200	50-100

In this report, we give the following meanings to ambiguous words:

Soviet Armed Forces

All military units, including those in the KGB and MVD not under the Ministry of Defense.

Soviet Army

That part of the Soviet Armed Forces comparable to the US Army.

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SUMMARY

INTRODUCTION

This report compares the military manpower devoted to combat and support functions of the United States and the Soviet Union, primarily in the ground forces. The report is designed to answer the following questions:

1. What is combat and what is support?
2. Is it true that the Soviet Army has less support than the US Army?
3. What influences the combat-to-support ratio of the US and Soviet Armies?
4. How should we assess proposed changes in the combat-to-support ratio of the US Army?

The answers to these questions are based on the best data available. It must be emphasized, however, that these answers cannot be clear, simple, or confident. Our knowledge of the organization and strength of the Soviet Armed Forces has many gaps. Perhaps of more importance, there are gaps in our understanding of the domestic and foreign political and military problems faced by the Soviets and how they have gone about solving them. We can be sure that their problems are very different from ours and so their solutions are also different. Applying American ideas and categories to the Soviet Armed Forces can lead to gross distortions.

WHAT IS COMBAT AND WHAT IS SUPPORT?

The following definitions of combat and support are used in this report:

- Troops in divisions are combat; all others are support.

The difficulty with this definition is that some combat units are not in divisions. The US and Soviet Armies have different proportions of these nondivisional combat units.

- Troops in major combat units (divisions, separate brigades, regiments, and battalions) are combat; all others are support.

The difficulty with this definition is that all divisions, brigades, regiments, etc., contain support units. The US and Soviet Armies have different proportions of these support units.

- Troops in battalion-size units (500-800 men in US battalions) entitled tank, infantry, artillery, cavalry, aviation, and combat engineers are combat; all others are support.

The difficulty with this definition is that US battalions contain more support personnel than Soviet battalions.

- Troops in company-size units (100-200 men in US companies) entitled tank, infantry, etc., but not including combat engineers, are combat; all others are support.

The difficulty with this definition is that US companies contain support personnel but most Soviet companies do not.

DOES THE SOVIET ARMY HAVE LESS SUPPORT THAN THE US ARMY?

- Yes, if all current active duty personnel are considered.

The fraction of support personnel varies with the definition, but the Soviets have a smaller fraction than the US for all definitions.

Although there are large uncertainties in our knowledge of Soviet support personnel, these uncertainties are not large enough to reverse the answer.

- No, within full-strength US and Soviet divisions.

Our knowledge of the composition of Soviet divisions is more complete than our knowledge of the Soviet Army as a whole.

According to the combat battalion definition, a US division has less support than a Soviet division (24 compared with 28 percent).

According to the company definition, US and Soviet divisions have about 50 percent of their manpower in support.

- Unlikely, if reserves as well as active forces are considered.

Soviet strategists state that mobilization plans include the possibility of a protracted war.

These plans include the mobilization of entire civilian repair, truck transport, and medical establishments.

If the Soviets mobilize the support personnel in their reserve, the percentage of support will more than match the US.

WHAT INFLUENCES THE COMBAT-TO-SUPPORT RATIO IN THE US AND SOVIET ARMIES?

- US and Soviet history have influenced the resources they devote to support.

Since 1865, every major US war has been fought overseas. Expeditionary forces require all support to be in identified military units, rather than a mixture of civilian and military personnel.

A large part of World War I and World War II was fought in Russia. Fighting on home territory blurs the distinction between civilian and military noncombat functions. This experience influences the present Soviet military establishment.

- The difference between US and Soviet society and political institutions influences the resources devoted to support.

Everybody works for the State in a communist society. To some extent the distinction between military and civilian noncombat functions is bureaucratic rather than real.

The US democratic tradition and the Constitution require a clear distinction between civilian and military noncombat functions.

Government control over civilian repair and transport allows the Soviet Army to count on prompt mobilization of entire support units.

There are political and social barriers to a similar arrangement for support units in the US national guard and reserve.

- Differences between the US and Soviet economy influence the resources devoted to support.

The US economy is service rather than production oriented. There is a large reservoir of trained repairmen and large stocks of repair parts. This is reflected in a substantial repair capability in the peacetime armed forces.

The Soviet economy is production rather than service oriented. There are shortages of repair parts and repairmen. It is counterproductive to lock up these skills in the armed forces in peacetime.

- The Soviet military establishment differs substantially from the US military establishment.

There are seven rather than four military components: KGB, MVD, Strategic Rocket Forces, Ground Forces, Air Defense Forces, Air Forces, and Navy.

Each component trains its own officers and men in its own schools and colleges and training establishments. 141 schools have been identified that produce junior officers, and 17 war colleges (or equivalents) for career officer training and education.

There probably are 1200 or so military commissariat offices that run the draft and keep track of all reservists, civilian vehicles, and other items that may be mobilized.

The Ministry of Defense operates farms and industrial plants. Some farms exceed 10,000 acres.

The Ministry of Defense supervises military training for all males between 15 and 17; each high school has military instructors. In addition, there are youth camps for field training with a total membership in excess of 9,000,000.

These functions, for which there is no counterpart in the United States except for academies and war colleges, may absorb over 500,000 active duty personnel who would be treated as support.

- US and Soviet combat units have different peacetime functions.

Soviet combat units do all their own house-keeping, barracks repair, unloading of delivered supplies, and firefighting.

A major political purpose of the draft in the Soviet Union is to inculcate loyalty to the regime. Many hours per week are devoted to political indoctrination of draftees and communist party affairs.

The US Army increase training time for combat units by allocating many house-keeping functions either to special units or to civilian contractors.

HOW SHOULD CHANGES IN THE US ARMY COMBAT-TO-SUPPORT RATIO BE ASSESSED?

- The differences between the society, history, government, and functions of the US and Soviet Armies are so great that the proper ratio of combat and support in the US Army should be examined on its own merits, not on presumed analogies with Soviet experience or practice.

Chapter 1

DEFINITIONS OF COMBAT AND SUPPORT

INTRODUCTION

There are about as many definitions of combat and support as there are laws, regulations, and studies treating the problem. Most current definitions reflect the organization and structure of the force under consideration, the administrative purpose of the agency preparing the data, and the purpose the data are designed to serve. There is not even a uniform method for breaking down categories of support within the US Army, let alone comparing them with Soviet forces. Even if there were a standard for the US Army, the organizational differences between US and Soviet units, even those with the same name, makes any single definition a distortion of reality.

At one extreme, divisions and independent brigades and regiments have been considered 100 percent combat; all other personnel can be considered support. Such definitions give high combat-to-support ratios. At the other extreme, the function of each individual in the armed forces can be assessed one-by-one and, if that function does not have the primary job of inflicting casualties on the enemy—a gunner or loader or fire director—it is treated as support. This method gives a low combat-to-support ratio. Moreover, we do not have data available to compare US and Soviet manpower in such detail. Other definitions fall within these two extremes.

Restrictions are sometimes placed on the definition of support, applying the ratio only to forces deployed or planned for deployment overseas. This raises the combat-to-support ratio because it eliminates from support

all training and US base support and a substantial fraction of medical, administrative, training and recruiting manpower, support for the reserves, and research, development, and test. Moreover, the proportion of these functions carried out by deployed Soviet forces differs substantially from the proportion carried out by US forces.

Finally, technology tends to increase the fraction of manpower in support functions. A World War II anti-aircraft battery of six guns in the US, British, or German Army required at least three people to fire each gun. A modern surface-to-air missile battery needs only one man to push the button and, in more advanced systems, only one operator for the radar and computer which automatically fires the missile.

It is essential, therefore, to state with precision exactly what is being compared when we define combat-to-support ratios, if we are to avoid manipulating the data to reach a predetermined conclusion.

This chapter gives a number of different definitions so that the reader will always be conscious of the distortions introduced by any single definition.

DICTIONARY OF UNITED STATES ARMY MILITARY TERMS*

Combat Unit

"Unit trained and equipped for fighting as an independent tactical element."

Combat units are normally called divisions, regiments, brigades, and battalions when the adjective infantry, armor, artillery, or cavalry is attached.

* All quotas in this section are from AR-310-24, Dictionary of US Army Military Terms, 1972.

All personnel in a combat unit are trained to fight, but a proportion have primarily administrative and support functions and actually fight only in extreme emergencies. But, because all personnel are trained to fight, the unit is sometimes treated as 100 percent combat.

Combat Support Elements

"Those elements whose primary missions are to provide operational assistance to the combat forces and which are a part, or are prepared to become a part, of a theater, command, or task force formed for combat operations."

Combat support includes military police, military intelligence, and certain engineer and signal units. The US Army usually treats these units as combat for traditional and psychological reasons. The Soviet Army, on the other hand, has no category of combat support. Soviet engineers, signal, and chemical personnel are listed as "special troops," along with transport, railroad, and road troops which are clearly support. For purposes of this report, therefore, US and Soviet troops in these categories will be considered support, except for combat engineer battalions.

Combat Service Support Elements

"Those elements whose primary missions are to provide service support to combat forces and which are or are prepared to become a part of a theater, command, or task force formed for combat operations."*

Service support provides the means for military forces to fight away from their own home base.

Overhead

"Those resources consisting of personnel, funds, and/or material which are used to provide indirect support for the accomplishment of the direct mission of an organization."

* Ibid. Service support includes: medical, supply, maintenance, transportation, construction, mapping, chaplain, finance, legal and administration, military police, civil affairs, acquisition and disposal of property, bath, and laundry and dry cleaning.

Overhead comprises that part of the military forces that is not expected to fight. Currently, the US Army divides overhead into the following categories:

- Auxiliary Forces: intelligence and security, world-wide communications, research and development, support to other nations, and mapping.
- Mission Support Forces: support to reserves and national guard, support of home bases and training of combat and combat service support units, and their command.
- Central Support Forces: support of installations that have no combat units, army-wide medical services, personnel support and individual training, command and logistics, and military personnel assigned to other agencies of the US Government.
- Individuals: military personnel not assigned to a unit, including patients, transients, prisoners, trainees and students, including cadets at the US Military Academy.

Most discussions of combat-to-support ratios confine themselves to combat vs. combat service support. Overhead is left out. In 1975, 40 percent of the US Army military manpower is in the overhead category plus an equal number of permanently employed civilians.

It is doubtful that the Soviet Army makes the same distinction between combat service support and overhead. US categories may not be entirely applicable in all cases when comparing US with Soviet military manpower allocations. However, for purposes of this paper, US definitions should suffice, with the exception of combat support.

DIVISIONS

Definition

Treat all personnel in US and Soviet divisions as combat; treat all other uniformed personnel in the Army as support.

Effect

The US Army has a large number of combat units that are not in divisions. These include armored cavalry regiments, separate brigades, and a number of separate artillery, engineer, and aviation battalions. The Soviet Army has similar nondivisional combat units, although it is believed that they are fewer in proportion to the number of divisions. The effect of treating these nondivisional combat units as support is to maximize the difference in apparent support of the US Army compared with the Soviet Army.

DIVISIONS AND OTHER MAJOR COMBAT UNITS

Definition

Treat all personnel in US and Soviet divisions, separate brigades, combat regiments, and combat battalions as combat; treat all other uniformed personnel in the Army as support. This is the preferred definition of the US Army.

Effect

This definition reduces the fraction of support personnel in both the US and Soviet Armies compared with the previous definition. It does not, however, take into account the support personnel within these units in both US and Soviet divisions and separate brigades, regiments, etc. The effect of this definition is to maximize the fraction of combat personnel in the US Army in absolute terms.

COMBAT BATTALIONS

Definition

Treat as combat only personnel in infantry, cavalry, artillery, armored, combat engineer, special forces, attack assault helicopter, air defense, and missile combat units of battalion or smaller size; treat all other uniformed personnel in the armies as support.*

* This definition is identical to that given in Title III, Section 302.(b) of Public Law 93-365, the so-called Nunn Amendment, that required certain changes in US manpower in Europe in 1975.

Effect

This definition reduces the absolute fraction of personnel in combat units in both the US and Soviet Army, because all headquarters and other support units in a division, brigade, regiment, etc., that do not have the title given are treated as support. The effect of this definition is to increase the combat-to-support ratio of the US Army compared with the Soviet Army because a Soviet battalion has far less internal support than a US battalion.

COMBAT COMPANIES

Definition

Apply the previous definition, except for combat engineers, to units of company rather than battalion size.

Effect

This definition further reduces the combat-to-support ratio compared with previous definitions because all battalions have personnel in headquarters, medical, and other support units. It has the advantage of eliminating some, but not all, of the difficulty of equating US with Soviet units of the same name. The effect of this definition is to increase the fraction of support manpower in the US Army compared with the Soviet Army.

INDIVIDUAL JOBS

Definition

An extreme definition of combat vs. support is to treat as combat only those personnel who are directly concerned with the loading and firing of a weapon or designating the target for the weapon.

In principle, this definition would eliminate all distortions in comparing US and Soviet combat-to-support ratios. In practice, the available information regarding the exact job descriptions of each Soviet soldier is so limited that a valid comparison is not possible.

IMPLICATIONS

It should be clear from these definitions that there is no single definition of combat and support that applies to all circumstances. Every definition can introduce some distortion because of the vast difference between the US and Soviet governments, society, military forces, and strategy.

As we shall see in Chapter 3, each definition allocates a different fraction of manpower to combat and support and alters the comparison of US and Soviet forces.

Chapter 2

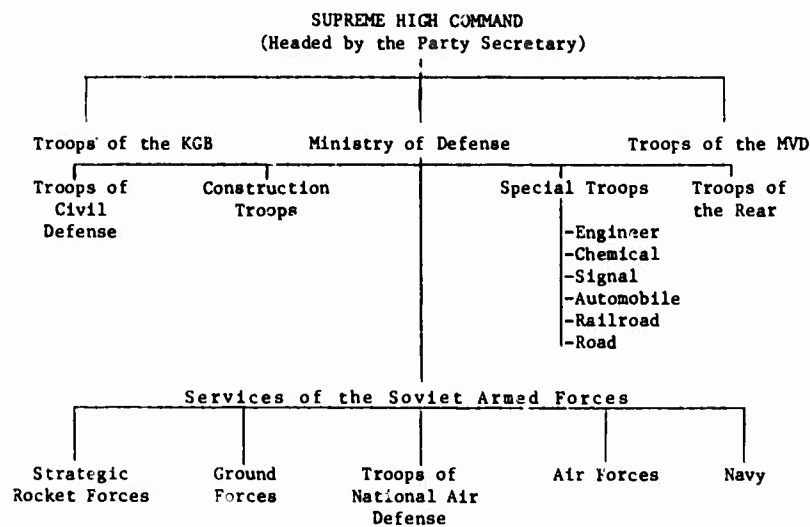
ORGANIZATION AND STRUCTURE OF THE SOVIET ARMED FORCES

ORGANIZATION

The organization of the Soviet armed forces is basically different from that of the military forces of the United States. This adds to the complexity of the task of comparing combat-to-support ratios. These fundamental differences will be apparent when the organization and structure of the Soviet military establishment are examined.

Basic Structure

According to Soviet law, the Armed Forces of the USSR are composed of the following primary components:



As noted on the above chart, there are three basic categories of Soviet troops: those of the Ministry of Defense, the KGB, and the MVD. Each has its own leadership and personnel management. Ministry of Defense forces are by far the most important, but the other forces cannot be discounted. For example, all of the skirmishes with the Chinese, including the 1969 Battle of Damansky Island, have been fought by the Border Troops of the KGB, and not by Ministry of Defense Forces under command of Marshal Grechko.

MINISTRY OF DEFENSE

Armed Services

There are five armed services under the Ministry of Defense:

Strategic Rocket Force. Declared the primary service when it was created in 1959. Contains all land-based ICBMs, IRBMs, and MRBMs with ranges greater than 1000 kilometers.

Ground Forces. The largest of the Soviet services. Equivalent in many respects to the US Army, except for the national guard, air defense of the United States, civil defense, and Corps of Engineer civil functions: dams, rivers and harbors. The Soviet Ground Forces have four basic components: rocket troops and artillery, motorized rifle troops, tank troops, and air defense troops. In addition, there are supporting branches.

Troops of National Air Defense. This service provides for the air defense of the USSR, and its coverage now has been extended to the other nations of the Warsaw Pact. It consists of 3 major components: interceptor aviation, ground-to-air missile, and radar. There also are the antimissile and antispacesystems.

Air Forces. Contains three basic components: long range aviation, frontal aviation, and transport aviation. Helicopters are assigned to transport aviation.

Navy. Consists of 3 basic components, the most important is always stated as the nuclear submarine armed with ballistic missiles. The other two components are the surface fleet and naval aviation. A large portion of the Soviet bomber-type aircraft are assigned to the Navy for reconnaissance and other purposes. In addition, the Soviet Navy has between 15,000—25,000 Naval infantry, somewhat similar to the United States Marines. Naval forces also include coastal rocket artillery and mine-laying elements.

Other Troops

Troops of Civil Defense. Attention to civil defense in the Soviet Union has increased markedly since 1967. In 1972, when a new Chief of Civil Defense was appointed, he also was designated as a Deputy Minister of Defense. Several dozen Soviet general officers now have been identified as being assigned to civil defense.

Construction Troops. Like the Troops of Civil Defense, these troops are headed by a Deputy Minister of Defense. Probably perform all of the functions of the US Corps of Engineers, including civil functions, the Navy construction corps and the greater part of the military construction that is done by civilian contractors in the United States. A major difference is that construction troops build many of the civilian airports and major buildings, including apartment houses, that are not directly associated with the military. Such troops in the Soviet Union act and serve under different regulations than other troops, both combat and support. Those inductees reporting for duty in the Construction Troops receive training different from those entering any of the five services or even other support elements. The educational level of the inductees may be a factor in the determination of assignments to these troops.

Special Troops. The following troops are often referred to as "special troops," and do not have a centralized head. Their chiefs are not "Deputy Ministers of Defense," as is the case with the Troops of Civil Defense and the Construction Troops. "Special troops are designated for supporting the combat activities of arms of services."* They include:

Engineer Troops. These are of many varieties, and some are specifically assigned to the services.

Chemical Troops. Responsible for chemical, bacteriological, and nuclear decontamination—suggesting preparation for chemical, bacteriological, and nuclear warfare. Assigned to all services.

Signal. A large arm, with troops assigned to all services and other agencies.

Automotive. These are divided into a number of categories, and may be assigned to specific services. Responsible for motor transport in general.

Railroad: A separate body of troops trained to build and repair railroads and railroad bridges under nuclear as well as conventional attack. In 1974-75 large numbers of these troops were engaged in building the new northern line of the Transsiberian Railway, which circles Lake Baikal to the north.

* Textbook for Reserve Officers of Motorized Rifle and Tank Troops, Moscow: Military Publishing House, 1973, p. 40.

Road. As with the railroad troops, the road troops build roads, including bridges. They are apart from the automotive troops, who are concerned with the transport of goods.

Troops of the Rear Service. These are essentially quartermaster troops, in the US sense. They include medical troops, food-handling troops, fuel services, clothing, ammunition, etc.

Educational Institutions*

Most of the younger Soviet officers are graduates of "military and higher military schools." These are specialized schools, accepting young men age 17-22 and graduating them with commissions as lieutenants. Most of the schools offer 4 or 5 year courses and award degrees. One-hundred-forty-one of these military and higher military schools have been identified. Their nearest equivalents in the United States are the three service academies, West Point, Annapolis, and the Air Force Academy.

It is estimated that, for each of these schools, the size of the student body may vary between 1000-2000, and the average number of graduates per school each year is 350. Total number of lieutenants commissioned annually is believed to be approximately 49,000.

For career officer training and education, the Soviet Armed Forces maintain 17 "academies," which are equivalent to the war colleges and staff and command schools in the United States. Courses are from 2 to 5 years.

Total personnel assigned to the military schools and academies, including staffs, faculty, students and housekeeping personnel, may number 350,000 to 550,000.

The number of officer inputs for support of Soviet Ground Force operations cannot be determined with any degree of certainty. From our analysis of the military and higher military schools, we believe the annual number of graduates going into the Ground Forces and into supporting areas are approximately as follows:

* For a more detailed explanation of the Soviet educational institutions and how the composition of the specialized military and higher military schools may suggest combat-to-support ratios, see Appendix A.

<u>Soviet Ground Force School Graduates</u>	<u>Combat</u>	<u>Support</u>	<u>Total</u>
Combined arms, tanks, rockets and artillery, troop air defense, airborne	9,800		
Tank engineers and artillery engineers		1,400	
Support personnel from joint service schools that appear to support Ground Force operations		8,050	
Total	9,800	9,450	19,250

Troops in Special Assignments

In addition to the above troops, which can be identified by their insignia, there are other special categories of troops, and troops in special assignments, which have no counterparts in the United States. Among these are the following:

Military commissariat offices: Military commissariats are responsible for ensuring that youth receive their pre-military training and are prepared for universal military service. After this service is completed, military commissariat offices also are responsible that reservists maintain the required military proficiency. Another duty is to keep track of all equipment that might have military utility, such as trucks, automobiles, motorcycles, bicycles, and farm machinery. In Moscow there are at least 35 military commissariat offices, each believed to contain between 15-30 personnel. In Lithuania the regional military commissariat office contains the following: duty officer, secretary, chief of the political department, the pension group, and the administrative support unit.

Within the city of Vilnius there are at least 5 military commissariats, which appear to be the same size as the Moscow offices.* Insofar as is known, all personnel in these offices are military.

Military garrisons: Many major cities in the Soviet Union have "military garrisons" assigned. These perform ceremonial duties, as well as certain housekeeping functions. General regulations of the Soviet armed forces define some aspects of these groups.**

* Vilnius City Telephone Lists, Vilnius, 1971.

** See: General Regulations of the Armed Forces of the USSR, Moscow: Military Publishing House, 1972, pp. 196-232.

Other Organizations in the Soviet Ministry of Defense

Under the Ministry of Defense are two types of organizations that have received little attention when considering combat-to-support ratios. These are called "self-financing enterprises" and cultural institutions, and require considerable numbers of personnel.

Self-Financing Enterprises

The Ministry of Defense operates a number of organizations that are supposed to be self-supporting, i.e., requiring no direct budgetary support from the Ministry of Defense. Data are lacking on the number and type of such enterprises, but a few examples show how widespread these organizations are in the Soviet military establishment.

Military Sovkhozes (farms): The Soviet Ministry of Defense operates military sovkhozes, the numbers and locations of which are considered a state secret. These range from large establishments of over 10,000 acres, some of which may produce as much as 15,000 metric tons of grain and vegetables and using over 21,000 tons of fertilizer, to the smaller hay, vegetable, poultry and livestock farms managed by individual regiments of the services. One large military farm turned a clear profit of 1.3 million rubles in 1973, after supplying the local military forces with potatoes and beets.* These farms are probably under the control of the Deputy Minister of Defense and Chief of the Rear, General Kurkotkin, because a number of articles about these farms appear in the Soviet Army monthly journal, Rear and Supply of the Soviet Armed Forces. Soldiers and airmen work on these regimental farms as part of their military service as is shown by a 1973 Ministry of Defense Regulation restricting the permitted uses of money from crop and animal sales by regimental commanders.**

Post Exchanges. The Soviet Military Trade Organization (Voyentorg) combines many of the functions of the Post Exchange and Commissary in US forces. "The goal of military trade is to provide service for military men, their families, military industrial and office workers for all types of household equipment and operation. Basic

* Rear and Supply of the Soviet Armed Forces, No. 4, 1974, p. 24.

** At least 75 percent of the money must be spent on farm-related activities (self-financing); the remainder can be spent "to improve the food supply service." One percent of return from meat sales can be used for "awards to military personnel, civilian field workers, and office workers of the kitchen husbandry." Ibid., p. 68.

foods, clothing, refrigerators, motorcycles, and cars are allocated directly to military trade in the Five Year Plan by the State Planning Committee. Other items, such as canned and frozen products, matches, photographic equipment, must be distributed by local authorities. In the period 1971-1972, 112 warehouses, 130 stores, and many dining rooms, coffee houses, and seamstress shops have been built. Voyentorg has acquired more than 2000 trucks. As in the US, most Soviet Voyentorg workers are civilians, but the managers and supervisors are active-duty officers. It should be noted that all orders for goods must be approved by the commander of the garrison where the Voyentorg is located.*

Most Voyentorg stores have tailor shops with civilian labor to serve officers and career enlisted men. Unlike the US Army, career personnel in the Soviet armed forces are issued a bolt of cloth and have their uniforms made to order. It is apparently a widespread practice to use this, presumably very good cloth, for personal purposes and the tailor shops therefore are under-utilized. The shops then must serve the civilian community in order to meet their production quotas.** It is possible that some military repair depots may serve civilian trucking enterprises because of similar under-utilization of the military vehicles.

Cultural Institutions

An extensive network of central cultural establishments is operated by the Ministry of Defense. At the top are the M. V. Frunze Central Soviet Army Club, the Central Armed Forces Museum, the Central Theater of the Soviet Army, and the Twice Red Banner Soviet Army Song and Dance Ensemble. Most major garrisons have officers' clubs, tea and coffee houses, and theaters for movies and amateur theatricals. The Military Publishing House publishes more than 350 titles—books and pamphlets—totaling almost 17,000,000 copies. The Ministry of Defense publishes 20-30 daily, weekly,

* Gen-Maj. V. Bondarenko, Deputy Chief of Main Trade Administration of the USSR Ministry of Defense, Rear and Supply of the Soviet Armed Forces, No. 7, 1973, pp. 60-65.

** Lt-Col. A. Kortashov, Rear and Supply of the Soviet Armed Forces, No. 10, 1973, p. 72.

and monthly newspapers and magazines. The number of radio broadcasting stations operated for the Armed Forces has tripled since 1960.*

Sport and tourism is a large-scale and highly organized activity in the Soviet Armed Forces. The chief of the Tourism Department of the USSR Ministry of Defense is a brigadier general, General-Major N. Garetnin. There are 26 tourist bases with a capacity of 10,000 people. Apparently all Ministry of Defense personnel except conscripts, are eligible for tours. There are 700 tourist instructors under General Garetnin, most of them active-duty officers. The Central Military Hunting Society of the Ministry of Defense has facilities to handle 28,000 people. The total number of tourists planned for 1974 was 113,000 and more in 1975—the 30th anniversary of the Soviet victory in World War II. Tourism is supported by the Clothing and Supply Directorate, the Main Directorate of Trade, and the Central Military Hunting Society of the Ministry of Defense. The Ministry of Defense operates motorships on the Volga and Yenisey Rivers and buses over routes totaling 20,000 miles.**

TROOPS OUTSIDE OF THE MINISTRY OF DEFENSE

As previously noted, Troops of the KGB and MVD are considered by Soviet law as part of the Armed Forces. Manpower is provided through the Soviet system of universal military service. Subordination and tasks of these forces are as follows:

Troops of the KGB. These forces are directly under the Committee for State Security. The largest component is the Border Guard, who are equipped with tanks, armored personnel carriers, aircraft and ships, which carry light armament and depth charges. In addition, other components of KGB troops provide high level communications and guard nuclear stockpiles.

* General-Major A. S. Milovidov and Colonel V. G. Kozlov, eds., Problems of Contemporary War, Moscow, 1972. (Translated and published under the auspices of the US Air Force. US Government Printing Office, Washington, D.C.)

** General-Major N. Garetnin, Chief of the Tourism Department, Ministry of Defense, Rear and Supply of the Soviet Armed Forces, No. 4, 1974, pp. 62-65.

Troops of the MVD. These troops, under the Ministry for Internal Affairs, in some respects serve the functions of the US National Guard in quelling domestic disturbances. The primary difference is that these troops serve full-time, and training and equipment are very similar to that issued to the Ground Forces. MVD troops also guard concentration camps.

COMBAT AND SUPPORT

This examination of the basic structures of the Soviet Armed Forces shows five combat services, supported by varied arms and branches, some of which are not the equivalent of any organization within the armed forces of the United States. The role of certain of the special troops—engineer, chemical, and signal—is not difficult to understand. However, there are no units in the peacetime structure of the United States armed forces who, within the interior of the nation, build railroads and roads for both civilian and military use. Military commissariat offices, military garrisons and military farms also have no counterparts.

Voyentorg, the Soviet Military Trade Organization, resembles post exchanges and commissaries in the United States. To a lesser extent, the same can be said for the Soviet military "cultural establishments." Sports and tourism in the Soviet military forces are somewhat similar to the function the special services in the United States Army would perform.

Numbers of the Soviet support forces are not known with any degree of accuracy. But as this examination of the organization and structure of the Soviet Armed Forces suggests, the numbers of uniformed personnel outside of the five basic services—Strategic Rocket Forces, Ground Force, Troops of National Air Defense, Air Forces and Navy—must number in the hundreds of thousands.

COMPOSITION OF TOTAL SOVIET MILITARY MANPOWER

The Soviet Armed Forces have four categories of personnel: officers, warrant officers and ensigns, sergeants and petty officers, soldiers and

Officers

An analysis of Soviet officer strength is not available. But some scattered references in Soviet publications to officer enlisted ratios and our knowledge of officer candidate schools and military academies make it possible to give some reasonable estimates. The Soviets state that the enlisted-to-officer ratio in the traditional forces is between 7 and 11 to 1, while it is much lower in missile, radio-technical, and aviation units.* The number of officer candidate schools and an estimate of their size indicate that roughly 49,000 lieutenants are produced annually.** Regulations provide a normal promotion cycle of 10 years from lieutenant through senior lieutenant and captain, giving a total of 400,000 junior officers.† Two thirds of the officers in regimental-sized units are junior officers, so that there would be 200,000 major, lieutenant-colonels, and colonels.‡ Thus, there would be 600,000 officers below general officer rank. Requirements for lieutenant colonels, colonels, and generals at higher headquarters, schools, and agencies of the Ministry of Defense suggest that there are more than 700,000 officers in the Soviet Armed Forces.

The number of reserve officers cannot be estimated because many superior draftees become junior lieutenants after completing their draft service, if they pass the required examination.

Warrant Officers and Ensigns

In 1972, the Ministry of Defense revived the old Czarist rank of warrant officer and ensign. It is believed that the purpose was to keep adequate numbers of high-school graduates, not eligible for officer rank, in the Armed Forces. The number of warrant officers and ensigns is not

* Officer's Handbook, p. 168.

** See Appendix A for a breakdown of 141 "military and higher military schools" which provide officer inputs to the Soviet Armed Forces. It is estimated that each of these schools graduate between 300-400 officers each year.

† Soviet Military Regulations, Section 6, Article 16, and estimating about 20 percent attrition.

‡ Officer's Handbook, Ibid.

known, but it is believed to be included in the officer portion of the 7-11 to 1 ratio of enlisted men to officers.

Sergeants and Petty Officers

Soviet regulations and practice provide 6 months initial practical training in schools and training units for all draftees who have completed high school and have a militarily useful specialty. Inductees who successfully complete this initial specialist training automatically become junior sergeants. If they do well after joining their unit, they can become sergeant (petty officers) after another 6 months and senior sergeant after one year in the unit. About 40 percent of the sergeants and 30 percent of the petty officers are demobilized each year. Only 10 percent reenlist.* Roughly 30 percent of Army inductees become sergeants; 80 percent of inductees in the other services probably become sergeants and petty officers.

Soldiers and Sailors

Privates have few amenities in the Armed Forces. A man with no specialty receives pay of 2.80 rubles per month—equivalent in purchasing power to \$5 at most in military stores. Inductees are authorized a maximum of 10 days' leave in their 2-year tour, but only for exceptional performance and few are believed to receive it. Inductees, not qualified for specialist training, go directly to their military unit where they are isolated for indoctrination for 4 weeks, after which they take the oath and are given a permanent assignment, and receive individual and unit training as riflemen, loaders for tank and artillery guns, and other nonspecialist jobs.

Preinduction Training

In 1967, the Soviet Union reduced the draft from three years to two and lowered the draft age from 19 to 18. To compensate for the reduced training period and immaturity of draftees, the law requires all 16 and

* The Soviet Soldier, USAREUR Pamphlet 30-60-10, 1974, p. 17.

17 year-old males to receive 140 hours of classroom instruction and 10-24 days of field training, including rifle practice. Preinduction classroom training is normally carried out by reserve officers; field exercises are normally conducted by reserve officers under the supervision of active duty officers. The Ministry of Defense directs the course of instruction, writes the textbooks, supervises and inspects the course of instruction at schools, farms, and factories. It also provides the weapons, ammunition, and targets for the field exercises.

Additional training is available in the clubs of the Voluntary Society for Assistance to the Army, Air Force, and Navy (DOSAAF). DOSAAF is open to all Soviet citizens over 14. It offers training in tractor, truck, and motorcycle driving, radio operation, navigation, gliding and flying, skiing, and parachute jumping. There are 9,000,000 members, but it is unlikely that many clubs actually provide these activities. Recently, the Soviet press has complained about the poor quality of driver training in the DOSAAF.*

Training of Soviet Officer and Enlisted Reserve Personnel

The Universal Military Service Law of the Soviet Union provides for refresher training of reserve officers and enlisted personnel up to age 50. Reserve officers up to age 30 may be involuntarily recalled to active duty for 2-3 years, "in the number and occupational specialties defined by the USSR Council of Ministers." Up to age 35, they may be called for refresher training up to 3 months every year and for 30-60 hours of instruction every 3 years.

All enlisted men, after completing their obligatory service period, are "discharged into the reserves." They may be called up for active duty 4 times for a period of 3 months each up to age 35. From age 35 to 50, the frequency and duration of call-ups declines.**

* "Most people who complete these schools fail the driving exam on their first try." Pravda, October 8, 1974.

** Universal Military Service Law of the USSR, 12 October 1967. Articles 49-61.

The number and frequency of reservist call-ups for refresher training is not known. The training load on the active force must be substantial. If only 20 percent of the reservists receive full refresher training, there would be roughly 800,000 reservists undergoing training every summer, if it were carried out during the three summer months.

Chapter 3

COMPARISON OF US AND SOVIET COMBAT-TO-SUPPORT RATIOS

INTRODUCTION

The purpose of this chapter is to examine the popular belief that the Soviet Army devotea proportionately less military manpower to support functions than the US Army.

fairly reliable data are available regarding the manpower allocated to combat and support functions within Soviet divisions according to the definitions given in Chapter 1. Moreover, Soviet and US divisions have fundamentally the same function, although the internal organization is different.

There are few data regarding support manpower outside of divisions in the Soviet Army. Estimates can be made, but it should be emphasized that the resulting comparisons have large uncertainties. It is possible, however, to indicate the impact of these uncertainties on the issue whether the Soviets have proportionately fewer support personnel than the US Army.

This chapter is in two parts: a comparison of combat and support manpower in full strength US and Soviet divisions, and the same comparison for the entire ground force manpower.

COMBAT-TO-SUPPORT RATIOS IN DIVISIONS

The percent of personnel allocated to combat functions in the average US and the average Soviet division is shown in Table 1 for the four definitions of combat and support given in Chapter 1. The US average is taken

across our 13 armored, infantry, mechanized infantry, airmobile, and airborne divisions; the Soviet average is taken across their 167 tank, motorized rifle, and airborne divisions; all assumed to be at full strength.

Table 1
COMBAT MANPOWER IN FULL-STRENGTH DIVISIONS
(Percent)

	Individual Jobs	Definitions		Divisions
		Combat Companies	Combat Battalions	
AVERAGE US DIVISION				
% Combat	50	51	76	100
% Support	70	49	24	0
AVERAGE SOVIET DIVISION				
% Combat	Data not available	54	72	100
% Support		46	28	0

Table 1 shows that there is little difference in the combat-to-support ratio of full-strength US and Soviet divisions, regardless of the definition employed.

If this result is surprising, and perhaps unbelievable to some, it may be because many people count tanks alone as a measure of combat power. The Soviets and the US both emphasize that tanks cannot survive and be effective unless they are part of a balanced force of infantry, artillery, and air.* The average US division has about 16,000 men, while an average Soviet division has about 11,000 men. Although the Soviets have about the same number of tanks and artillery as the US in mechanized and armored divisions, they have fewer weapons of other kinds—antitank missiles, anti-aircraft missiles, etc.

* Marshal of the Soviet Union A. A. Grechko, Minister of Defense, Armed Forces of the Soviet State, 2d Edition, Moscow, 1975, p. 196. (This page was added in the second edition.)

The other conclusion that might be drawn from Table 1 is that the absolute value of the combat-to-support ratio has little meaning. All four columns use identical input data. The method of defining combat is different. If US battalions are considered 100 percent combat, over three-quarters of the division manpower are combat. Since battalions contain mechanics, radiomen, and medical personnel, only 50 percent of the division manpower are in combat companies. If we examine each job, 40 percent of the personnel in combat companies do not normally handle weapons.

In the Soviet division, the drop in combat-to-support ratio is less striking from battalion to company. This is because most transport and repair is centralized under direct divisional control rather than dispersed among battalions as is done in the US division. The Soviet Quartermaster General, S. Kurkotkin, explains this difference as a consequence of World War II when the Soviets were short of trucks and could not afford to lock them up in battalions, since only a small portion of the battalions were simultaneously engaged in combat.*

Total Strength of the Soviet Armed Forces

Secretary of Defense Schlesinger, in his address to the Congress in February, 1975, estimated the total uniformed manpower in the Soviet Armed Forces at 4.2 million; also "there are a number of individuals assigned to supply, research and training elements for whom we have not yet accounted."**

In Table 2 we have used the personnel strength for each Soviet service, as found in The Military Balance, 1974-1975. It should be noted that The Military Balance, when giving total manpower strengths for the Soviet Armed Forces, places all military personnel in one of the military services, or in the KGB or MVD. The journal does not attempt to show the number of personnel in units that are directly under the Ministry of Defense and which are not assigned to any one service.

* General S. Kurkotkin, Deputy Minister of Defense and Chief of the USSR Armed Forces Rear, "On Defense of the Socialist Motherland," Rear and Supply of the Soviet Armed Forces, No. 2, 1974.

** Statement of Secretary of Defense James R. Schlesinger to the Congress, February 5, 1975.

In the table below, we have placed the unestimated Soviet military manpower, identified by Secretary Schlesinger, as being the Construction Troops, Civil Defense Troops, Railroad Troops, Rear Service, and others. We recognize that these figures are inexact, but it is believed they are probably lower limits.

Officer strength is calculated on the basis of one officer to seven enlisted men in the Army, KGB and MVD; one officer to three enlisted men in the Strategic Rocket Forces; and one to five in the other services. Conscripts are calculated on the basis of 85 percent of the enlisted strength in each service. The number of trainees is based on the number of conscripts with less than 6 months service: 17 percent of Navy conscripts and 25 percent of all others.

Table 2*
STRENGTHS AND TRAINING LOAD IN SOVIET ARMED FORCES
(in thousands)

Service	Total Manpower	Officer Strength	Enlisted Strength	Conscript Strength	Training Load
Strategic Rocket Forces	350	88	262	223	56
Army	1,800	225	1,575	1,339	335
National Air Defense	500	83	417	354	89
Air Force	400	67	333	253	71
Navy	475	79	396	337	84
KGB & MVD	310	51	259	220	55
Construction, Civil Defense, Railroad, Rear Services, etc.	365+	61+	304+	253+	64+
Total	4,200+	654+	3,546+	3,014+	754+

* Sources: The Military Balance, 1974-1975 and Statement of Secretary of Defense to the Congress, February 5, 1975.

Even though the available data do not permit the precision shown in Table 2, the totals are not rounded so that the calculation could be repeated by the reader for other input data.

Total Strength of the US Armed Forces in 1976

For comparison, the US equivalent to Table 2 is shown in Table 3.

Table 3*
STRENGTHS AND TRAINING LOAD IN US ARMED FORCES, 1976 ESTIMATED
(in thousands)

Service	Total Manpower	Officer Strength	Enlisted Strength	Recruits (Training Load)
Army	785	98	687	83
Navy + USMC	725	84	641	97
Air Force	590	100	490	51
Total	2,100	282	1,818	231

* Source: Hearing before the Committee on Armed Services, US Senate, 94th Congress, 1st Session, Part 3, pp. 959, 1056.

Included in the Army are 900 officers and men assigned to the strategic defense of the US who would be equivalent to the troops of National Air Defense of the USSR. The number is so small that this distortion is neglected in the calculation of combat-to-support ratio. The US Marine Corps and Navy are combined because the Soviets combine their equivalent, the naval infantry.

Conscript and Specialty Training in the Soviet Armed Forces

A rough estimate of the fraction of inductees who receive technical specialized training immediately upon entry into the Armed Forces is shown in Table 4.

Table 4
CONSCRIPTS WITH SPECIALTY TRAINING

Service	Receiving Specialty Training Percent	No. (1000s)	No. with no Specialty Training (1000s)
Strategic Rocket Forces	80	42	10
Army	50	167	168
Air Defense	80	68	17
Air Force	80	54	14
Navy	80	43	11
KGB + MVD	?	?	?
Constr., etc.	50	31	31
Total (rounded)		405+	250+

Based on these proportions, roughly one-half of the draftees do not go to a military unit immediately after induction but receive 6 months classroom and practical training in a specialty. The other half, largely Army, go immediately to their unit.

Data do not exist to provide even rough estimates of the allocation of manpower to combat and support (including training) functions in the Soviet Armed Forces, other than Army. The remainder of this chapter, therefore, is restricted to Army manpower.

Soviet Army Manpower

The Soviet Army has 167 divisions of three types: tank, motorized rifle, and airborne. These divisions are in three categories of readiness and peacetime strength. Category I divisions have 90 percent of their personnel on hand and all of their equipment. Category II divisions have two-thirds of their personnel on hand and all of their fighting vehicles and artillery. Category III divisions have one-third of their personnel on hand and possibly all of their fighting vehicles and artillery.*

* These are rough averages. The Military Balance states that Category I divisions have 75-100 % of their personnel; Category II, 50-75 %; and Category III, one-third. For simplicity we have assumed that all the airborne divisions are at full strength. Since there are only 7 airborne divisions in the Soviet Army, this assumption has little effect on the calculation of combat-to-support ratios.

No data are available on the impact of the understrength on the combat-to-support ratios within these divisions. For purposes of this report, we shall assume that most of the missing personnel are in support units. This assumption tends to overstate the combat-to-support ratio of the Soviet peacetime Army. The details of the calculation are shown in Appendix B for Category I and II divisions.

Category III divisions are more complicated because there are no divisions in the US Army with only one-third of their personnel. The peacetime task of the active duty personnel in Category III divisions is to maintain equipment and supervise the training of the reservists to be assigned to the division upon mobilization. From that point of view these active duty personnel are 100 percent support. On the other hand, Category III divisions could be at full strength within a few days after mobilization and could be committed to combat within a few weeks and so should be treated in the same way as Category II divisions. To cover both points of view, Category III divisions are considered 100 percent combat under the division and major unit definitions; and 100 percent support for the battalion and company definition.

It remains to allocate the Soviet Army's share of the manpower in rear services, construction, etc. In the absence of better information, the personnel in this category are allocated in proportion to the manpower of each service. The resulting total strength of the Soviet Army for calculating the combat-to-support ratio is 1,971,000.

With these assumptions, the percent of combat manpower in the total Soviet and US Army is shown in Table 5 for the four definitions described in Chapter 1.*

* See Appendix B for details of the calculation.

Table 5
SOVIET AND US COMBAT MANPOWER
(Percent of Total Strength)

Definition	Soviet	US
Division	61	32
Major Combat Units	65	42
Battalion	46	25
Company	33	16

The impact of the division slice method of calculating combat-to-support ratios is shown in the top line of Table 5. Nearly 60 percent of all Soviet soldiers are believed to be in divisions, while less than one-third of US soldiers are in divisions. When nondivisional combat units—separate regiments, brigades, and battalions—are taken into account, the Soviet combat percentage is increased by 4 percent, while the US percentage is increased by 10 percent. The battalion and company definitions give the Soviet Army 17-21 percent more men in combat units than the US Army.

The figures in Table 5 include in the combat category draftees who are assigned directly from civilian life to combat units and their trainers. The US Army does not assign recruits directly to combat units until they have received more than 16 weeks of basic combat training. Of the estimated 168,000 Soviet draftees (with less than 6 months' service) who are assigned directly to units, 112,000 would be assigned to divisions or other major combat units. If these draftees and their trainers were considered support, the Soviet combat-to-support ratio would be reduced by 6 percent for the division and major combat unit definition, 4 percent for the battalion definition, and 3 percent for company.

If the intelligence review mentioned by the Secretary of Defense in his Statement of February 5, 1975 should result in finding an additional 500,000 personnel in the Soviet Armed Forces, one-half of which could be allocated to the support of the Soviet Army, there would be a reduction of 3-6 percent in the Soviet combat-to-support ratio.

It can be concluded that the peacetime, active duty Soviet Army has a smaller fraction of its strength in support functions than the US Army, regardless of the definition used. Differences in the training of recruits and uncertainties in the total number of support personnel are not likely to modify this conclusion.

Trends

Soviet spokesmen emphasize that "the role of logistic troops has grown immeasurably" with the introduction of complex weapons systems into the Armed Forces.* The increase in sophistication, as evidenced by the Soviet equipment sent to Syria since 1974, indicates that the role of logistic troops will continue to grow.

In contrast, public and Congressional pressure has resulted in a decrease in the number of logistic troops in the US Army. If this pressure continues, it is not impossible that the Soviet peacetime Army may eventually have a lower combat-to-support ratio than the US.

Discussion of Results

The results of Table 5 may be surprising to some. The percentages for both the Soviet and US Army are lower than often quoted. A review of the available unclassified studies shows that most authors have restricted their comparisons of manpower to organized military units assigned to or planned for deployment overseas. They have not included the forces at home bases and the training, administrative, and overhead support for these bases.

The US Army makes a clear distinction between forces overseas or available for deployment overseas, and forces involved in home-base training, support, and administration. The Soviet Army makes no such distinction because it has yet to develop a capability to project major parts of its Army overseas.** As we shall discuss in the next chapter, the Soviet Army

* General-Colonel N. A. Lomov, Editor, Scientific-Technical Progress and the Revolution in Military Affairs, Moscow: Military Publishing House, 1973. An English translation of this work has been published under the auspices of the US Air Force by the Government Printing Office, Washington, D. C., p. 118.

** Except possibly for the seven airborne divisions.

can drive to war, so there is no need to have large numbers of support units specially trained and equipped for overseas deployment.

It is undoubtedly correct to state that the Soviet Army has relatively few less active duty support forces in peacetime than the US Army. However, full-strength Soviet divisions have roughly the same fraction of support personnel as US divisions so that a few days after mobilization, the Soviet support will undergo a major expansion as the support elements of understrength divisions are brought to active duty and nondivisional support units are created from the civilian economy.

Chapter 4

INFLUENCES ON THE COMBAT-TO-SUPPORT RATIO

INTRODUCTION

The purpose of this chapter is to describe reasons for the difference in the perceived combat-to-support ratio of the US and the Soviet armies. Since the armed forces of any country are a mirror of the society from which they come, the combat-to-support ratio reflects the history and geography of a country, its political and strategic objectives, its society and political structure, its economy, and the peacetime operation of its military forces. In every one of these factors, the United States and the Soviet Union differ profoundly.

HISTORY AND GEOGRAPHY

United States

The United States is separated from potential enemies by oceans. It has not fought a war on its own or adjacent territory since 1865; every war has been fought overseas.* There are no fortifications along US borders and the US Army is not designed to repel invasion from Canada or Mexico. The US Army and all of its officers in their lifetime have been exclusively concerned with the organization, training, and deployment of expeditionary forces that are expected to fight thousands of miles across oceans.

The impact of the expeditionary forces concept on the combat-to-support ratio in the last four overseas wars is shown in Figure 1.

* Not counting the small expedition into northern Mexico in 1916 against the guerrilla, Francisco Villa.

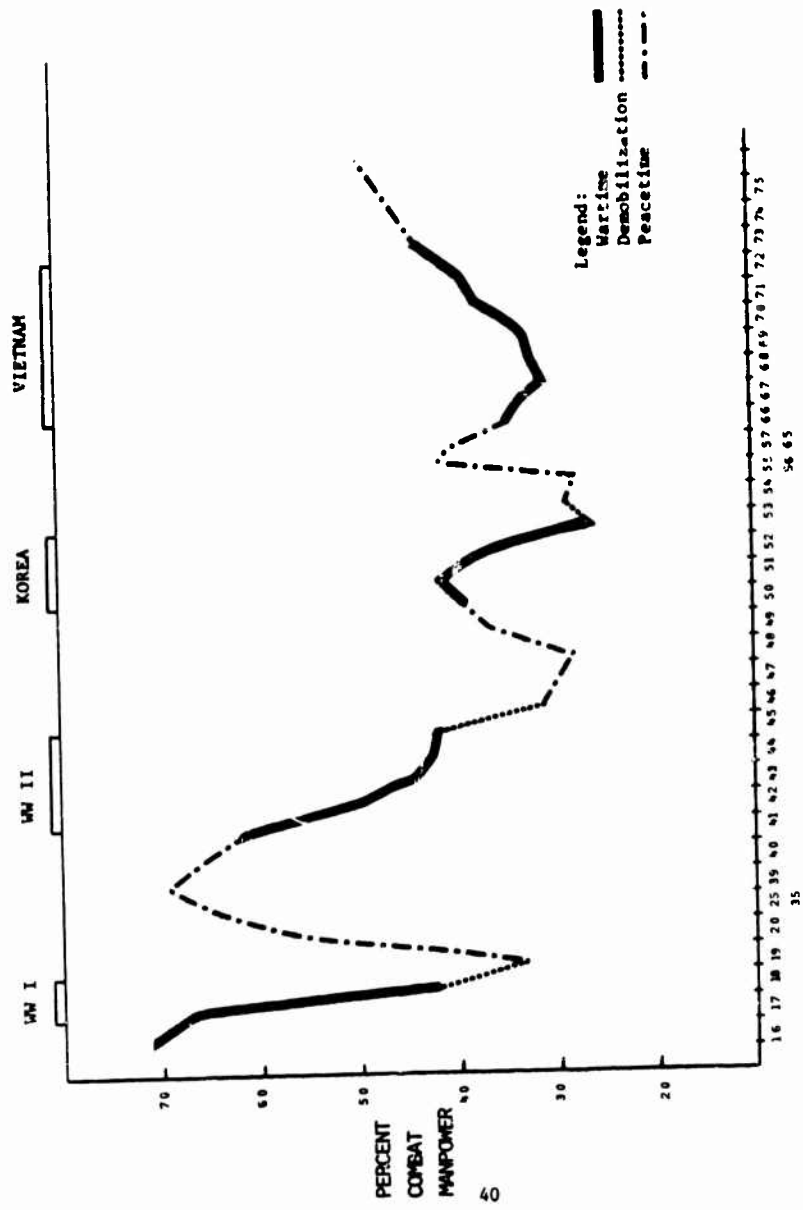


FIG. 1 — PERCENT ARMY COMBAT TO TOTAL US ARMY MANPOWER
 1916—1975

Figure 1 shows the combat manpower in the US Army as a percent of the total uniformed personnel for the period 1916-1975. The heavy lines show wartime years when expeditionary forces were sent overseas. The dotted lines show the demobilization period when forces were brought back to the United States. The dash-dot lines show peacetime years. The percent combat in each year was that defined by the US Army at the time. No effort has been made to secure uniformity because of the differences in mission, organization, and unit functions. In general, the proportions approximate the major combat unit definition described in Chapter 1. Divisions and separate combat regiments, brigades, and battalions are treated as combat; all others are support.

The most striking feature of Fig. 1 is the sharp decrease in the combat-to-support ratio in every overseas war the US has fought. The greatest decrease took place in 1917, primarily because of the inexperience of US Army planners. A number of combat divisions had to be broken into support units because the planners had underestimated the support requirements.

In both World War I and II the combat strength ended up at about 40 percent. Immediately after each war there was a further decline because men in combat units went home first, as shown by the dotted lines for 1919 and 1946.

The Korean War showed an upward trend for the first year because that war was the only one in US history when the US was in a hurry. A number of men in support units in Japan were transferred to combat units because of the desperate situation in the Summer of 1950. Later, the percentage in combat units dropped sharply because US support troops were needed to provide fuel, ammunition, and construction to support South Korean as well as US forces. Moreover, many support units were needed in Germany to provide the base support for the five divisions sent there in 1951-2.

After the armistice of 1953 because forces returned home. The upward trend in percent combat began in World War I or II levels because of the maintenance of peacetime for the first time in US history.

The Vietnam War showed the same trend as the other wars down to the peak year: 1967. As the withdrawal began and accelerated, the upward trend began and is still in progress.

The conclusion one can draw from Fig. 1 is that slightly more than 1.5 times as much support is needed in war as in peacetime, except for Vietnam where only 1.3 times was needed.

Soviet Union

The Soviet Army has never been in combat across an ocean. The Russo-Japanese War, World War I, the Civil War, and World War II, including the Finnish prelude, were fought either in Russian territory or within a few hundred miles of the Russian land frontier. Thus, the entire military experience of the Soviet Army and its officers within their lifetime has dealt with the design, training, and deployment of forces to fight either within or immediately adjacent to its own land.

The Soviet Union has 14,000 miles of land frontier, a large portion of which confronts unfriendly countries. A large portion of its territory has been overrun by Germany within the lifetime of most of the population. On occasion, ammunition and weapons were delivered directly to front-line troops from the factory. Historically, therefore, there has not been a rigid distinction between military noncombat functions and civilian functions. When one's own land is being fought over, every able-bodied man is, to some degree, in the army.

Data are not available to produce a companion graph to Fig. 1 for the percent combat manpower in the Soviet Army. Because of the nature of its wars, it is doubtful whether even the Soviets have useful statistics on the number of people who performed support functions in World War II; and it is doubtful whether it was possible to make a distinction between military and civilian support.

Impact of Differences

The US geography and historical experience makes it possible to distinguish between military and civilian support in wartime. The Soviet experience has tended to blur any distinction except within fighting divisions, corps, and armies.

POLITICAL AND STRATEGIC OBJECTIVES

United States

The political and strategic objectives of the United States follow naturally from its history and geography. The current categories of US forces follow from these political and strategic objectives.

Strategic forces are designed to defend the United States against direct nuclear attack and not, it should be noted, against a land invasion.

General purpose forces are designed to be a shield against coercion or actual attack by a nuclear power against our allies. They are designed to provide an initial defense, along with the forces of our allies and friends, against a conventional attack by a nuclear power.

Reserve forces and mobilization plans provide a "long-war hedge."*

National Guard forces of the United States provide a means for State Governments to maintain public order when local police forces are inadequate.

US objectives, which define the missions to be carried out by US military forces, emphasize an initial defense but explicitly take into account the possibility that the war may be a long one. A long war implies a lower combat-to-support ratio than a short war.

Soviet Union

There are no official pronouncements of force planning objectives for the Soviet Union equivalent to those briefly outlined for the United States.

* Statement of the Secretary of Defense to the Congress, February 5, 1975.

However, Soviet political-military spokesmen constantly reiterates the position that, although the goal is a quick victory, the Soviet Armed Forces must be prepared both for a short war and a protracted war.

Colonel V. V. Larionov, composing editor of all three editions of Military Strategy, subsequently headed the political-military section at the Institute of the USA in Moscow. At the present time he is on the faculty of the General Staff Academy. In his view, any future war will be "short and swift-moving." But in the event that initial attacks are not successful, the Soviet Union must have forces and resources "which are necessary for the successful continuation of a protracted war."*

In all three editions of Military Strategy (1962, 1963 and 1968), Marshal Sokolovskiy asserted the goal of "the attainment of victory in the shortest possible time." However, the nation must be prepared for "the possibility, if need be, of waging war for a protracted period of time..."**

A 1973 Soviet book, Scientific-Technical Progress and the Revolution in Military Affairs, edited by General-Colonel N. A. Lomov, contains the same basic doctrinal concept:

"A nuclear war can be comparatively short in time, since the chief political and strategic goals can be achieved as a result of the massed use of strategic nuclear means and active operations by all services of armed forces in the basic theaters of military operations. . . . At the same time, in examining various political, economic, and strategic problems related to the preparations for war, it is also essential to consider those conditions which can lead to a relatively long and protracted war."§

* Colonel V. V. Larionov, Doctor of Historical Sciences, "New Weapons and the Duration of War." Red Star, March 1965. For an English translation, see William R. Kintner and Harriet Fast Scott, The Nuclear Revolution in Soviet Military Affairs, Norman, Okla.: University of Oklahoma Press, 1968, pp. 62-63.

** V. D. Sokolovskiy, Marshal of the Soviet Union, editor, Military Strategy, 3rd Ed., Moscow, 1968. For an English translation see: Soviet Military Strategy, Third Edition, edited with analysis and commentary by Harriet Fast Scott, New York: Crane and Russak, 1975. This English edition shows those portions that are common to all three editions, as well as that added to the 3rd edition.

§ N. A. Lomov, op. cit., p. 137.

We believe these statements represent current Soviet planning guidance. Similar statements can be found in numerous other Soviet publications. The organizational structure of the Soviet Armed Forces also suggests that they, too, have a "long-war hedge" and, consequently, a significant fraction of their reserves designated for support tasks.

Impact of Differences

Soviet strategy clearly envisages the possibility of a land invasion by either the Chinese or elsewhere. It is even possible that they do not exclude the possibility of wholesale defections of their East European satellites, unlikely though it appears today, that would open the Soviet Union to invasion from the west. Thus, the major portion of their armed forces is designed to protect the home country, either from nuclear attack or land invasion.

The Soviet combat-to-support ratio, therefore, is based on the concept that major army forces will fight on land within a few hundred miles of Soviet territory. It is unnecessary, therefore, to make preparations for shipping forces overseas. Train, planes, trucks, repair facilities can shuttle back and forth from Soviet factories and warehouses to the fighting forces on land. Whether the men operating these trucks and railways are in uniform or not is immaterial so long as the task is accomplished.

In the United States, however, equipment shipped overseas is inevitably lost from the civilian economy for the duration of the war. Except for air transport, therefore, personnel carrying out these support functions are almost entirely in uniform and treated as distinct from the civilian economy in wartime.

SOCIETY AND POLITICAL INSTITUTIONS

United States

One of the fundamental premises of US society and the Constitution is a rigid distinction between civil and military affairs and the concept of civilian control over the military. Ideas and institutions that blur

this distinction are unwelcome, especially in peacetime. For example, the civil functions of the Corps of Engineers are no longer part of the US military budget. The direct mobilization of civilian organizations and companies into the armed forces is not done, although some personnel and equipment may directly support military operations. One example is the Civilian Reserve Air Fleet to provide airlift in case of emergency. But no similar arrangements are possible for US civilian truck companies. All US Army trucks will be operated by soldiers when they are overseas. Thus, our society and Constitution make a rigid distinction between civilian and military personnel, even when the military personnel are carrying out noncombat functions.

There are also social barriers to increasing the proportion of reserve units performing support functions. It would be politically almost impossible for the Secretary of Defense to transform a National Guard Division to, say, a number of Truck Transportation Brigades. It is necessary, therefore, for the US Army to have active duty support units in peacetime to serve as a nucleus for mobilized individuals to join rather than transfer a number of support units from the active Army to the reserves, which would increase the combat-to-support ratio in the active forces in peacetime.

There are political barriers to the involuntary call-up of reserve personnel in the US for nonemergency situations. Under some conditions, the ability to make such call-ups might increase the combat-to-support ratio in peacetime.

Soviet Union

In contrast to the United States, Soviet society is completely controlled. Everybody works for the government. There need be no distinction between civilian and military functions and, in a number of cases, it is impossible to separate noncombat military from civilian activities in peacetime. For example, the Construction Troops of the Soviet Union have been compared with the US Army Corps of Engineers. The Moscow airport, the Moscow university, and a number of buildings along the main street of Moscow were built by the Soviet Army. Unlike the Corps of Engineers, the

actual workers and foremen are draftees and officers in the Soviet Army. A high percentage of the roads and railways are also built by military personnel, although they are not always considered part of the Soviet Armed Forces.

Reserve training is tightly controlled and rigidly enforced. Any reserve officer may be called up involuntarily for 2-3 years up to age 35.* Entire repair and transportation truck units may be mobilized as units. "The formation during mobilization of certain special units (repair, automotive transport, hydrometeorological, hospitals, etc.) can be accomplished directly by civilian ministries and departments."**

Many Soviet enterprises, such as transport, civil aviation, communications and the like, are established on a semi-militarized basis. Senior individuals in these establishments often have military ranks. For example, the Minister of Aviation Industries is a General Colonel of Aviation. The Minister of Civil Aviation, who also heads Aeroflot, was promoted from General Colonel of Aviation to Marshal of Aviation while serving in his current position. The head of the Soviet National Communications System is a General Colonel of the Signal Corps. It is difficult to determine the degree to which these ranks are active or inactive. In any event, such establishments, being under state control, undoubtedly work closely with the Soviet Armed Forces.

Impact of Differences

The Soviet society and political institutions are so different from those of the United States that using US concepts and categories to describe Soviet combat-to-support ratios can lead to gross distortions. It is possible that, except for support units that work directly with

* Law of Compulsory Military Service, Article 58.

** Sokolovskiy, op. cit., p. 310.

§ See, for example, J. T. Reitz, "Soviet Defense—Associated Activities Outside of the Ministry of Defense," Economic Performance and the Military Burden in the Soviet Union, Joint Economic Committee, Congress of the United States, 91st Congress, 2nd Session, Washington, D. C., US Government Printing Office, 1970, pp. 133-161.

combat units in Soviet divisions, there are few identifiable support units in the peacetime Soviet Army. Anything that needs major repair or the long-haul transportation of supplies is carried out by personnel that are not currently identified as part of the Armed Forces.

ECONOMY

United States

The US economy is basically service-oriented. There are more auto, radio, and television repairmen than there are people on the production line of these items. This factor is reflected in the relationship of production contractors to the US Armed Services. Concurrent spares are a normal part of all contracts and, it is generally believed, that larger profits are made from concurrent and subsequent spare parts than from the major production item. Airline contracts with aircraft and engine manufacturers normally have a clause requiring 24-48 hour delivery of major assemblies or engines anywhere in the world. This attitude is reflected in the large maintenance and repair portion of support units in all of the US Armed Forces, especially the US Army. The rationale, presumably, is that fewer tanks, trucks, etc., are needed if worn or damaged items can be quickly repaired; and that the US economy can supply a very large number of trained mechanics and technicians. This tends to reduce the combat-to-support ratio in US forces.

Soviet Union

In contrast, the Soviet economy is almost totally oriented to production of new items rather than maintenance of existing items. The Soviet press is filled with examples of maintenance failures and the lack of spare parts. The Five Year Planners are struggling to devise incentives for plant managers to produce more spare parts. The current system penalizes a plant that produces repair parts at the expense of major item production, even if the major items are not needed. Examples are cited of scrapping trucks, tractors, and whole plants because it is easier to build a new one than repair the old.* Even when equipment is repaired, there are

* Pravda, July 23, 1974.

cases where the repairs were inadequate.* It is expected that the 1976-1980 Five Year Plan may have new incentives in order to attain a better balance between new production and the economic repair of major items of equipment.**

The current combat-to-support ratio of the peacetime Soviet Army perhaps reflects this condition in the economy. Until the shortage of repairmen, particularly for vehicles and electronic equipment, is eliminated, it is inefficient to lock up such skills in the Armed Forces. The ability to mobilize them quickly makes it unnecessary to have many on active duty in peacetime. And, most important of all, these men can maintain their skills more easily in the civilian economy than in the Armed Forces. The Soviet Army keeps most of its equipment and vehicles in storage,§ while the Motor Vehicle Administration of the City of Moscow, for example, hauls 500,000 metric tons per day in 35,000 trucks.¶¶

Sokolovskiy notes this point:

"It would seem advisable to have peacetime armed forces set up in such a way that the main aims of the initial phase of the war can be attained without additional mobilization. However, to keep the armed forces in such a state is economically impossible for even the strongest country."†

"Under present-day conditions there are possibilities for more rapid training and instruction of enlisted men and noncommissioned personnel because much of the equipment in the armed forces are similar to the equipment used in the national economy. Indeed, such specialists as the operators and mechanics of diesel, gasoline, and electric engines, radio engineering, radio electronics, optica, and others are fundamentally identical in the military and civilian production."††

* For example, most of the 500,000 trucks and 1,500,000 truck engines overhauled in the Soviet Union in 1973 broke down again within 8-16,000 miles. *Izvestia*, October 22, 1974.

** *Economic Gazette*, May 1974, pp. 13-14.

§ Marshal of Tank Troops, A. Kh. Babazhanyan, *Tanks and Tank Troops*, Moscow, Military Publishing House, 1970. JPRS Translation K3441, 23 April 1973.

¶¶ *Pravda*, May 12, 1974.

† Sokolovskiy, *op. cit.*, p. 307.

†† Sokolovskiy, *op. cit.*, p. 309.

Impact of Differences

The US Army tends to have a larger number of mechanics and electronic technicians in peacetime than the Soviet Army in proportion to the number of items of equipment. There is no shortage of mechanics and electronic technicians in the US. The availability of these skills in the military allows the US Army to drive its tanks and other vehicles more miles in training than the Soviet Army, giving the combat personnel and support personnel more training in repair as well as preventive maintenance. The shortage of mechanics in the Soviet economy tends to reduce the number available in the Armed Forces in peacetime. The large fraction of vehicles and electronic equipment in storage reduces the ability of these support personnel to maintain their skills, except for preventive maintenance. Thus, the solution apparently preferred by the Soviets is to mobilize men with these skills as quickly as possible, and keep only a minimum number on active duty.

PEACETIME OPERATIONS

United States

It is a general practice in the US Army to reduce as much as possible the housekeeping chores of personnel in combat units so that they can concentrate on training and combat readiness. Most military facilities distinguish post troops from the combat units that are "tenants" at the facility. Normal repair and maintenance is often done by civilian contractors, for example, replacing broken windows, plumbing fixtures, delivering coal or fuel oil for heating and gasoline for motor pool operations, and food. Often, as in the Pentagon, the food service is also contracted.

Maintenance and repair of military vehicles and equipment, except for major overhaul, is carried out by combat and support units at all posts. There is a general belief that a unit with all of its equipment and with less than 75-80 percent personnel strength is unable to train and maintain adequately. The equipment that would be operated by the missing personnel, therefore, is normally put in storage. And stored equipment is usually under the supervision of trained support units.

Raw recruits are not sent to US Army combat or support units. They have a period of basic and advanced individual or specialized skill training before they arrive at their military unit. As a result, units can concentrate on unit rather than on individual training, welding the personnel into a viable team.

The impact of these peacetime operating procedures allows a clear distinction to be made between personnel in military units on the one hand, and housekeeping and training personnel on the other.

Soviet Union

Combat and support units in the Soviet Army do almost all of their own housekeeping: repair of broken windows, unloading coal from railway freight cars for the winter, building tables and stools for the barracks, workbenches for repair shops, and fumigating and whitewashing the barracks twice a year. In addition, most units have truck gardens, keep pigs and chickens, and grow hay. Guard duty is always part of a combat unit's function at a peacetime military post.

At many posts, it is likely that most equipment is in storage most of the time. The military journal, Tekhnika i Vozrozheniye (Technology and Armament) is filled with examples of better ways to ready equipment that has been in storage all winter or prepare equipment for storage in the winter. It is likely, therefore, that Soviet personnel spend less time on preventive maintenance than US personnel and, because the equipment is in storage, have less experience with unexpected breakdowns. There is, accordingly, less of a need for skilled repairmen in the peacetime Soviet Army except as instructors.

Military combat and support units in the Soviet Army do all of the advanced individual training of privates. Only candidates for sergeant are sent to a specialized training unit. It is estimated that about one-half of the recruits semiannually are sent directly to a combat or support unit. Many individuals in these units, therefore, can be classed as trainers even though they belong to a combat unit.

The impact of these procedures is to blur the distinction between recruits and trainers compared with combat unit personnel.

It has been argued that Soviet draftees have far more time available than US recruits because they get almost no leave and few off-post passes. This may be true, but a Soviet draftee must spend 6-8 hours per week in political indoctrination in Marxist-Leninist principles. It is almost mandatory for every draftee to be a member of the Communist Youth Organization, the Komsomol. Komsomol membership imposes obligations in addition to the formal political indoctrination by the Communist Party Representative of the Unit, usually the Deputy Commander for Political Affairs. It is, therefore, uncertain how much time is available for training in the average Soviet combat unit.

Chapter 5

IMPLICATIONS

The comparison of US and Soviet forces in the preceding chapters leads to the following conclusions.

1. There is strong evidence that US and Soviet divisions have roughly the same percentage of men in combat and support functions.
2. In peacetime, the Soviet Army as a whole has a much smaller percentage of active duty men in support functions than the US Army.
3. After mobilization, the Soviet Army may have about the same percentage of men in combat and support functions as the US Army.
4. The trend in the Soviet Armed Forces is in the direction of increasing support manpower. The trend in the US Army is toward decreasing support manpower.
5. Among the reasons for the higher peacetime combat-to-support ratio of the Soviet Army is its ability to mobilize and deploy quickly large numbers of support personnel for a war close to the borders of the USSR.

It follows from these conclusions that the combat-to-support ratio in the US Army should be examined on its own merits, taking into account the Soviet threat and other strategic requirements, but without necessarily emulating the structure of the Soviet Army or any other foreign force.

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Appendix A

SUVIET EDUCATIONAL INSTITUTIONS

Appendix A

SOVIET EDUCATIONAL INSTITUTIONS

MILITARY AND HIGHER MILITARY SCHOOLS*

The primary input to the Soviet officer corps are graduates of "military and higher military schools." These are specialized institutions, accepting young men ages 17-22 and graduating them with commissions as lieutenants. Although these schools have no exact counterparts in the United States, in many ways they might be compared to West Point and to the other two service academies.

Of the total number of officers in the Soviet Armed Forces as of 1973, for example, only "around half have a higher military or specialized education."** This may be due, in part, to the fact that the number of military schools have increased in the past decade. Obviously, however, there are other officer inputs. Some of these are from universities, although estimates of officer inputs from this source are not available. Most Soviet universities appear to have "military chairs."

In the early 1960's the majority of the military schools offered 3-year courses. In the late 1960's and early 1970's the length of courses was extended to four or five years, and such schools were designated as "higher military schools." Graduates of military schools have diplomas as technicians; those of higher military schools receive degrees as engineers, according to their specialty. These are equivalent to university degrees.

* Data on Soviet military and higher military schools are from an unpublished monograph by Harriet Fast Scott, The Soviet Military School System. Used by permission of the author.

** A. A. Grechko, Marshal of the Soviet Union, Minister of Defense, The Armed Forces of the Soviet State, Moscow: Military Publishing House, 1974, p. 212.

Only a few 3-year schools remain today. More and more schools are going to 5-year courses.

There are at least 141 military and higher military schools. An analysis of these schools, by service and type, will indicate the attention given to support units in the Soviet Armed Forces, and some indication of combat vs. support troop ratios.

Schools of specific services are as follows:

Strategic Rocket Forces	7
Ground Forces	31
Combined arms	9
Tanks	7
Tank engineers	1
Rockets and artillery	6
Artillery engineers	3
Troop air defense	5
Troops of National Air Defense	14
Surface-to-air missiles	7
Flying training	2
Radio technical	5
Air Forces	24
Flying training	13
Aviation-engineering and technical	11
Navy	10
Higher naval schools	5
Higher naval schools for specialized training	5
Airborne (not a service, but has a special status)	1
Total	87

An examination of these schools suggests that some of the graduates might be considered as being in a "support" area, as, for example, the outputs of the artillery engineer schools in the Ground Forces.

A listing of other schools, providing specialized training to meet the needs of all five services as well as the special agencies under the Ministry of Defense, may indicate combat-to-support ratios more clearly.

Civil Defense	1*
Building and Construction	5
Special Troops	26
Military engineers	4
Signal	12
Automotive	4
Chemical defense	3
Military-technical	1
Road and engineer	1
Finance	1
Troops of the Rear Services	5
Political Troops	9**
Total	46

Military schools outside of the Ministry of Defense:

KGB (Border Guards)	3
MVD (Internal Security)	5

* The first Civil Defense School did not open until the early 1970s.

** It is most difficult to categorize the political officers of the Soviet armed forces. These schools most likely are under the direct supervision of the Main Political Administration of the Soviet Army and Navy. This Administration has the rights of a department of the Central Committee of the USSR. It acts as the Party's watchdog over the Soviet armed forces. Political officers in the Soviet armed forces have many responsibilities and duties that in the United States armed forces would include those of the chaplain and special services officer. Political officers also serve as instructors throughout the Soviet armed forces, providing lectures on military doctrines, strategy, purpose of the armed forces, etc.

Almost all of the military and higher military schools are commanded by general officers or admirals. Grounds and buildings often are impressive. Sample entrance examinations that are available indicate a high academic standard is required for admission, comparable to US military academics.

In summary, the military and higher military schools show the following breakdown:

Schools under the 5 services (including airborne)	87
Schools within the Ministry of Defense, but providing direct and indirect support to all services	46
Military schools of the KGB and MVD	<u>8</u>
Total	141

There are many additional ways in which the schools under the services could be shown as indicating combat and support. One possible method is as follows:

	<u>Combat</u>	<u>Support</u>
Strategic Rocket Forces	7	
Ground Forces		
Combined arms, tanks, rockets and artillery, troop air defense	27	
Tank engineers and artillery engineers		4
Air Forces		
Flying	13	
Aviation-engineering and technical		11
Troops of National Air Defense (all)	14	
Navy		
Higher Naval schools	5	
Higher Naval schools for specialized training		5
Airborne	<u>1</u>	
Totals	67	20

Using the above for comparative purposes only (recognizing that it is not exact), the following ratio appears:*

	<u>Combat</u>	<u>Support</u>
Service schools that may train officers primarily for combat duties	67	
Service schools that may train officers for supporting duties		20
Other schools under the Ministry of Defense, whose graduates may be considered to be in support roles (both direct combat support and logistics)		<u>46</u>
Totals	<u>67</u>	<u>66</u>

From the specialized nature of these schools, it is believed that graduates will remain for the early portion of their careers in the specific service or branch for which they have been prepared. For example, we would expect that the graduate of the "Blagoveshchensk Higher Tank Command Red Banner School" would serve in a tank division, or in a tank unit assigned to a motorized rifle division. After four years of preparation in a higher tank combined school he probably would receive specific assignments in his specialty.

The size of the annual entry classes, the percentages of students who do not complete the courses, and the average number of graduates are not known. Based on personal observations of a number of these schools, combined with published photographs, it is estimated that the size of the student body varies between 1000 and 2000.

* It should be recognized that the above breakdown of schools is not definitive. A number of the schools may use cover designations, especially for areas such as chemical warfare and strategic rockets. Also, it is not known exactly where pilots for the Soviet Navy are trained. There may, of course, be additional schools which are never announced in the Soviet press. Despite these uncertainties, it is believed that the portrayal of military and higher military schools which provide primary officer inputs to the Soviet armed forces does provide a positive indication of combat-to-support ratios.

It is believed that the wastage rate of schools is low. Those who fail courses or who are considered unsuitable for officer material are sent to units to complete their required military service as enlisted personnel. The penalty for failure to remain in school for the individual would appear greater than, for example, a cadet failing at West Point or one of the other service academies in the United States.

Our estimate, therefore, is that the graduates of each of the schools number somewhere between 300-400. Taking an average of 350, this would give some 49,350 new officers each year for all services, supporting branches, and the KGB and MVD as well.

Thus, our estimate is that approximately equal numbers of officers are trained for combat and support roles in all of the Soviet armed forces, in the following numbers (excluding KGB and MVD):

Annual Input of Lieutenants Each Year from Military
and Higher Military Schools

For Combat Services	23,450
For Support Services	23,100

Appendix B

COMPUTATION OF SOVIET COMBAT-TO-SUPPORT RATIOS

Appendix B

COMPUTATION OF SOVIET COMBAT-TO-SUPPORT RATIOS

The fraction of Soviet manpower given in Table 5* of this report has been calculated with the following assumptions and data:

Category I divisions have 90 percent of strength on hand; all of the missing personnel are in support.

Category II divisions have 67 percent of their manpower on hand; 22 percent of the missing manpower is from support battalions; 11 percent from combat battalions.

Category III divisions are treated as 100 percent combat for the major combat unit and division definitions; 100 percent support for the battalion and company definitions.

* Table 5 appears on page 36.

Manpower in the three types of divisions is shown below:

	Category I	Category II	Category III
No. of Tank Divisions	24	21	5
Avg. Strength/Division	8,550	6,333	3,117
Combat Bn. Manpower	6,400	5,700	0
Combat Co. Manpower	4,480	3,990	0
No. of Motorized Rifle Divisions	35	28	47
Avg. Strength/Division	10,800	8,900	4,000
Combat Bn. Manpower	8,640	7,690	0
Combat Co. Manpower	6,480	5,770	0
No. Airborne Divisions	7		
Avg. Strength/Division	7,000		
Combat Bn. Manpower	5,040		
Combat Co. Manpower	3,780		

Multiplying the troops by the number of divisions in each category and assuming that 83,000 men are in nondivisional combat units, we obtain the results in the following table, for a total Soviet Army strength of 1,971,000.

TOTAL SOVIET GROUND FORCE MANPOWER
(in thousands)

Type	Total	Division	Combat Battalions Combat Support	Combat Companies Combat Support
Category I Divisions	632	632	491	141
Category II Divisions	357	357	335	22
Category III Divisions	204	204		204
Nondivisional Combat	83		75	8
Total Combat	1,276	1,193	961	659
Other Support	695			
Total	1,971			
Percent Combat	65	61	46	33
Percent Combat for Total Army = 2,221,000	57	54	41	30

The last line of the table indicates the impact on the combat-to-support ratio, if Secretary Schlesinger's review should show an additional 500,000 Soviet troops in support and administrative functions, one-half of which can be attributed to the Army.

A second alternative calculation indicates the impact of treating draftsmen sent directly to units and their trainers as support—the category in which the US Army places these personnel.

If these 185,000 draftsmen and their trainers are allocated to each type of force in accordance with its manpower, the number and percent that would be subtracted from the combat strength for each definition is:

Definition	Number (1000s)	Percent
Major Combat Unit	119	- 6 %
Divisions	111	- 6
Combat Battalions	76	- 4
Combat Companies	60	- 3

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THE SUPPORT FORCES

A STAFF ISSUE PAPER
for the
DEFENSE MANPOWER COMMISSION

by Marvin N. Gordon and John D. Sitterson, Jr.

Requirements Group
Defense Manpower Commission Staff

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EXECUTIVE SUMMARY

ISSUE: Manpower Levels and Mix of the Support Forces

PURPOSE: The purposes of this paper are:

1. To assess the manpower requirements of the Support Forces.
2. To identify areas in which reductions in manpower and manpower costs could be made, and to estimate the order of magnitude of the savings.
3. To recommend management principles that the Department of Defense, in turn, could translate into policies that would result in manpower savings.

BACKGROUND: Support forces were assessed and narrowed down to areas which would give the greatest payoff. The study focused primarily on Base Operating Support (BOS). BOS comprises one out of six Defense personnel (535,000) but had not undergone the amount of management scrutiny during the post-Vietnam drawdown as had other support areas.

ANALYSIS:

1. Basing. Trend analysis shows that large amounts of BOS manpower are generated by the very existence of Defense installations, whether or not they are needed. Similar analysis showed that the number of bases in the inventory does not vary consistently with changes in the size and characteristics of the force. Defense does not have a way of objectively computing the land and facility requirements of its forces and, therefore, does not know exactly how much basing it requires. Bases are presently allocated directly to the Service and, subsequently, to the major commands of the Services. This is a sub-optimal allocation of resources. As a result, there are more bases in the inventory than are needed. Each unnecessary base generates requirements for unnecessary manpower. A rationalized long-range basing plan would result in significant manpower savings. Such a plan should include a strong economic adjustment program for people and communities affected by base closures.
2. BOS Management. BOS is not managed as an integrated program. Its management is highly fragmented among and within the Defense and Service Secretariats, the Service headquarters and their major commands, and the installations themselves. There are no common standards or Defense-wide priorities for BOS. BOS is not assessed "all at once" so that possible trade-offs between its various support

functions could be made. Opportunities to allocate resources and provide support on a regional basis across Service lines have not been pursued fully.

3. Contracting. Increased contracting for services could achieve major savings in BOS manpower costs (as shown in LMI contract study for DMC). Some work of this kind presently is done under contract, but relatively little compared to the opportunities. Cost estimates comparing work performed under contract with in-house performance generally do not consider the total cost to the Government. The methods of making these comparisons differ across the Services. Successful experiences with contracting that have resulted in savings to the Government are not transferred for use at similar installations. There is a general reluctance to award contract for BOS services, apparently to protect the well-being of Federal work force, and because of the apprehension of not being able to control the responsiveness and quality of the work.

4. BOS Manpower Mix. Since a large share of BOS is performed in non-deploying organizations, the function lends itself to more optimal use of the Total Force mix. More military positions could be reduced in favor of less expensive Reserves, Federal civilians, or as discussed above, contractor employees. After providing for deployment and rotation base requirements for military personnel, many of these housekeeping functions should be opened to the selection of the least expensive kind of manpower that would be capable of performing the work up to prescribed standards. It appears, however, that traditional preferences for active military personnel have taken precedence over these opportunities. Defense should develop long-range and annual goals for the optimal cost-effective mix of these forces.

5. Alternatives to Manpower (From previous DMC staff issue paper using ORI contract study). The Department of Defense has demonstrated that it can save large amounts of manpower dollars by substituting capital equipment for more expensive manpower. It has not, however, institutionalized these practices, nor is the Department presently organized to do so. Defense should establish a capability to manage capital investments and should increase the amount of funds it spends on fast-amortizing capital projects.

CONCLUSIONS:

Within the Defense support establishment, substantial manpower savings are possible in Base Operating Support over the next ten years through actions recommended in this paper.

RECOMMENDATIONS:

The paper lists recommendations for management systems that could lead to substantial savings in manpower costs. The management improvements would be made as part of an integrated, long-range plan that would permit the Department of Defense to save costs by institutionalizing management improvements it has already proven to be successful in isolated instances.

It is recommended that the JMC accept this paper as a basis for preparation of the DoC final report.

THE SUPPORT FORCES

INTRODUCTION

Purpose

The purposes of this paper are as follows:

1. To assess the manpower requirements of the Support Forces.
2. To identify areas in which reductions in manpower and manpower costs could be made, and to estimate the order of magnitude of the savings.
3. To recommend management principles that the Department of Defense, in turn, could translate into policies that would result in manpower savings.

General

"Support Forces", for the purpose of this paper, are defined in accordance with the Department of Defense Planning and Programming Categories (DPPCs), which are already in use by both the executive and legislative branches. As shown in Tables 1 and 2, the Support Forces consist of two categories: Mission Support Forces and Central Support Forces. They are defined by the Department of Defense as follows:

Mission Support Forces consist of activities which are not organic to a specific kind of unit (e.g., division, squadron, or ship), but directly support a group of complementary units (e.g., fighter squadrons, reconnaissance squadrons, and tactical airlift squadrons) devoted to a common mission. Mission Support Forces are categorized separately primarily because they are not fully allocated to a specific kind of operating unit. It should be emphasized that although these forces

TABLE 1

Department of Defense Military Manpower Requirements
(Active Duty End Strengths in Thousands)

	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 77</u>
	<u>Actual</u>	<u>(FY 1976 Budget)</u>			<u>Program</u>
<u>Strategic Forces</u>	<u>121.4</u>	<u>109.8</u>	<u>102.4</u>	<u>102.3</u>	<u>102.8</u>
<u>General Purpose Forces</u>	<u>871.5</u>	<u>912.5</u>	<u>939.0</u>	<u>937.1</u>	<u>952.7</u>
Land Forces	494.6	529.3	558.9	556.3	560.5
Tactical Air Forces	162.9	169.7	168.7	168.9	171.3
Naval Forces	173.2	173.9	172.6	173.0	182.5
Mobility Forces	40.7	39.6	38.7	38.7	38.5
<u>Auxiliary Forces</u>	<u>151.5</u>	<u>139.9</u>	<u>127.0</u>	<u>126.2</u>	<u>123.3</u>
Intelligence & Security	55.6	52.6	42.5	41.8	41.2
Centrally Managed					
Communications	46.0	38.8	38.1	38.1	36.2
Research & Development	32.2	32.5	32.0	31.9	31.7
Support to Other Nations	4.3	3.6	3.4	3.4	3.3
Geophysical Activities	13.4	12.4	11.1	11.1	11.0
<u>Mission Support Forces</u>	<u>306.0</u>	<u>298.5</u>	<u>289.4</u>	<u>289.3</u>	<u>286.8</u>
Reserve Components Support	13.6	14.0	13.6	13.6	13.6
Base Operating Support	208.9	206.5	199.9	199.9	196.8
Force Support Training	33.1	31.8	31.6	31.7	32.3
Command	50.5	46.2	44.4	44.2	44.0
<u>Central Support Forces</u>	<u>365.4</u>	<u>342.8</u>	<u>333.2</u>	<u>333.4</u>	<u>331.5</u>
Base Operating Support	50.2	46.2	44.9	44.9	45.0
Medical Support	86.7	82.4	79.4	79.4	78.1
Personnel Support	32.1	31.9	31.5	31.4	31.2
Individual Training	134.0	121.6	118.0	118.4	118.1
Command	38.3	35.8	35.4	35.3	35.1
Logistics	21.0	21.1	20.3	20.2	20.3
Federal Agency Support	3.0	3.8	3.7	3.7	3.7
<u>Individuals</u>	<u>345.1</u>	<u>325.6</u>	<u>309.1</u>	<u>330.7</u>	<u>334.2</u>
Transients	110.7	95.7	94.8	92.3	89.5
Patients & Prisoners	12.5	9.3	9.3	9.5	9.5
Trainees & Students	211.4	209.1	193.4	216.1	223.0
Cadets	10.5	11.5	11.6	12.9	12.9
Army Understrength (-)				-3.7	-5.3
<u>Total DoD</u>	<u>2161.2</u>	<u>2129.0</u>	<u>2100.0</u>	<u>2115.4</u>	<u>2126.7</u>

NOTE: Totals may not add due to rounding.

SOURCE: DoD Manpower Requirements Report for FY 1976

TABLE 2

DoD Civilian Manpower Requirements
(Direct & Indirect Hire End Strengths in Thousands)

	FY 74 Actual	FY 75	FY 76 (FY 1976 Budget)	FY 77	FY 77 Program
Strategic Forces	15.2 (*)	11.7 (*)	10.6 (*)	10.2 (*)	10.2 (*)
General Purpose Forces	77.9 (10.6)	80.5 (11.5)	80.9 (11.6)	81.1 (11.9)	83.0 (13.0)
Land Forces	41.3 (9.6)	42.5 (10.4)	42.0 (10.5)	42.1 (10.8)	43.6 (11.9)
Tactical Air Forces	13.2 (0.2)	14.3 (0.2)	14.8 (0.2)	14.9 (0.2)	15.0 (0.2)
Naval Forces	0.3 (*)	0.3 (*)	0.3 (*)	0.3 (*)	0.3 (*)
Mobility Forces	23.1 (0.8)	23.4 (0.8)	23.8 (0.8)	23.8 (0.8)	24.1 (0.8)
Auxiliary Forces	125.4 (2.6)	122.9 (2.4)	116.5 (2.3)	116.8 (2.3)	116.8 (2.3)
Intelligence & Security	10.2 (0.8)	10.1 (0.9)	9.6 (0.8)	9.6 (0.8)	9.5 (0.8)
Centrally Manned					
Communication	16.5 (1.7)	14.7 (1.4)	14.2 (1.4)	14.2 (1.4)	14.2 (1.4)
Research & Development	86.0 (-)	85.2 (-)	79.6 (-)	79.9 (-)	79.9 (-)
Support to Other Nations	2.3 (*)	2.6 (*)	2.6 (*)	2.6 (*)	2.6 (*)
Geophysical Activities	10.4 (0.1)	10.3 (0.1)	10.5 (0.1)	10.5 (*)	10.5 (*)
Mission Support Forces	224.8 (50.3)	227.2 (60.9)	228.5 (59.9)	229.2 (60.3)	228.2 (60.6)
Reserve Component Support	20.7 (-)	20.5 (-)	20.7 (-)	20.7 (-)	20.6 (-)
Base Operating Support	189.0 (57.6)	191.4 (60.4)	190.9 (59.4)	191.6 (59.8)	190.6 (60.1)
Force Support Training	1.9 (0.1)	2.1 (0.1)	2.1 (0.1)	2.1 (0.1)	2.1 (0.1)
Command	13.2 (0.5)	13.2 (0.3)	14.8 (0.4)	14.8 (0.4)	14.9 (0.3)
Central Support Forces	665.1 (23.0)	649.8 (22.8)	644.0 (21.7)	650.7 (21.9)	654.4 (22.2)
Base Operating Support	103.8 (2.4)	102.7 (2.7)	99.3 (2.7)	98.1 (2.7)	98.4 (2.8)
Medical Support	42.4 (3.7)	45.2 (4.4)	46.5 (4.7)	47.0 (4.8)	47.3 (5.4)
Personnel Support	10.6 (1.1)	11.7 (1.6)	11.8 (1.6)	20.0 (1.6)	19.9 (1.6)
Individual Training	45.3 (0.1)	48.0 (0.2)	48.1 (0.2)	48.8 (0.2)	49.1 (0.1)
Command	60.9 (0.4)	59.1 (0.8)	57.5 (0.6)	57.6 (0.6)	57.8 (0.6)
Logistics	402.1 (15.0)	393.1 (13.2)	393.7 (11.9)	379.3 (12.0)	381.7 (11.6)
Total	1108.5 (94.5)	1052.1 (97.7)	1080.5 (95.5)	1087.9 (96.5)	1092.7 (98.2)
Direct Hire Only	1014.1	994.4	985.0	991.4	994.5

() Indirect hire included.
NOTE: Totals may not add due to rounding.

SOURCE: DoD Manpower Requirements Report for FY 1976

are categorized separately for accounting purposes they are not programmed independently. Mission Support Forces are an integral part of the primary mission forces being supported.

Central Support Forces consist of those activities which are not easily associated with a single Defense mission. Included are such activities as depot level supply and maintenance, individual training, "fixed-site" medical facilities, service management headquarters, and support services to all Defense manpower and to other persons (e.g., retirees) and organizations (e.g., the Coast Guard). By its nature, Central Support Forces manpower is not a direct function of mission force manpower or even total active duty military manpower. For example, depot maintenance manpower repairs equipment for the Reserve Components and allies, and maintains war reserve stocks, in addition to serving active forces requirements.

It should be noted that this paper does not address manpower requirements of Individual Training or Medical Support. Another LMC study team is addressing individual training. The manpower requirements implications of their efforts will be determined separately. Medical support is the subject of a major inter-departmental study headed by the OMB. The DMC staff does not duplicate that effort.

The Logistics sub-category of Central Support Forces is handled in part in this paper under the consideration of depot-level plant consolidation, a part of the Basing Requirements section of this paper. It also is included to some extent in the consideration in the sub-study on "Alternatives to Manpower," which will be discussed later in this paper.

On the basis of preliminary analysis of the Support Forces and considering the alternatives, the DMC staff has focused this paper primarily on the Base Operating Support (BOS) part of the Support Forces. This is because BOS involves so many personnel (535,000), approximately one out of every six people in the active defense establishment (see Tables 1-3) and presents especially significant opportunities to reduce manpower costs through lasting, institutional changes without reductions in national security. Aside from outright reductions in total manpower, the BOS function is highly susceptible to a revision of its total force composition that would result in a more cost-effective mix of active, Reserve, Civil Service and contractor personnel.

BASE OPERATING SUPPORT

Background

Base Operating Support (BOS) is defined by the Department of Defense as "wide range of diverse services similar to those provided by local government, utilities, and the 'service industry' segment of the civilian economy. Included are: (a) services which directly support forces, active and reserve (e.g., airfield operations, wharf operation, and base supply and transportation activities); (b) services which maintain the installation facilities (e.g., building and road construction and repair, police and fire protection, trash and sewage disposal, and utilities operation); (c) services which directly support operating personnel, military and civilian (e.g., food services, laundries, clothing issue, payroll and administrative activities, and housing); and (d) services which maintain the 'standard of living' of servicemen, dependents, and retirees (e.g., commissaries, exchanges, theaters, libraries, religious activities, and sports and entertainment facilities).

TABLE 3

BASE OPERATING SUPPORT
FY 76 REQUIREMENTS
(Combined Mission & Central Support Forces)
(Thousands)

	<u>TOTAL</u>	<u>BOS</u>	<u>% BOS</u>
<u>Army</u>			
Military	785.0	42.9	5.5
Civilian (Direct & Indirect Hire)	401.8	130.4	32.5
<u>Air Force</u>			
Military	590.0	140.2	23.8
Civilian (Direct & Indirect Hire)	271.3	93.3	34.4
<u>Navy</u>			
Military	528.7	39.5	7.5
Civilian (Direct & Indirect Hire)	313.9	47.8	15.2
<u>Marine Corps</u>			
Military	196.3	22.2	11.3
Civilian (Direct & Indirect Hire)	19.9	12.4	62.3
<u>Defense Agencies</u>			
Military			
Civilian (Direct & Indirect Hire)	73.7	6.5	8.8
<u>Total DOD</u>			
Military	2,100.0*	244.8	11.7
Civilian (Direct & Indirect Hire)	1,080.6	290.2	26.9
	3,180.6	535.0	16.8%

SOURCES: DoD Manpower Requirements Report for FY 1976

() Already included in Service totals

* Rounded total

Several major issues within BOS that impact heavily on support manpower requirements have been addressed in separate papers, prepared with contractor research support, which addressed the following subjects:

1. Alternatives to manpower (increased productivity through the use of capital equipment as a substitute for manpower).
2. Contracting for BOS services.

In addition, this paper will discuss five other subjects of extreme importance to the size and capability of EOS forces:

1. BOS trends.
2. The organization and management of BOS.
3. The total force mix of these forces, including civilianization program.
4. A different approach to BOS.
5. Defense Basing Requirements.

While the first two subjects will be only summarized in this paper, it is important to note that they share several common threads that impact on BOS management: major inconsistencies were documented for each of these major issues in the form of redundancies on one hand, and, on the other hand, the failure to transfer successful practices from one installation to another, and from one Service to the others. The following are brief summaries of the papers on "Alternatives to Manpower" and "Contracting for Services." A summary of the Defense Basing Requirements paper is also included to facilitate the consideration of this complex subject.

ALTERNATIVES TO MANPOWER

The study, "Alternatives to Manpower" was made to consider the extent to which savings in manpower costs could be made by the substitution of capital equipment for labor. A special impetus for the assessment was the continuing disproportionate share of the Defense budget, 53%, represented by manpower costs. It was reasoned that if manpower was often used in the past as a substitute for capital since it was the cheaper of the two resources, the recent inversion of these resource costs would warrant a re-thinking of the choices. The study concluded that capital substitutions for manpower would increase labor productivity, and thus provide the Department of Defense with the option of reducing its manpower requirements. It was estimated that the impending Defense program that will provide for \$35 million per year for five years for quick amortizing capital investments could result in a reduction in manpower requirements of 1,750 manpower spaces per year or approximately 8,750 spaces over a five year period. Further, it was estimated that for each 1% of increase that the Department of Defense could attain, it could save approximately 7,000-10,000 manpower spaces and at least \$200 million annually.

The identification of capital equipment that would replace personnel at a savings is not a problem. A study conducted for the Defense Manpower Commission by Mr. Eckhard Bennewitz of Operations Research, Inc. lists pages of such substitutions that have already proven successful at military installations across the country, but have not been institutionalized. A more generalized use of these successes could become the beginning of a major Defense capital equipment program at very little risk to the Government, considering also that any such program would contain a post-audit capability.

BASING REQUIREMENTS

The following is a summary of a more extensive discussion contained in Annex A. Defense basing and base requirements are fundamental, major factors affecting the size and mix of BOS manpower requirements.

There are approximately 6,500 Defense installations in the worldwide inventory. Of these, 764 are classified as "major" installations. Table 4 displays the amount of BOS manpower by Service, totaling 535,000 people for the entire Department of Defense.

It might be expected that with a resource as expensive as basing, the real estate and facilities needed by the forces would be allocated in accordance with the size and characteristics of those forces, across Service lines. But this is not the case. Instead, the Defense inventory of bases, at least in the USA, appears to be largely a product of past eras (especially WWII) that has been handed down through generations of Defense managers, some of whom have made improvements, but none of whom have managed to update the criteria for basing requirements and thus create a more efficient allocation system for the resource.

The Department of Defense, however, is in the process of taking some steps to bring more order to this problem. Installations have been categorized into homogeneous groupings (e.g., major, minor, medical) to make them more visible and facilitate management. In the CASD(I&L), work has also begun to develop Service-oriented criteria for basing (considering mission, access, floor space, special facilities, open space, weather, compatibility of mission with local communities, environmental impact, etc.) and a model for allocating land and facilities to the forces based on their size and characteristics. Until something of this order is

TABLE 4

BOS MANPOWER LEVELS (FY 1976)
(Authorization Requested by DoD)
(Military and Civilian Employees Combined)

Total DOD	535.0 *
Army	173.3
Navy	87.3
Air Force	233.5
Marine Corps	34.6
Defense Agencies	6.5

* Figures may not add exactly, due to rounding

SOURCE: DoD Manpower Requirements Report for FY 1976

completed, however, the Department of Defense will not know its true requirements for basing.

The computation of requirements and the subsequent allocation of basing should cut across Service lines for maximum cost effectiveness. Even when land and facilities represent a sunk cost and as such could be considered to be freely available for allocation beyond minimum essential needs, the manpower costs engendered by additional basing should prohibit such a course of action.

Such an objective calculation of basing requirements, however well determined, does not suffice to activate base realignments and closures in the United States. This is because military basing is not just a Defense consideration; it is a national consideration with economic and political aspects that affect communities all over the United States. To a community, a base means jobs and a market for local businesses. Consequently, pressures are placed on elected officials to keep bases open, even though those bases may be in excess of national security requirements or their locations or present use may not be the most cost effective from the national viewpoint. Without imposing value judgments on this condition, it is safe to say that the American citizens' needs for income are real and understandable and that neither reasoning in the Executive Branch nor on the economist's calculator is going to eliminate such considerations. It appears, therefore, that real hope of bringing change to this condition rests, in part, with the extent to which the people adversely impacted by base closures are accommodated (compensated) in order to reduce pressures on elected officials to compete their local interests against the broader national interest.

The following conditions or changes would reduce these pressures and permit a more cost-effective distribution of Defense basing and the support manpower costs associated with that basing:

1. The realignment of the basing structure and the closing of those bases in excess of national security requirements should, insofar as practicable, be approached as a long-range (10-15 year) program.

2. Time should be programmed for the multitude of actions that must take place for the economic adjustment of the impacted employees and communities. Closures of bases or major activities thereon generally should be announced at least three years in advance. As to the employees, time permits choices and eases the problems of change. Impacted personnel with enough advance notice can decide upon retirement, or have time to seek other employment more to their choosing. Career oriented employees subject to relocation (or else), would not have to move abruptly to the first new location that comes along as a permanent home for their families. The environment brought about by long-range planning would bring a sense of candor to installation hiring procedures: Employment with the Federal Government at an installation would mean that the employee would enter on duty with full knowledge that the installation is scheduled to close at a set time, when he must move with transferred functions or seek other employment.

Time is critical also for economic adjustment of a community affected by base closure. The President's Economic Adjustment Committee has a record of successes in working with impacted communities to attract new business, and thus jobs and markets, to replace those lost through base closures.

If the President's Committee is involved in each base closure from the initial planning phases, then its previous record indicates that the adjustment of the communities will be fully compensatory and timely.

We regret that this long-range approach would defer savings in manpower and other costs, but it would be better in the long run, and the history of military basing since WWII shows that very little improvement will result unless such a different, more realistic approach is taken.

The other ingredient needed for the long-term success of a long-range comprehensive basing plan is money in the near term. Although proven successful, the process of planning for and preparing a community to attract new business is very expensive. In the case of the much publicized 1975 Defense base closure plan, the Economic Adjustment Committee will administer the expenditure of more than \$100 million in loans and grants in the first two years of implementation. The plan is projected, however, to save \$3.5 billion over the first 10 years. The adjustment funds are being provided mostly through HUD and the Departments of Commerce and Labor. If Defense were to adopt a long range, comprehensive basing plan, there would, under present circumstances, be no automatic assurance that such funds would be available adequately in the annual appropriations processes. The plan would be dependent on Congressional action to ensure the necessary funds as well as the coordinated funding procedures. As part of the total plan, and as a more direct source of Federal funds for this purpose, economic adjustment funds should be identified as a percentage of the dollars projected for savings from base closures or other realignments, and used to restore the economic health of impacted communities.

In summary, the Department of Defense should determine its optimal basing requirements, after developing a method to do so, and then formulate a long range plan to restructure its present basing in accordance with those optimal requirements. Part of the savings derived from bases no longer needed would be used for the economic adjustment of impacted communities as part of a long range plan that would also accommodate the needs of impacted Federal employees. Although the long range approach would reduce potential savings, it is more likely to result in needed base closures than the present approach.

Even with the best base requirements plan that DOD could formulate and the economic adjustment measures discussed above, it is unreasonable to expect that contrary parochial Congressional pressures would cease. Accordingly, a new bi-partisan national commission should be established to review DOD basing plans, when ready, and make appropriate recommendations to the Congress and the President. The composition of this commission, as discussed further in Annex A, should be such as to ensure consideration of all major viewpoints and interests involved and provide a broad basis for the commission's recommendations.

CONTRACTING FOR BASE OPERATING SUPPORT SERVICES

An important part of the total manpower force available to the Department of Defense is private sector manpower - work performed under contract. Based on observations made during field visits of the utilization of contractor manpower in EOS, contracting appears to present an opportunity to save manpower costs without reducing mission effectiveness. A study was conducted to evaluate this opportunity. The study was designed and directed by the DMC staff, but was performed by the Logistics Management Institute (LMI). The objectives of the study were as follows:

- To identify the base operating support functions performed under contract.
- To compare contractual services with similar functions performed in-house and to explain relative efficiencies.
- To identify areas in which contracting for services represents the best opportunities for savings in manpower costs.
- To provide information from which management principles can be developed and translated into effective policies by the DOD.

The following paragraphs are a summary of the study.

Present government policies for contracting for service are contained in OMB Circular A-76. DOD instruction 4100.15 prescribes Department of Defense policy and assigns responsibilities for implementation of the program. In effect, the Defense directive reiterates policies of A-76 with added emphasis on obtaining at least cost to the Government those products and services which need not be performed internally in order to meet military readiness requirements. DODI 4100.33 prescribes

procedures for implementing the program. It defines 101 functional areas as commercial or industrial activities, establishes requirements for inventorying and reviewing these functional areas, and specifies procedures for conducting comparative cost analyses. It specifically excludes from the program:

- Products or services obtainable from other Federal agencies which are authorized or required by law to furnish them.

- Products or services procured in accordance with treaties or international agreements.

- Managerial advisory services such as those normally provided by an office of general counsel, a management and organization staff, automatic data processing staff, or a systems analysis unit.

While all of the Services do some contracting for installation services, the amount of contracting, the functions placed under contract, and the in-house vs. contractor cost comparisons made to determine whether a contract will be awarded, all differ from Service to Service. The Army and Navy take a decentralized approach to the so-called "buy or make" decision. In the Army, each installation reviews the functional areas contained within the 101 functions defined by DOD Instruction 4100.33 as Commercial or Industrial Activities in accordance with an Army-wide schedule. A comparative cost analysis is made when required, and a recommendation is made to either continue the function in-house, or award to contract. If a cost comparison is used to justify in-house performance, or if a conversion to contract will have an adverse impact on the present work force, the cost comparison is required to be audited by the Army Audit Agency.

Navy's program is similar except that the cost comparisons are not subject to audit.

The Air Force approach differs in that there is more central control of the process by the Air Staff. The Air Staff selects the functions for review, and conducts subsequent review of many of the results. Central decisions are also made, without regard to economics, to keep certain functions in-house in order to sustain needed deployable manpower and maintain a rotation base. Since it is felt that a Service-wide perspective is needed to make such decisions, the Air Staff retains the decision-making authority.

The biggest difference among the Services, and the one having the greatest impact on the quality of the decision to contract or do the work in-house occurs in the cost-comparison process. The Army and Navy estimate their costs of doing in-house work, and also estimate what they think the contractor's cost would be. The Air Force, on the other hand, estimates its cost, solicits bids from qualified contractors, and gives the work to the lowest bidder, whether it is in-house or a contractor. This process, in part, explains Table 5, a very self-descriptive table. The Army and Navy assume that a contractor will do the job the same way as a Service, with the same organizational structure, and approximately the same numbers of people. This limits the comparison mostly to employee pay and benefits, which will be shown later in this summary not to be a major determinant in the decision.

Table 6 displays the amount of BOS services that are under contract. Again, there are wide disparities between functions and between the Services.

TABLE 5

SUMMARY OF COST COMPARISON RESULTS, FY 1973-75

	NUMBER OF COMPARISONS	COMPARISONS FAVORING CONTRACT	COMPARISONS FAVORING IN-HOUSE
AIR FORCE	79	70	9
ARMY	69	33	36
NAVY	47	6	41

SOURCE: A sample of comparisons provided by the Military Departments.
(See LMI Report, Contracting for Services in the Department of
Defense, October 1975.)

TABLE 6
 CONTRACTED SERVICES BY FUNCTION AND CATEGORY, FY 1974
 (Thousands of dollars)

CATEGORY	Army		Air Force		Navy	
	\$ TOTAL	% CONTRACT	\$ TOTAL	% CONTRACT	\$ TOTAL	% CONTRACT
J	156,251	38.04%	213,253	9.10%	70,50%	2.5
S	520,428	136.49%	449,510	67.73%	369,726	13.2
T	726,450	207.96%	204,531	9.85%	254,390	33.2
W	216,450	50.01%	179,749	7.59%	153,822	28.2
X	135,990	1.32%	2,933	0*	133,800	0*
Z	128,099	51.66%	241,127	74.78%	99,888	32.1
TOTAL	1,883,678	480.50%	1,240,256	166.10%	1,101,544	19.4

SOURCE: DoD Commercial and Industrial Activities Report, FY 1974.

* Contract activities in Category X (Products Manufactured/Fabricated In-House) do not require review or inventory.

- J - Maintenance and/or Repair of Equipment (Intermediate/Direct/General)
- S - Installation Services
- T - Other Nonmanufacturing Operations
- W - Automatic Data Processing
- X - Products Manufactured/Fabricated In-House
- Z - Repair, Alteration & Minor Construction of Real Property (Excludes Repair Incident to Maintenance & Military Construction (MILCON) Funded Projects)

The comparison of the efficiency of doing work in-house or under contract is very much impaired by the cost comparison methods used by Army and Navy, as discussed above. This limited the quality and amount of information that was available for a functional comparison, although there is still enough information to assess the opportunities to save manpower dollars. One hundred ninety five cost comparisons (contractor vs. in-house) were available from the three Services: Air Force - 79; Army - 69; Navy - 47. We saw in Table 5 the disparity in contractor selections between the Services. Table 7 goes further to compare the Army functions favoring contract with those that do not. Since Army has dealt with a wide range of functions, its experience can serve as the "best available" example. These areas suggest where time might be spent in pursuit of savings through service contracting. Table 8 gives the percent of average savings resulting from work performed at installations under contract. Keeping Table 8 in mind, one can look to Table 9 to gain an idea of opportunities not just foregone, but never approached. Another thing to consider in Table 9 is that the number of activities under contract, which can be derived, are in that category because they were in fact shown to more economical by a cost comparison. One can imagine how this table would look if the Army and Navy cost comparisons looked more like those in the Air Force, or if the Air Force didn't concentrate its efforts in so few areas at a time. (Most of the Air Force concentration has been in custodial services, refuse collection and disposal, and laundry and dry cleaning service, although it is embarking on a program in food services that is expected to become heavily contractual.)

TABLE 7

SUMMARY OF ARMY COST COMPARISONSFunctions Favoring Contract

J501 Aircraft Maintenance
J503 Missiles Maintenance
J505 Combat Vehicles Maintenance
J506 NonCombat Vehicles Maintenance
J507 Electronic & Communications Equipment Maintenance
S709 Custodial Services
S712 Refuse Collection & Disposal Services
S713 Food Services
S724 Guard Services

Functions Favoring In-House

J511 Special Equipment Maintenance
S717 Motor Vehicle Maintenance
T807 Photographic, Film & TV Services
W826 Systems Design, Development & Programming Services

SOURCE: LMI Report, Contracting for Services in the Department of Defense, using data provided by the Department of Defense.

TABLE 8

FY 74 CONVERSIONS FROM IN-HOUSE TO CONTRACT

CODE	FUNCTION	A	AF	N	AVG** SAVINGS
S708	Laundry, Dry Cleaning Services	0	2	1	39%
S709	Custodial Services	4	19	2	39%
S712	Refuse Collection & Disposal Service	1	2	1	47%
S713	Food Services	1	3	1	22%
S715	Office Equipment	1	1	0	--
WB25	Maintenance of ADP Equipment	1	0	1	--
OTHER*		9	0	3	--
TOTAL		17	27	9	

* One conversion per function.

** Average Savings are computed only for those function for which savings were identified at more than one activity.

SOURCE: LMI Report, Contracting for Services in the Department of Defense, based on the DoD Commercial and Industrial Activities Report, FY 1974.

TABLE 9
DEMONSTRATED OPPORTUNITIES
FOR CONTRACT SUPPORT

CODE	FUNCTION	ARMY		AIR FORCE		NAVY	
		# OF ACTIVITIES	# NOT USING CONTRACT	# OF ACTIVITIES	# NOT USING CONTRACT	# OF ACTIVITIES	# NOT USING CONTRACT
J501	Aircraft Maintenance	21	4	49	34	17	14
J503	Missiles Maintenance	5	4	2	1	6	3
J504	Combat Vehicles Maintenance	16	12	-	-	1	1
J506	Noncombat Vehicles Maintenance	44	13	-	-	7	4
J507	Electronic & Communications Equipment Maintenance	48	22	72	62	7	6
S708	Laundry, Dry Cleaning Services	42	22	31	6	23	16
S709	Custodial Services	109	10	88	4	104	40
S712	Refuse Collection & Disposal Services	80	19	76	43	61	15
S713	Food Services	105	43	158	138	111	38
S715	Office Equipment	51	3	25	2	13	2
S717	Motor Vehicle Maintenance	82	45	129	98	80	47
S724	Guard Services	60	42	108	108	108	88
S725-S730	Utility Systems	442	114	633	545	401	245
T002	Cataloging	9	8	5	2	5	4
T804	Training & Consultant Services	46	5	27	27	25	14
T807	Photographic, Film & TV Services	98	60	99	98	52	38
T809	Administrative Telephone Services	92	61	90	90	66	14
T813	Contractor Engineering & Technical Services	3	0	-	-	7	0
T814	Fueling Service (Aircraft)	15	13	83	83	36	12
W824	Data Processing Services	122	44	98	91	115	36
W825	Maintenance of ADP Equipment	38	0	5	0	32	7
W826	Systems Design, Development & Programming Services	83	20	57	54	68	51
Z992	Buildings & Structures	65	6	114	30	82	17
Z994	Surfaced Areas	54	8	97	40	34	10

SOURCE: LMI Report, Contracting for Services in the Department of Defense, based on DoD Commercial and Industrial Activities Report, FY 1974.

The most significant and noteworthy example of services performed under contract to the advantage of the Government is at Vance AFB, Oklahoma where practically its entire BOS is performed under contract. To determine the real value of BOS contracting and of the performance of practically all of an installation's support services under contract, the Air Force called on the RAND Corporation to make an analysis of the Vance experience.* RAND compared Vance with Reese AFB, which is almost its mirror image in terms of missions, number and kind of facilities, amount of output (pilots trained), and number and kind of aircraft, and hours flown. Reese AFB relies mostly on conventional "in-house" BOS. As cited in the LMI contract report for the DMC and as further substantiated by a DMC staff visit to Vance AFB, RAND found two distinct differences:

1. In measures of quality and responsiveness of support, e.g., aircraft availability, supply and parts availability, Vance exceeded Reese in quality and, for that matter, most of the other bases in the Air Training Command.

2. As shown in Tables 15 and 16, p. 40 of the LMI study,** Vance used only 74% of the manpower and 87% of the budget Reese used to get approximately the same output. Some of the reasons for this are explained on page 41 of the LMI study** which distributes differences in manning between personnel availability, number of trainees, and management in three representative functions. Tables 18 and 19 of the LMI report** give more reasons for the contractor efficiency in the fewer number of sub-organizations and supervisors used at Vance than at Reese, which is compelled to use the standard Air Force organizational structure.

* The RAND report contains privileged contractor information and therefore is "For Official Use Only", limited to use by government agencies.

** The referenced tables in the LMI study contain privileged information and therefore have been deleted from the copies of the LMI study reproduced for public distribution in the Defense Manpower Commission Staff Studies.

Note that these differences could not manifest themselves in cost comparisons made by Army and Navy since those Services assume that the contractor will organize and man his organization in the same fashion as the Services.

BOS Trends

There is much more to say about this management problem, but first it would be useful to look at some BOS manning trends to establish a broader perspective for analysis:

Figure 1 displays trends from 1964-74 of total DoD manpower, total DoD support manpower, and total DoD BOS manpower. Figure 2 shows support as a percent of total manpower, BOS as a percent of total manpower, and BOS as a percent of total support. Key points from these charts are summarized below:

MANPOWER REDUCTIONS

1964-68-75

Type	<u>Millions of Personnel</u>			<u>Percentage Change</u>	
	1964	1968	1975	1964-75	1968-75
Total manpower	3.86	4.95	3.22	-16.5	-44.9
Support	2.09	2.54	1.52	-27.4	-40.1
BOS	.75	.74	.54	-28.6	-28.1

SOURCE: Department of Defense Historical Five-Year Defense Program, 1975.

As can be seen from the percentage reductions, BOS personnel from 1964 to 1975 were reduced relatively more than total defense manpower and slightly more than support personnel. Since 1968, however, reductions in both total manpower and support personnel have been much more dramatic. This leads to the conclusion that too little emphasis has been placed upon reductions of BOS personnel and, accordingly, that this is an area where concentration of effort can produce further personnel reductions. This further suggests that if

FIGURE 1

TRENDS IN TOTAL EOS MANPOWER

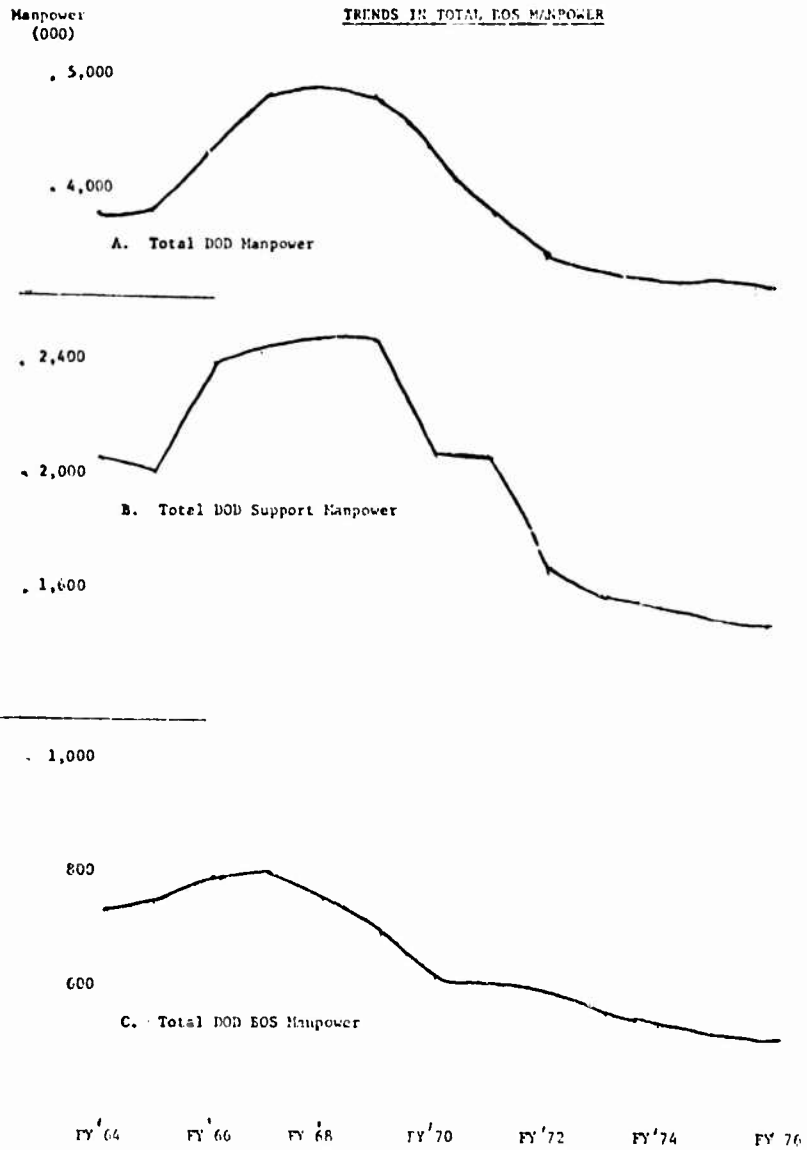


FIGURE 2
TRENDS IN BOS MANPOWER
(Percent)

Percent

. 60

. 50

A. Support as a percent of Total Manpower

. 30

. 20

. 10

B. BOS as a percent of Total Manpower

. 40

. 30

C. BOS as a percent of Support Manpower

. 20

FY '64

FY '66

FY '68

FY '70

FY '72

FY '74

FY '76

J

savings in BOS manpower costs are to be attained, the efforts should be more direct -- i.e., not limited to the relationship between BOS manpower and total strength.

The Organizational Management of Defense BOS

Because of lack of cohesion in the management of BOS as cited in the issue papers mentioned above, and as a result of other observations made in Washington and during visits to field installations, the Office of the Secretary of Defense was asked by the DMC to depict graphically and narratively the organization used by each Service for the various functions that compose BOS, from military installations through Service intermediate commands and Service Headquarters to the Office of the Secretary of Defense.

One of the reasons that prompted this request was the absence of a management office in the Pentagon that could provide adequate basic management information on BOS as a whole. To get such information, several offices would have to be solicited and the resultant information compiled. Further, even the total cost of BOS--involving 535,000 people--was not available in the OSD offices responsible for logistics management. It would have to be formulated from information from several accounts, based on however the requestor of the information decided to define "BOS."

From extensive observations made during the staff's assessment of this problem, and from the information on BOS organization received from the Office of the Secretary of Defense, it is apparent that the Department of Defense does not manage BOS as a single, integrated function, but rather manages the separate functions that compose BOS. The principle separate functions that compose BOS are listed below:

Personnel support
Supply Operations
Materiel Maintenance
Transportation
Laundry
Food Service
Commissary
Recreation
Facility Engineering (incl. utilities, real property, maintenance,
and minor construction)
ADP
Communications
Medical Support
Procurement
Security
Legal Services
Administration (incl. finance and accounting and other comptroller
functions)
Public Information
Chaplain Services

For the most of these functions, each Service maintains a separate staff at its Service Staff level, a staff at each of their major commands that have cognizance over installations, and still another at the installations themselves. Even at the Office, Secretary of Defense, the management of BOS is divided between three major components within the Office of the Assistant Secretary of Defense (Installations and Logistics), with financial management residing in the Office of the Assistant Secretary of Defense (Comptroller). In this connection, it was surprising to find in the Army that the overall responsibility for BOS was assigned to the Army Comptroller, rather than to the Army's logistics chief (DCSLOG).

There is yet another problem related to the fragmentation of this function. That problem is the traditional concept that every individual base should come equipped with a full set of BOS functions, regardless of whether the base may be one of the tight cluster of bases that could share some or all of this kind of support with nearby bases. It should be added, however, that some steps have been taken by the OSD and the Services to

regionalize some BOS functions both on an intra- and inter-Service basis. This will be discussed further in the discussion of Navy Public Works.

The major problems resulting from the diffusion of BOS management are as follows:

1. With each Service and Service major command "owning" their own land and facilities, the allocation of these resources becomes expensively sub-optimal. Land, facilities, and related BOS resources, including personnel, should be treated as extremely precious assets. As such, they could be managed from a central source and allocated on the basis of national security requirements with less regard to traditional, parochial interests.

2. There is no mechanism for determining priorities for BOS resources, including manpower, across Service lines. Further, there is no single set of criteria based on national security requirements and efficient resource utilization that could be used to develop such priorities.

3. There is no single compendium of BOS standards for the operation of military installations. This results in some rich bases and some poor ones, with the danger that the larger share of the resources will go to the best "justification writers."

4. The present DOD program/budget system serves to do little more than to collect and compile the pieces of BOS into several aggregations. The preparation of programs and budgets is the only time that BOS is evaluated at a level approaching an integrated function. Even in this case, the urgency of the program/budget exercises leaves time to do little more than consider Service-initiated changes from the last cycle. There

is an urgent requirement in the Department of Defense for a single Defense management office to get in front of the power curve with this enormous segment of the Defense establishment by applying deliberate, coordinated, programmed management to the BOS resources as an entity.

5. Large BOS management functions are kept too much in isolation. The important areas of contracting for base services is a good example. In this instance, much of the entire effort is separated from the rest of logistics management. For example, in the OSD contracting for services policy is managed by the offices concerned with procurement, not installation management. In the Air Force, it is the concern of the Director of Manpower and Organization. While these offices may or may not be the proper point for focus, the problem is that their energies seem to be directed more toward administrative satisfaction of the OMB/DOD/Service directives concerned with contracting than toward the potential management opportunities for the use of private sector manpower as a viable alternative for efficient manpower management.

6. The present organization for BOS does not provide for the continuing review of the need for reallocation of BOS resources DOD-wide, except as part of the budget exercise which, as discussed above, is not a comprehensive evaluation.

Between budget cycles, the present capability for reallocation is limited practically to change only after something has gone wrong. An increase in centralized responsibility for BOS, with the capability of execution on a geographically regionalized basis across Service lines, would permit the rapid allocation of resources (including people) to changes in operational needs.

Composition of the BOS Force - The Total Force Mix

The four kinds of manpower available to the Department of Defense are as follows:

1. Active Military
2. Civilian Employees
3. Reserves
4. Contractor Employees

There are reasons and incentives for using each of these kinds of manpower in BOS functions. Examples are:

1. Active military personnel are deployable, provide for Service rotation needs, and would be a flexible resource upon mobilization.
2. Civilian employees generally cost less than military personnel when life-cycle and support costs are compared, which will be discussed in more detail below.
3. Reservists offer the advantage of not being present-for-pay on a full-time basis, and are thus far cheaper.
4. Private sector business is able in some cases to provide installation support services satisfactorily under contract cheaper than when Federal employees are used.

Because a large share of the BOS force works at fixed installations in non-deployable jobs, BOS as a function lends itself to the use of all four of the kinds of manpower available to the Department of Defense, i.e., active military, Reserves, Civil Service personnel, and contractors. More attention is given to the use of civilian employees and contractors in this paper since other DMC papers consider the other kinds of manpower in more detail.

Before a change in force mix is made, however, essential military requirements for deployability and personnel rotation from hardship tours must be provided for. Beyond this computable manpower requirement needed to support the force levels representing combat capability requirements, the opportunity exists to efficiently utilize all of the four kinds of manpower available to the Department of Defense. The objectives would be to maintain the numbers of manpower spaces needed for national security requirements, but at the lowest possible manpower costs. In this respect, for each generic category of work, e.g., base supply or civil engineering, the capability of each of the four kinds of manpower to perform that work should be estimated. Next, the relative costs of each of the four kinds of manpower for that kind of work should be computed. A five-to-ten year program could then be established that would provide target levels for each kind of manpower that would give the Department of Defense a force composition whereby for each category of work, the capability and cost of each kind of manpower would be more nearly optimized. There would be exceptions such as differences in manpower costs attributable to local conditions, but these would be manageable exceptions. This would give the Department of Defense the option of selecting a less preferred force mix as an alternative to sustaining reductions in force levels imposed because of rising manpower costs.

Separate issue papers have been prepared that describe in detail and give recommendations for the use of Reserve and contractor manpower. Annex B describes the Defense "civilianization" program, actions taken within it in the past and the reasons for these actions. Annex B also

discusses the cost of Civil Service personnel in relation to active military personnel.

An ICF, Inc. study of the relationship between the life-cycle and indirect costs of active duty military personnel and civil service direct hire personnel indicates that military personnel costs exceed civilian personnel costs for each and every grade comparison. (For further discussion, see DMC staff paper, "Comparative Costs of Defense Manpower," with supporting contract studies.)

Utilization of Civilian Employees

Civilian employees compose a large, important, integral component of the manpower available to the DoD. Table 10 shows the share of the Defense forces represented by civilians, both in total and in BOS. Since the majority of these personnel are employed in a support role, the entire civilian work force will be discussed in the following paragraphs. The discussions will include both direct and indirect-hire personnel.

The operation of the Nation's Armed Forces encompasses most of the occupations found in the American culture. For many of the occupations, particularly those that are not combat-related, the Government has followed the practical policy of utilizing Civil Service employees. Since it is difficult sometimes to distinguish absolutely between jobs that are truly "military" and those that are not, it requires a great deal of discretion and management to develop the forces with the most economical yet the most effective mix of military and Civil Service personnel. The selection process is made even more difficult with the addition of the considerations that the force mix selected must serve competently in times of war as well as in peace, that military personnel are a more flexible resource which can be moved on orders and used wherever needed,

TABLE 10

Total DoD Military and Civilian Manpower, FY64-76

<u>Fiscal Year</u>	<u>Total (000)</u>	<u>Military (000)</u>	<u>Civilian* (000)</u>	<u>Civilian (Percent)</u>
1964	3,861	2,685	1,176	31
1965	3,821	2,653	1,168	31
1966	4,361	3,091	1,270	29
1967	4,803	3,377	1,426	30
1968	4,969	3,547	1,406	28
1969	4,746	3,459	1,287	27
1970	4,330	3,066	1,264	29
1971	3,904	2,714	1,190	31
1972	3,431	2,322	1,109	33
1973	3,352	2,252	1,100	33
1974	3,269	2,161	1,108	34
1975	3,209	2,131	1,078	34
1976**	3,149	2,091	1,058	34

SOURCE: Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs.

*Includes both Direct and Indirect Hire. Excludes Civil Functions and Youth Programs.

**As authorized in the Defense Authorization Appropriation Act, 1976.

Civilian personnel comprised 31 percent of total active DoD manpower in FY 64, declined to 27 percent at the height of the Vietnam conflict, and now stands at about 34 percent. This period is a turbulent one incorporating the war, the subsequent phase-down and changing mix of forces, and reductions in support activities such as headquarters and numerous base closures. Major civilianization programs were conducted during FY 64-68 and FY 73-75.

and that a number of non-combatant jobs must be "reserved" for military personnel to provide them with the opportunity to rotate periodically from hardship tours to duty in the United States. The so-called rotation base assignments must, of course, be related to military occupations so that, insofar as practicable, the military personnel will continue to exercise and maintain or improve their occupational proficiency. On the other side of the scales is the previously mentioned difference in cost between the two kinds of manpower, with civilians generally being less costly to the taxpayer in the long run. This is of basic importance to the goal of attaining the most effective armed force at the least cost to the taxpayer.

The policy of the Department of Defense with respect to the military/civilian composition of the force is expressed in DoD Directive 1400.5 as follows:

Civilians shall be utilized in all positions which do not require military incumbents for reasons of law, training, security, discipline, rotation, or combat readiness, or which do not require a military background for successful performance of the duties involved.

As related to the DMC in a Department of Defense paper,

"This policy might seem sufficient to assure maximum use of civilian employees, but several factors militate against such a result. These factors include a prudent reluctance to reduce the ability to meet wartime surge requirements for military personnel; the continuing pressure to reduce both military and civilian manpower; and the difficulty of determining which military positions truly are substitutable according to the criteria cited in the DOD Directive. Consequently, DOD has periodically mounted concerted efforts to identify that portion of the military work force that is reasonably substitutable through specific conversion programs. These programs are generally referred to as 'civilianization.'"

Looking back to Table 10, the trends in military/civilian force composition from 1964-76 are displayed. These trends have resulted from some deliberate management actions taken by the Department of Defense during that period. The driving force beyond these actions is to reduce the cost of the Armed Forces without reducing their effectiveness.

Annex B, prepared by the Department of Defense at the request of the DMC staff, also gives a detailed, comprehensive history of civilianization programs from 1964-75. In that Annex, two major civilianization programs are discussed. One occurred in the FY 1964-68 time frame when 114,213 military positions were reduced in favor of 94,975 civilian positions. In the FY 1973-75 program, 47,898 military positions were reduced in favor of 40,200 civilian ones. These civilianization programs have, beyond question, resulted in savings in manpower costs, but there are two fundamental problems associated with them:

1. Periodic "percentage reductions" are imposed on the DOD's civilian work force. While the perpetuator of the reductions had in mind the reduction of only the civilian force, a reduction in the total force actually occurred because of the large number of civilian positions that were previously military. This, of course, serves as a disincentive to reduce military positions in favor of less expensive civilian positions since the civilian ones are vulnerable to these "percentage reductions." In addition, the civilianization programs mask the real reductions the DOD has sustained in its recent history. Page 16 of the Annex shows that the reductions taken from 1964-75 in the civilian force were actually more than appears on the surface since so many positions were converted from military to civilian during that period of time.

2. While civilianization programs save money, they work in isolation from total force goals and objectives. Rather than imposing periodic civilianization directive on the Services, it would be better to establish annual strength goals for each kind of manpower (active military, Reserves, civilian employees and contractor), considering the cost savings that could be attained by the force mix represented by those goals. This would be a more coordinated and explainable approach and would result in maximized rather than periodic savings.

Indirect-Hire Employees (Foreign)

"Indirect-hire employees" are those foreign employees overseas whose services are provided for the U.S. Forces through arrangements with host governments. (Not all foreign employees are in this category; some are "direct hire.") There are 88,782 of these indirect-hire employees at the end of FY 1975. Virtually all are in support activities.

Table 11 shows the detailed numbers and countries of the indirect-hire employees.

The system for indirect-hire employees, to quote from DOD Instruction 1400.10, is

. . . that the host government assumes the responsibility of assuring that the needs of the U.S. Forces for local national personnel are met and that the host government be in fact the official employer of such personnel but that the host government specifically grants to the U.S. Forces operational control under a program mutually agreed to by the host and the U.S. Forces for the day-to-day management of such personnel. . .

Usually the host government recruits these employees for the U.S. Forces. The basic principle behind this arrangement, as given in DODI 1400.10 is, "That local law and customs are followed in the employment and administration of local national personnel to the extent that such laws and customs are compatible with the basic management needs of the U.S. Forces "

TABLE 11

INDIRECT HIRE PERSONNEL BY COUNTRY

(Foreign nationals supporting U.S. military forces
under contract or agreements with
foreign governments)

June 30, 1975

Country	Total	Army	Navy	Air Force	Other Defense Activities
Belgium	473	471	--	2	--
France	--	--	--	--	--
Germany	55,072	47,007	34	6,834	297
Greece	639	12	247	371	9
(Including Crete)					
Japan <u>1/</u>	25,226	10,892	8,924	5,154	256
Korea	3,371	3,371	--	--	--
Morocco	516	--	514	--	2
Netherlands	286	210	--	76	--
Spain	2,015	49	1,143	795	28
United Kingdom	1,184	70	59	1,028	27
TOTAL:	88,782	62,982	10,921	14,260	619

1/ Now includes Okinawa, where the Ryukyun employees of the U.S.
Armed Forces were in the direct-hire category prior to reversion
to Japan in 1972.

Department of Defense
OASD (Comptroller)
Directorate for Information Operations
and Control
July 25, 1975

In the past, the indirect-hire employees have been outside the civilian manpower ceiling set by the Congress in the authorization process. They were, of course, subject to funding controls in the appropriation process and to management controls within DoD and the military departments. Nevertheless, there was a loophole which could have made it possible for the legislated manpower ceilings to be circumvented by augmenting the controlled military and Civil Service manpower through use of foreign indirect-hire personnel not under such controls. Accordingly, the Congress has acted to change that, effective in FY76-77. Under a new type provision in the Defense Appropriation Authorization Act, 1976, the indirect-hire employees are lumped together with the direct-hire civilian employees in a single overall authorization for civilian personnel for the Department of Defense (to be further allocated among the military departments and DOD agencies by the Secretary of Defense). This is a sound step with which the DMC is in agreement. Particularly since the Military Services are in the process of reducing support forces in favor of combat forces, it is advisable to keep the indirect-hire strengths within an overall ceiling for total civilian manpower, for better overall control. This way the full impact of military/civilian conversions and reductions that may accompany the process can better be seen and measured. Accordingly, in the judgment of the DMC staff, the provision in the 1976 Authorization Act which combines indirect-hire and direct-hire employees into a single overall DoD civilian authorization should be continued in FY1977 and thereafter. We shall treat the subject accordingly in further discussion of civilian manpower requirements and the military/civilian mix within DoD.

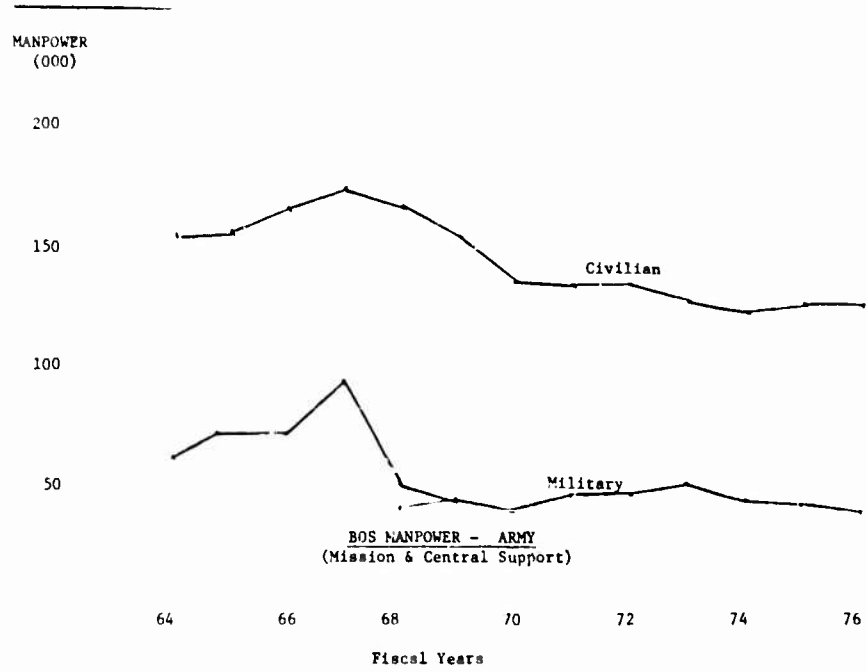
Military/Civilian Manpower Mix*

Although Annex B discusses the Defense civilianization program in general, it is useful to focus here on some trends in BOS military/civilian manpower mix in each of the Services since the base year of FY1964. Figures 3 and 4, respectively, show Army BOS military and civilian manpower trends for Mission and Central Support Forces and for Mission Support Forces by itself. There are no surprises in either of these figures. The preponderance of the Army BOS force is in civilian manpower, as would be expected since Army base support personnel are by and large non-deployable. Air Force and Navy present another picture. In the Air Force, as shown in Figures 5 and 6, BOS manpower includes large numbers of military personnel, even more than civilian employees. This is explained to some extent by the fact that a portion of Air Force manpower, although categorized in BOS, is actually deployable manpower. The wing organizations include BOS and combat support personnel, as well as the operational elements. On a wing base, there is no separate BOS organization outside the wing. Thus, the Air Force organizes for the present mission in its wing structure, and designates those support positions in the wing that will deploy for combat support. Under this system, all the personnel who need to be quickly deployable are necessarily military, including the deployable BOS elements. In addition, the Air Force has felt that operational requirements, security, contingencies,

*On use of civilian employees, refer to forthcoming separate paper on "Role of the DoD Civilians in the Total Force Structure," by the Development & Utilization Group of the DMC Staff.

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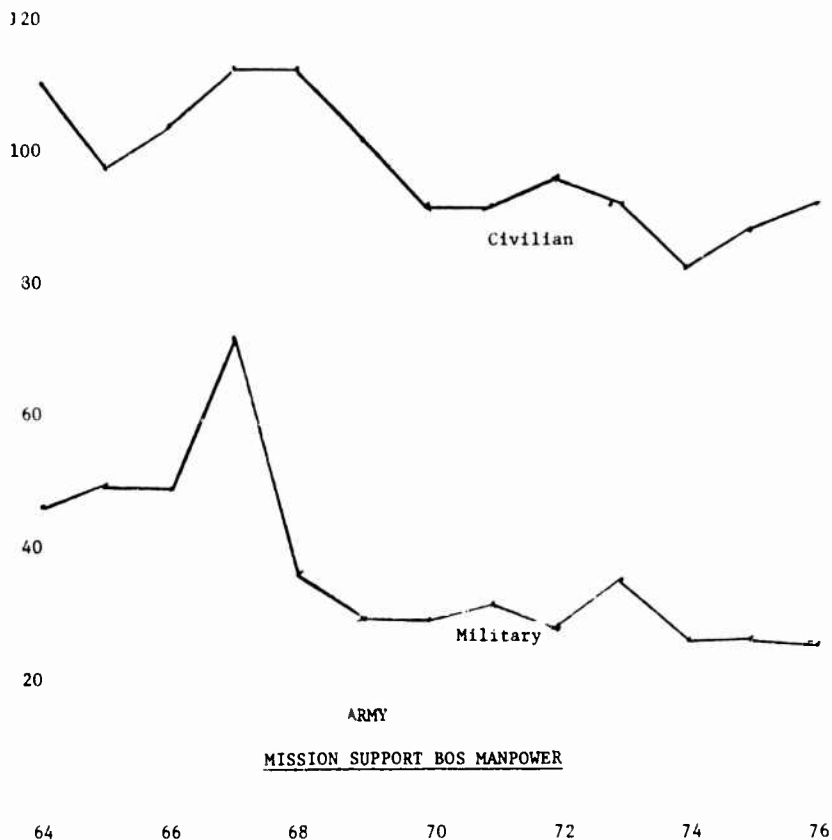
42
FIGURE 3



SOURCE: DoD Five-Year Defense Program Historical Report

MANPOWER
(000)

FIGURE 4



ARMY

MISSION SUPPORT BOS MANPOWER

SOURCE: DoD Five Year Defense Program Historical Report

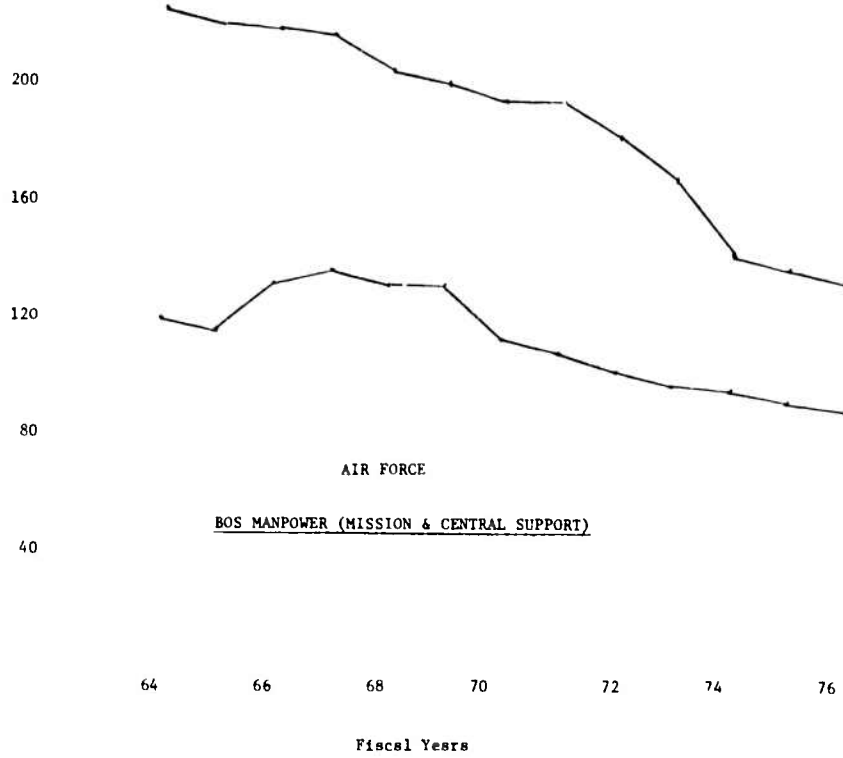
etc. dictate that many other support positions in a wing organization need to be military, even though they are not in the deploying category. This system has satisfied the Air Force well. However, the preponderance of military in BOS, as we saw in Figures 5 and 6, leaves much room for question.

One of the areas that bears a much closer look is the use of Air Force civil engineering personnel at Air Force installations. Unlike the other Services, whose installation facility engineering portions of BOS are more than 95% civilian, the Air Force uses mostly military personnel. The reason given for this unusual force mix is that the majority of the positions must be military to support the "Prime Beef" concept. The Prime Beef concept provides for four types of civil engineering teams that are formed for war or other emergency conditions by combining and deploying as a team designated personnel within the base civil engineering work force. For this reason, large numbers of the civil engineering work force are established as military positions. The four types of teams are described as follows:

1. Base Recovery Team (BEEF-R): These teams comprise the minimum number of military personnel necessary to maintain essential base operation and maintenance service before, during, and immediately after an attack or during a major fire, flood, storm, strife, or similar emergency. They also form the nucleus for recovery of all base facilities following an attack, disaster, or other emergency. In addition, the CONUS-assigned personnel provide the military resource of trained personnel to satisfy Air Force contingency and rotation requirements on a worldwide basis. Team size may vary with the size, location, type, and number of facilities on the installation. If an emergency

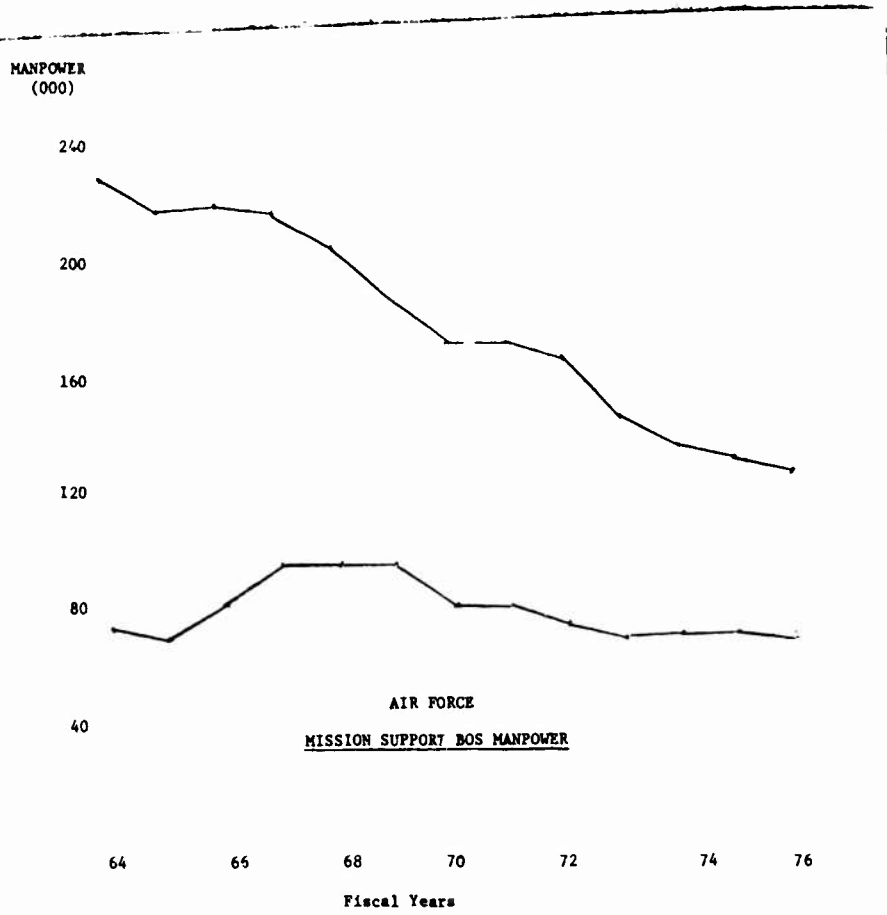
FIGURE 5

MANPOWER
(000)
240



SOURCE: DoD Five Year Defense Program Historical Report

FIGURE 6



SOURCE: DoD Five-Year Defense Program Historical Report

occurs, the teams will provide the capability to operate and maintain essential functions for a minimum of 36 hours on a two-shift basis.

2. Contingency Team (BEEF-C): These 60-man teams are designed to support worldwide contingencies, special air warfare operations, disasters, and other emergency situations. BEEF-C teams are not attached to specific flying units; however, they may be requested to support BEEF-F teams that need assistance. BEEF-C teams are located throughout the Air Force to meet contingency or emergency requirements. BEEF-C team members will not be assigned to any other BEEF team.

3. Flying Team (BEEF-F): BEEF-F teams (60 men), which are located within the CONUS, are attached to specific flying units (TAC or MAC). When designated flying unit is a tenant organization, the BEEF-F team supports the flying unit but remains under the control of the host base/command. One example of such a team is the BEEF-F team at Dyess AFB under SAC control. BEEF-F team members will not be assigned to any other BEEF team.

4. Missile Team (BEEF-M): These teams will provide depot level maintenance for real property, installed equipment, and equipment and facility maintenance beyond the missile maintenance organization's capability. There is no set manning guide for the BEEF-M teams; therefore, manning will coincide with current civil engineering authorizations required to support the missile facilities. If the missiles are launched, these teams will be available for deployment unless the sites are to be rearmed. BEEF-M team members will not be assigned to any other BEEF team without prior written approval of the major command. "M" teams vary in strength, with an average of 98 personnel.

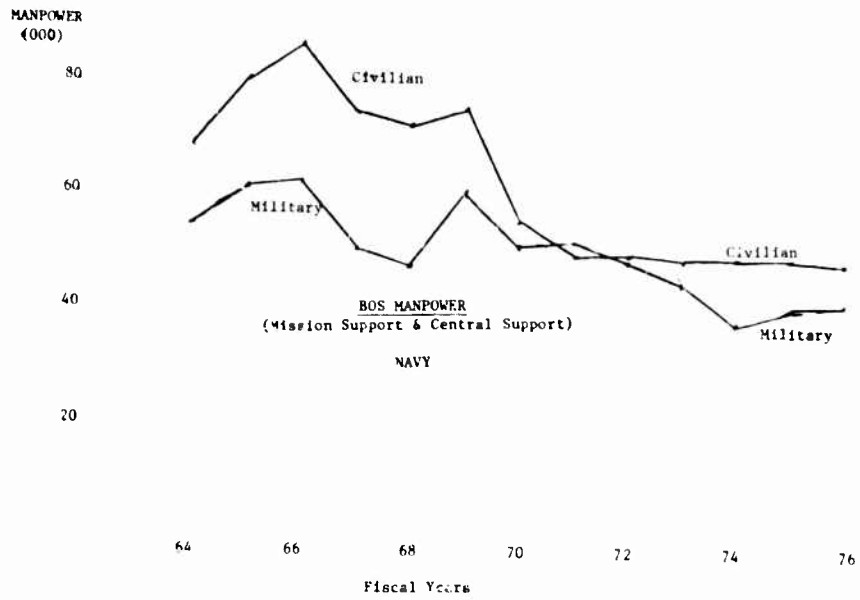
Review of the Civil Engineering teams above indicates that the "R" teams in CONUS may offer significant opportunities for cost-effective changes in military/civilian mix. There are 108 of these teams requiring 17,433 of the Air Force's bas civil engineering positions to be military positions. The underlying assumptions used by the Air Force appear to be as follows:

1. Air Force bases in the CONUS (TAC as well as SAC) are likely targets of enemy attack.
2. Civilian personnel cannot be counted upon to the same extent as military personnel to participate in recovery work during and after an attack or a natural disaster.

The Air Staff has told the DMC staff that it is reevaluating the mission of the "R" teams, including the assumptions underlying their need. The Air Staff is still uncertain, however, as to what its new civil engineering requirement will be for military positions to support Prime Beef requirements. Considering that there are more than 17,400 military positions under question, many of which could potentially be converted to civilian positions at a rate of savings to total Air Force manpower of approximately 50%, the Air Force should be required to minimize its military manpower utilization for such non-deploying civil engineering support functions.

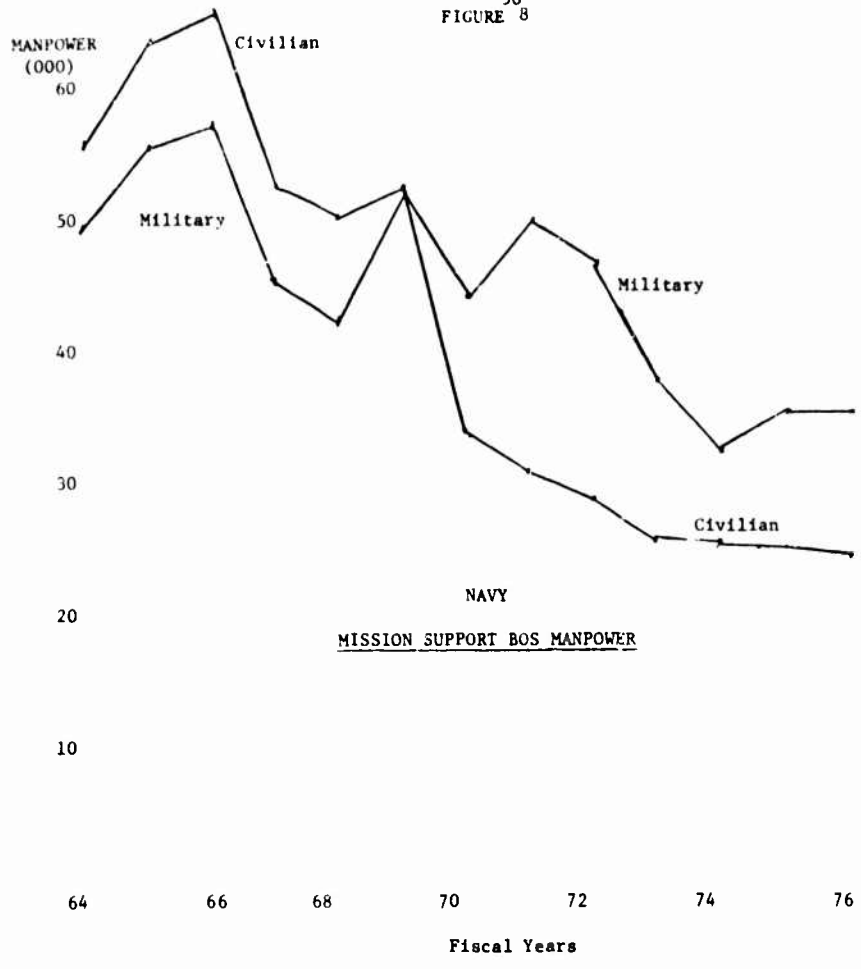
Turning now to the Navy, Figures 7 and 8 show the military/civilian manpower trends for BOS. Figure 8 shows an unusual turnabout in the Navy BOS force mix. Formerly a predominantly civilian function, we can see that since 1969 the function has become predominantly military. Some of this is understandable because of the Navy's sea/shore rotation problem. Navy experience shows that its force would be better off

FIGURE 7



SOURCE: DoD Five Year Defense Program Historical Report

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FIGURE 8



SOURCE: DoD Five Year Defense Program Historical Report

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if sea tours do not exceed three years. There must, therefore, be a place to assign Navy enlisted personnel after completion of a sea tour. Large numbers, as Figure 8 indicates, are assigned to BOS jobs until they are reassigned to a subsequent tour at sea. The Navy attempts to achieve a reasonably equitable rotation between sea and shore assignments in fairness to its people and especially to aid the retention of enlisted personnel. We have examined the rotation base requirement in considerable detail and accept it, in general. Beyond that, the frequent abrupt changes in the military/civilian mix as shown in Figure 7 still indicate that the mix of the Navy's Mission Support Forces should be brought under increased programmed control with objectives set for the most efficient mix of personnel (as constrained by the recognized need for a sound rotation base policy).

Use of Reserves in BOS

Our consideration of the use of Reserves to supplement or replace other kinds of manpower is concerned here with support operations, primarily with respect to active bases.

The idea of routinely using Reservists for such purposes in peacetime must be tempered at the outset with prudent considerations as to the purpose of the Reserves in the first place. Insofar at least as federal use of the Reserves is concerned (leaving aside the state use of the National Guard of the states), the Reserves traditionally have been thought of primarily as a resource to be used to augment the Active Forces in time of mobilization for national emergency or special needs. On the other hand, if Reservists are going to receive drill pay and retirement points for drill periods and the longer annual periods of Active Duty for Training,

why not, when practicable, use them in a way that not only exercises their skills and provides meaningful training experience but also makes a meaningful contribution to the Services (and ultimately the taxpayer)? The Air Force has taken the lead in this in its Reserve Associate Program. As one example, USAF Reserve pilots take scheduled turns in piloting C-141 aircraft in military airlift operations. This makes sense in every way, enhancing the Reservists' training and readiness, saving Active Force manpower, meeting surge requirements, and enhancing cost-effective utilization of expensive aircraft. So why not extend this idea, where practicable, to BOS?

Reserves can be used on weekends and during two-week drill periods to augment, or to reduce the requirement for, other kinds of manpower at Defense installations. For example, the Services have already demonstrated the successful utilization of Reserve physicians, dentists, and medical support personnel during their periods of Active Duty for Training.

Obviously, this needs to be done with discretion, but if such Reserve professionals are going to be in the system and they are willingly, their skills should be beneficially used rather than wasted. Beyond that, Defense could increase the use of Reserve units and Reservists on weekends to achieve or aid multi-shift, seven-day-per-week operations in some areas (again while providing meaningful training experience for the Reservists). Examples would be as security guards, computer operators, and communications equipment operators and repairmen. Civil engineer and transportation units could also be used to relieve the full-time force on weekends. The extent to which this is feasible, which would also determine the potential for savings, would depend largely on the proximity of the Reserve units to the supported military installation.

Another idea on utilization of Reserves is less direct. The thought here concerns BOS positions in CONUS, particularly in the Air Force, which do not require military personnel routinely in CONUS and could be filled with less costly civilian personnel but are manned with military personnel because of possible deployment requirements or other emerging requirements. Take, for example, the Prime Beef "R" teams for Civil Engineering personnel in Air Force wings, as discussed elsewhere in this paper (Page 33, above). These personnel now must be all military according to the Air Force-- not because of routine peacetime requirements but because of emerging requirements of a wartime type. We suggest that Reserves could properly be used to help in emergencies, which in turn would make it possible to use more civilian personnel instead of military in the civil engineering workforce for routine peacetime requirements. In routine drill periods, the Reservists could combine useful work at the same bases with their training, in turn enhancing their preparedness for emergency use.

This is a good example of the interrelationship of the various elements of the Total Force Mix as applied to BOS.

Contractors:

With respect to the use of contracting for services, the issue paper on that subject, as already referenced and summarized herein, shows the potential for large-scale savings. These savings are constrained, however, by the impact that contracting has on the present work force, and by the inconsistent, incomplete cost comparison methodologies used by the Services to determine whether work should be done under contract.

Planning and Implementing the Best Total Force Mix

On the basis of the foregoing overview of force mix, several points concerning planning and implementation are made as follows:

The Department of Defense should articulate, implement, and enforce much stronger, more definite and specific policies for a more cost-effective Total Force mix in the EOS area, both for near term purposes and, even more importantly, to provide effective direction for the long-term. Ideally Defense should have a 5-10 year plan which gives annual targets for the percentage of the Total Force each level of manpower should represent to get the highest force levels for the lowest cost. Near term changes can be made as necessary, as in all other DOD planning and programming. However, long-range planning of this type is needed to permit orderly development and to provide time to make reasonable accommodations for people who may be adversely affected by a change in force composition. This would be a more effective approach than the recent imposition of "civilianization" programs, which consider only a part of the problem, and the inadequate, ambiguous approach to contracting. Defense should not only be aware of the full potential for saving manpower costs through the force mix, but should work within an established, deliberate, strong, goal-oriented program to maximize this opportunity for savings in manpower costs. We are convinced that this can be done.

A Different Approach to BOS Organization and Management

Defense BOS is largely not managed as a single support structure as would befit a function of its size and as might be expected for the

amount of resources associated with it. Further, the commonality of BOS functions within and across Service lines lends itself to integrated management. On one hand, the DoD is faced with high and rising manpower costs that threaten the affordability of sensible national security measures. On the other hand, it continues to allow manpower abundant enough for each Service to maintain its traditional practice of highly decentralized management and execution of BOS at each individual installation. This is not the most efficient method of providing BOS to operating units and their personnel, as has already been demonstrated by the Services themselves in isolated examples. The Army, for example, has a system for assignment of regional responsibilities for specified BOS functions to selected installations. Even though this is limited largely to the support of small posts and in some instances groups of buildings near a larger installation, the practice works very efficiently. It should be noted also that support is provided sometimes to other Services.

The Air Force is testing what appears to be a very efficient BOS organizational alignment for aircraft maintenance that would result in the consolidation of maintenance for TAC and SAC wings located on the same base. In another test, SAC is determining the efficiency of centralizing aircraft maintenance at one base to support wings on several other bases. This is referred to as the "Queen Bee" concept. These are initiatives taken by the Air Force as a step toward reducing BOS manpower without degrading operational capability. It is significant that TAC and SAC were selected for these tests, since an often-used argument against

attempts at such efficiencies is that differences and criticality of mission require each organization to own and control its own support to assure quality and responsiveness. (There are few organizations requiring the responsiveness of SAC in a "peacetime" environment.) Members of the DMC staff observed both tests while on field visits and found the TAC and SAC personnel at the wings conducting the tests to be positive and optimistic about the success of the effort, despite earlier reluctance. In both instances, potential clearly exists for manpower savings. Just as important, the tests are expected to prove that high quality, responsive support can be provided to high priority, combat-ready military units without all the support having to be organic to those units. (Note: The Commanders of the supported wings acknowledged that it is "easier" to have and control your own support, but they believe that any difficulties can be overcome and savings achieved with proper management and cooperation.)

The Navy has been highly successful in bringing increased efficiency to BOS through their Public Works Centers (PWC). This has been an effort by the Navy that complies with a DOD Directive to consolidate Real Property Maintenance Activities (RPMA) where such action is cost-effective and can be taken without mission impairment. (Although this directive applies to all of the Services, the Navy was selected for this discussion because of their greater application of the concept and because they have been operating in this manner longer than the other Services.) A 1965 Navy study of the effects of consolidating 49 previously decentralized public works operations into 10 consolidated

PWC's showed annual manpower dollar savings then averaging approximately \$20,000,000 (3,552 employees at an annual pay rate of \$5,007.00 per year, using figures for the 1959-64 period). There are now nine such PWC's, five of them in the CONUS. The present environment would lend itself to applying this concept even further, with even more emphasis on inter-Service applications. It should be noted that additional decentralized activities have been incorporated into the Navy PWC's since 1965, including facility engineering activities of the other Services.

A more recent and especially notable example is the Navy PWC established in San Francisco (at the Oakland Army Terminal) for inter-Service support of military activities in that geographical area. The San Francisco PWC combined five activities of Army, Air Force, and Navy, and has resulted in an annual manpower cost savings of \$8,370,000 (465 people at \$18,000 per person). (Figures provided by Navy.)

The examples discussed above lend strength to the position that such changes can be made in traditional BOS practices without degrading the U.S. national security capability and can achieve significant manpower savings in the process. It could even be argued that if the past ways of handling BOS were not serving as a barrier to major changes to maximize BOS cost effectiveness, the Defense BOS structure of the future might be quite different from the organization that exists today. For example, the present philosophy that each installation must have a complete set of BOS functions under the control of the major mission element on the installation would be considered too expensive. If such control is essential, how are the tenants of an installation surviving who do not

have such control now? Some tenants have missions as critical to our national defense as the major or host organization. In the extreme, BOS (within the United States, at least) might be provided by a central BOS support organization (somewhat like GSA for civilian agencies of the Government) responsive to operational needs. Likewise, each BOS function would be stretched to as many installations as possible based on cost and effectiveness, again with little regard to which Service "owns" the installation. (Obviously, there are some problems. No military commander would like to be dependent on support, the control of which is far removed from his own command channels.)

Given the budgetary pressures it is unlikely that in a fresh start each Service and Service Command would be permitted, as at present, to develop its own priorities for allocation of resources and standards for quality and responsiveness. Correspondingly, allowing expensive trial and error in areas such as in contracting for services and in the use of capital equipment in place of manpower when experience already exists elsewhere within the system would simply not be tolerated, as it has been, and should not be.

Certainly, the Department of Defense cannot simply wipe the slate clean and all at once start anew--and that is not suggested. What it can do, however, is become absolutely convinced that it should take some bold steps toward the final objective of a restructuring; that the restructuring will save large amounts of much-needed manpower dollars; that those savings are more important than the preservation of the present BOS structure developed in the past by the separate Services;

and that change does not automatically mean a loss of quality and responsiveness any more than it means that it will automatically engender savings. These remarks should not be taken to mean that Defense officials in the Services and the OSD are unaware that greater efficiency can be brought to BOS. To the contrary, members of the DMC staff have discussed this with some very responsible officials who agree that something must be done, but by themselves can't turn the entire system around. Further, this inability is not to their discredit. The problem of changing strongly institutionalized practices has often proven too much for kings and presidents, much less Defense managers.

However, a major change in institutionalized practices is exactly what it will take to change the condition described succinctly by one observer, "If you want to ask a single question about BOS, you have to call a conference. Everybody has a piece of the action, but no one office has the answers." It is concluded that BOS management should be more centralized--to the extent that it can be treated as a separate program (as Army has done to some extent) for planning and programming, so that manpower resources can be allocated on the basis of Defense-wide priorities and standards, and to provide for geographically (rather than Service) based execution that minimizes the amount of direct labor and overhead manpower allocated for bedding-down the forces.

Annex C discusses the order of magnitude of the amounts of manpower that could be saved by maximizing the workload for each individual BOS organization (i.e., geographical centralization). These estimates are based on the staffing standards used by the Services as guidance for required manning levels.

Management to Implement a New Approach to BOS

Efficient management of BOS can occur only if the proper mechanism exists to make it happen. While the problems with BOS are visible, and even though Defense managers know how to correct many of them, optimal solutions along the lines which have been discussed seem unlikely, or even out of reach, unless the Department is better organized to implement the solutions. Improvements could be effected within the present management structure, of course, and it could be retained and may be; we shall call this Alternative 1. In this respect, however, the continued fragmentation of BOS into 15-18 separate functions, each with its own management chain, would tend to perpetuate most of the BOS management problems, regardless of the fragmented solutions attempted within that framework. While BOS management remains fragmented, the Department would still not be able to view BOS "all at once" except in terms of changes to annual programs. Resources would still be planned and allocated in sub-optimal Service increments, with no single manager responsible for initiating deliberate management actions that encompass the entirety of this large portion of the Defense establishment.

There are alternatives. The management of BOS can be better integrated in one of two ways, either of which the DMC staff would find acceptable. One (call it Alternative 2) would be to establish a Deputy Assistant Secretary of Defense (Base Operating Support), under the Assistant Secretary (i&L). The present offices of the DASD's for Supply and Maintenance Services, Procurement, and Installations and Housing would transfer those parts of their present functions and personnel which ar

related to BOS. Some additional staffing beyond that would be required for this office since it would be responsible for the active management of BOS, not just the establishment of policy. The manpower would come from the Services, each of which would establish a comparable management office by integrating their many offices involved in BOS management. The Services would have excess manpower since the active management role that presently exists at many locations at Service headquarters and major command headquarters would pass to the new DASD(BOS).

Another option (call it Alternative 3) would be to establish an Installation Management Agency to do the detailed BOS management, under policy guidance from OSD but without necessarily creating a new Deputy Assistant Secretary of Defense. The agency would function organizationally much like DSA in managing CONUS installations and providing institutional support to all Defense organizations. In either case, the BOS manager would be the single "host," while all military operating units would be tenanted for support. The operating units would assist in programming for resources, and would coordinate closely to maintain the quality and responsiveness of services. To work well enough to satisfy the military commanders, it would have to be highly responsive to their needs, and concern about that would generate strong opposition to the idea.

To illustrate the concept, the DASD(BOS) or the Defense Installation Management Agency (DIIMA) might have the following major functions:

1. Compute Defense-wide basing requirements
2. Compute real estate and facility requirements

3. Prepare and maintain a basing and facilities plan based on the size and characteristics of operating units.

4. Plan, program, account for and allocate all BOS resources including land, facilities, money and manpower.

5. DIMA provide (or DASD oversee) the entire range of what is now considered BOS, including such functions as installation supply, maintenance, and transportation services to the entire CONUS force, using regional support offices where economies would result from the integration of local installation BOS functions.

6. In conjunction with the Services, develop Defense-wide resource priorities for installation support.

7. In conjunction with the Services, develop quality and responsiveness standards for supported organizations, Defense-wide, based on operational requirements.

There could be a number of variations and combinations of the foregoing within a framework of more centralized BOS management. For example, there could be both a new DASD(BOS) for policy, with a small office and a BOS operating agency for DOD, functioning much the way DSA operates under OSD. For another, under strong, coordinated direction from OSD, there could be centralized BOS management within each Service (call this Alternative 4); this would be less effective than centralized management across Service lines but could be seen by the Services as more directly responsive to Service needs and, therefore, the Services probably would be more receptive to this than to Alternative 3.

Two other options were considered but discarded for the reasons given below:

Alternative 5. One Service would serve as single manager for all BOS. This would not work as well since it is desirable to have the manager and allocator of the resources not be a competitive recipient of that resource.

Alternative 6. Assign the function to the General Service Administration. This would cause extreme difficulties in resource appropriation management since one of the problems that would be solved by the other options is the formulation of BOS requirements on the basis of the other Defense appropriations, including the operating forces. GSA's distance would not permit this.

Comparing the alternatives, we view Alternative 1 as continued acceptance of an unsatisfactory status quo; the time has come to do better. As to the other options, the analysis clearly calls for greater centralized control and management of BOS, along the lines of Alternatives 2 or 3, or variations thereof. We favor Alternative 3. Alternative 4 is less preferable but would be a major improvement over the present as well as more acceptable to the Services; thus, it might be adopted as an interim solution for a few years in transition to Alternative 3 later in the future.

Estimated Savings In Support Manpower Costs

From all the above actions, it is estimated that the manpower savings would be significant. For a more detailed estimate, see Annex D.

CONCLUSIONS

1. Within the Support Forces of the Department of Defense, there are significant opportunities for manpower savings, especially in the area of Base Operating Support (BOS). BOS is a highly fragmented, inflated function for which manpower is unnecessarily expended in excess of national security requirements. It is the area within the Department of Defense in which changes could yield the greatest amount of savings in manpower costs with the least impact on combat capability.

2. Since the numbers and types of bases are fundamental to BOS manpower requirements, there is a need for further rationalization of the base structure for elimination of any unnecessary bases, and for optimal allocation and use of the bases retained. At present, DOD apparently does not have complete, substantiated knowledge of its true basing requirements, present and future, so as to allocate land and facilities to its forces across Service lines on an optimal cost-effective basis, although the Department periodically has carried out some significant base closure resignments. Beyond that, however, DOD is constrained in the changes it can make within the United States because of powerful Congressional pressures which reflect the major impact that bases have on local economies. Since DOD itself cannot overcome such pressures, a new bi-partisan national commission, reporting to the President and the Congress, should be established to review the military basing plans developed by DOD and recommend its adoption or the necessary changes to achieve, over time, an optimal cost effective basing structure that would be in the best overall national interest, taking all factors into account (including an economic adjustment plan for

area adversely affected). The composition of the commission (as further discussed in Annex A), should be such as to ensure consideration of all major viewpoints and interests involved and provide a broad basis of support for the commission's recommendations. Substantial future manpower savings should result (as well as substantial other savings, once the initial costs of change and economic adjustments are amortized). Substantial future manpower savings should result (as well as substantial other savings, once the initial costs of change and economic adjustment are amortized).

3. Opportunities exist to save significant amounts of manpower costs by substituting fast amortizing capital equipment for manpower. The Services are already doing this on a small scale, can point to many isolated savings resulting from capital equipment substitutions, but do not systematically transfer their success to other areas. Much more should be done in this area, as discussed in further detail in the DMC staff issue paper entitled "Alternatives to Manpower."

4. The Department of Defense is missing opportunities to save large-scale manpower costs by having more of its base services performed under contract, which generally is less costly than government manpower and in many instances can do the job satisfactorily. Although there is some contracting out for services (notably including an exemplary case at Vance AFB), too much of the effort Defense expends in this area was observed to be toward the administrative satisfaction of contracting policies and directives, rather than in genuine pursuit of the maximum savings that could be extracted from the use of contractor manpower. Contracting efforts were observed to be inconsistent from Service to

Service. Where successes have occurred (as at Vance AFB), the lessons learned are not institutionalized and applied elsewhere. Cost comparisons made between in-house and contractor operations are generally incomplete. Comparison methods used in DoD generally favor the in-house performance of work, indicating a reluctance to perform BOS under contract or at least to change. Clearly there should be more contracting out for services than at present, with resulting savings in government manpower and net savings in costs to the taxpayer.

5. The overall Defense organizational structure for BOS is sub-optimal. BOS is provided largely on a Service-by-Service, installation-by-installation basis. Further, the management of the approximately 18 major functions that compose BOS is fragmented among several managers at each of the various layers of the military and departmental hierarchies. The function is not managed as an integral program with Defense-wide standards and priorities. BOS is considered as a total program only during program/budget exercises, but time is usually permitted to consider only recommended changes. Deliberate, integrated management of the function across Service lines, preferably by a single DOD office or agency but at least closely coordinated, would result in large-scale savings.

6. The Department of Defense does not take full advantage of the opportunity to save manpower costs by optimally determining the force composition (active military, Reserves, Civil Service employees, and contractors) for each base or type of base. An optimal mix would mean that for generic categories of work (e.g., base supply, real property

maintenance) the optimal composition would provide for a force mix of the four kinds of manpower that would result in maximum capability for the least cost. Instead, Defense and the Services rely too much on traditional utilization practices without considering adequately the tradeoffs between the four kinds of manpower. Existing civilianization programs and contracting for services on only a fragmented, limited function-by-function basis do not represent adequate consideration and management of a four-way mix. From some of the examples studied, it is probable that sizeable additional manpower and dollar savings could be achieved by tailoring the mix to meet the need.

7. The foregoing conclusions all point to areas wherein management improvements could be made that would reduce Defense manpower costs without accompanying reductions in combat capability. Primarily, the need for change has been addressed in the areas of: more optimal allocation of tasks, the regional consolidation of some BOS functions, the increased use of Federal civilians and contractors in place of active military, and the substitution of capital equipment for more expensive manpower.

ANNEX A

BASING REQUIREMENTS

Purpose.

The purpose of this paper is to examine U.S. defense basing and base requirements as fundamental, major factors affecting the size and mix of defense manpower requirements.

General.

Military installations are established and operated to house, provide operating and training space and facilities for, and otherwise support the tenant operating units of the Armed Forces, including facilities and support for the dependents of the military personnel.

Base management policy presently is developed in the Office of the Secretary of Defense (OSD) by the Office of the Assistant Secretary of Defense (Installation and Logistics) (OASD I&L). The land and facilities themselves are allocated to and managed by the Services. (Actual ownership, of course, is held by the United States and is part of the General Services Administration (GSA) inventory.)

There are approximately 6,500 military installations, large and small, in the worldwide real estate inventory of the Department of Defense. Of these, 764 are categorized by OSD as "significant" installations. Note that in the U.S. this amounts to an average of approximately ten major bases per state. For the most part, these installations are assets of each Service inherited from the past -- not in all cases exactly what or where they would be if they could be planned anew and optimally allocated and designed.

TABLE 1

DEPARTMENT OF DEFENSE SIGNIFICANT
INSTALLATIONS AND ACTIVITIES

	<u>FY 73</u>	<u>FY 74</u>
<u>USA (Fifty States)</u>		
Army	94	93
Navy	201	200
Air Force	156	156
Total	451	449
<u>Outside the Fifty States</u>		
Army	233	223
Navy	47	51
Air Force	43	41
Total	323	315
<u>Total DOD</u>		
Army	327	316
Navy	248	251
Air Force	199	197
Total	774	764

Source: Office of the Assistant Secretary of Defense (Installations & Logistics)

TABLE 2

APPROXIMATE POPULATIONS OF SIGNIFICANT INSTALLATIONS

The approximate population size of these bases in percentage terms was as follows:

	<u>Percent</u>
100 - 1,000	43
1,000 - 2,500	14
2,500 - 5,000	21
5,000 - 7,500	12
7,500 - 15,000	5
15,000 +	5
Total	100

Source: Office of the Assistant Secretary of Defense (Installations & Logistics)

Although there is no published DOD-wide definition that precisely defines "significant," these installations are for the most part the larger, more populated bases. Only in the last 3-4 years has OSD developed categories such as "major" and "minor" installations.

Table 1 displays the DOD "significant" installations by Service for the two most recent fiscal years for which data are available. Table 2 summarizes the approximate population sizes of these installations.

A base organization is required for each significant installation to perform base operating support functions (BOS) including: building and ground maintenance, supply, transportation, utilities, equipment maintenance, communications, administrative services, data processing, security, fire protection, and all the life support functions provided to military personnel and their dependents, such as commissaries, churches and religious activities, schools, clubs, other community services, and recreational facilities. (Medical support is closely related but is programmed separately and is not addressed herein.) There is a minimum staffing level required just to open a sizeable base,* and beyond that the BOS manning can escalate and vary widely, depending on the base. In all, the DOD programs for FY76 (as submitted to the Congress) showed a total of 535 thousand (end strength) Defense personnel involved in base operating support (244.8 thousand military and 290.2 thousand civilians including 62.1 thousand foreign indirect-hire personnel overseas). Tables 3 and 4 show further details reporting BOS manpower.

* The Air Force estimates that it requires a minimum of approximately 1,100 support personnel just to open a wing-size base, almost regardless of the further details as to what goes on the base.

TABLE 3
BASE OPERATING SUPPORT
FY 76 REQUIREMENTS

(Thousands)

	<u>TOTAL</u>	<u>BOS</u>	<u>% BOS</u>
<u>Army</u>			
Military	785.0	42.9	5.5
Civilian (Direct & Indirect Hire)	401.8	120.4	32.5
<u>Air Force</u>			
Military	590.0	140.2	23.8
Civilian (Direct & Indirect Hire)	271.3	93.3	34.4
<u>Navy</u>			
Military	528.7	39.5	7.5
Civilian (Direct & Indirect Hire)	313.9	47.8	15.2
<u>Marine Corps</u>			
Military	196.3	22.2	11.3
Civilian (Direct & Indirect Hire)	19.9	12.4	62.3
<u>Defense Agencies</u>			
Military	(9.0)	(.1)	(1.0)
Civilian (Direct & Indirect Hire)	73.7	6.5	8.8
<u>Total DOD</u>			
Military	2,100.0*	244.8	11.7
Civilian (Direct & Indirect Hire)	1,080.6	290.2	26.9
	3,180.6	535.0	16.8%

Source: DoD Manpower Requirements Report for FY 1976

* Already included in Service totals.

TABLE 4

BOS MANPOWER LEVELS
By Service (000)
(FY 76 PROGRAM)

<u>Overall DOD</u>	535.0
Army	173.3
Navy	87.3
Air Force	233.5
Marine Corps	34.6
Defense Agencies	6.5

Source: DoD Manpower Requirements Report for FY 1976.

The tremendous numbers of personnel involved are in part a function of the numbers and type of bases involved--as well as, of course, the BOS manning of each base. With respect to the latter, there is a great deal of information available in the OSD and the Military Departments that provides guidance on the amount of manpower needed to operate military installations. This annex paper will not go into the details of these manpower authorization criteria but will follow the principles that bases inevitably generate BOS manpower requirements and that a primary means of attaining maximum manpower productivity of the base support workforce is to maximize the workload imposed on an existing base before operating another one. In this respect, it is axiomatic that greater efficiencies usually are achieved at the higher workload levels. This principle is applied and depicted graphically in Department of the Army Pamphlet 20-551, Staffing Guide for U.S. Army Garrisons, and in similar documents of the Air Force and Marine Corps.

Determination of Base Requirements; Trends and Problems

Given the importance of basing, it should follow that the numbers, kind, size, and location of Defense bases ideally would be determined objectively by the size and characteristics of the forces. Considering the cost of this resource, it would be expected also that basing might have a mathematical (although not linear) relationship with the forces supported, in that the amount or kind of basing would vary in some

consistent relationship with changes in the forces. Each Service is able to determine its number of personnel to be housed and trained; ships to be operated, berthed, supplied, and maintained; aircraft to be operated and maintained; and its logistical facility requirements as calculated by personnel and equipment inventories. The problem is that these available measures of basing requirements are not being used in the aggregate to determine optimal Defense basing requirements. From information made available from the Department of Defense, it is apparent that basing is determined somewhat apart from force and inventory requirements. For example, Figures 1 through 3 show the trends in the relation between numbers of bases and force size over time (FY64-76), and indicate that, except for the Navy, the changes in numbers of installations bear little relation to levels of major mission forces. Figure 4, which shows the aggregated overall trend for DOD installations, indicates also that basing management has occurred quite separately from force management. Since many complex factors are involved, these simplified trend lines are not shown to prove that basing is wrong, but they are relevant. Even though there has been a slow but steady decrease in number of bases, basing seems little affected by the dramatic force and equipment changes that occurred during the same period as a result of the Vietnam war. It is not difficult to conclude, therefore, that the Department of Defense is still in the process of adjusting from basing patterns that were established during WWII, which in turn gave rise to regional economic patterns, which must be taken into account before decreases in basing can be made.

FIGURE 1

Billion
(Hundreds of
Millions)
8

ARMY TRENDS - MAJOR MISSION VEHICLES AND LOS MANPOWER



A. Major Mission Vehicle Manpower

(In Millions)

3000
2500
2000

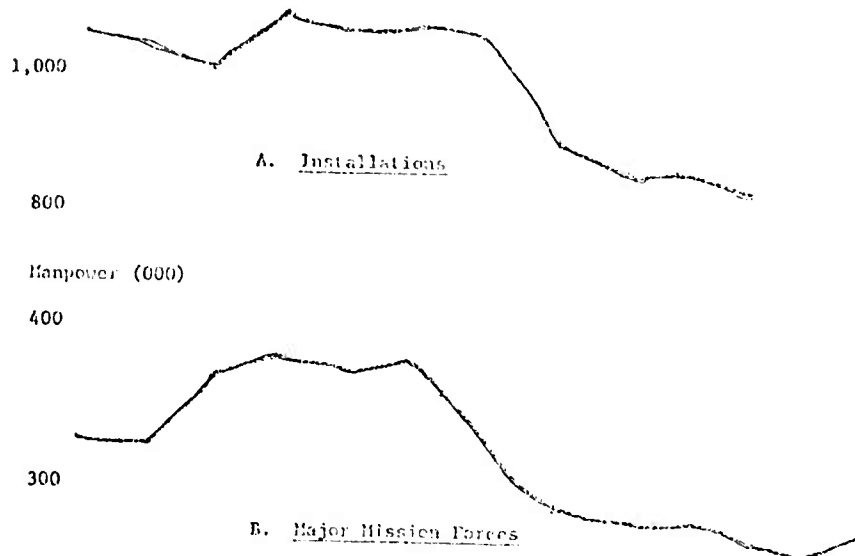
Total Army Installations

FY 64 FY 66 FY 68 FY 70 FY 72 FY 74 FY 75

Source: DoD Five Year Defense Program Historical Report.

FIGURE 2

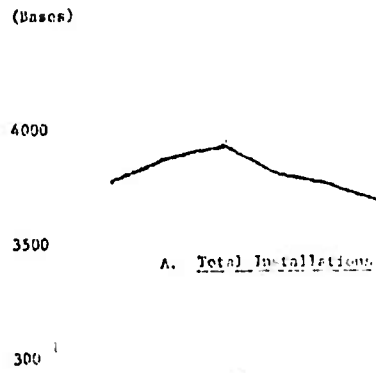
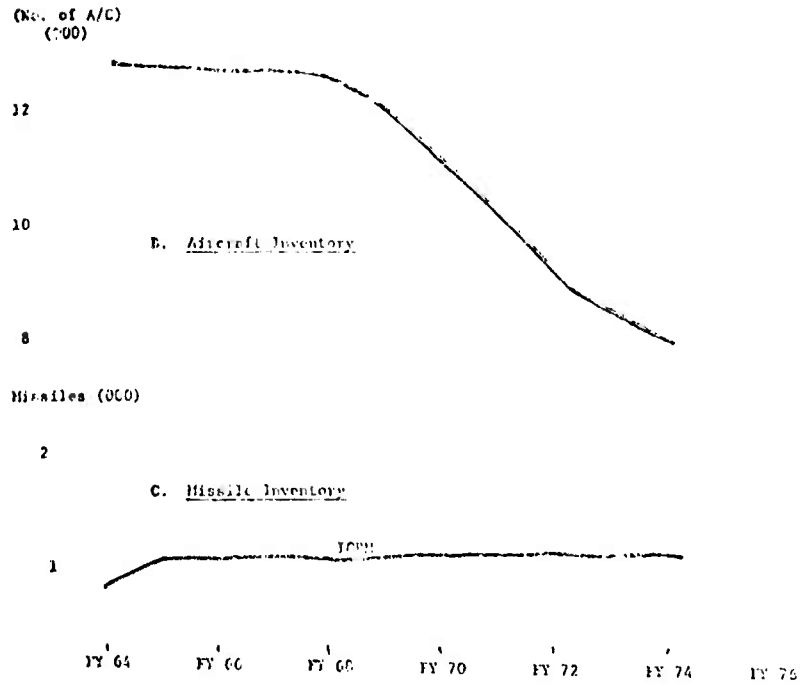
NAVY TRENDS -- INSTALLATIONS AND MAJOR MISSION FORCES



Source: DoD Five Year Defense Program Historical Report.

FIGURE 3

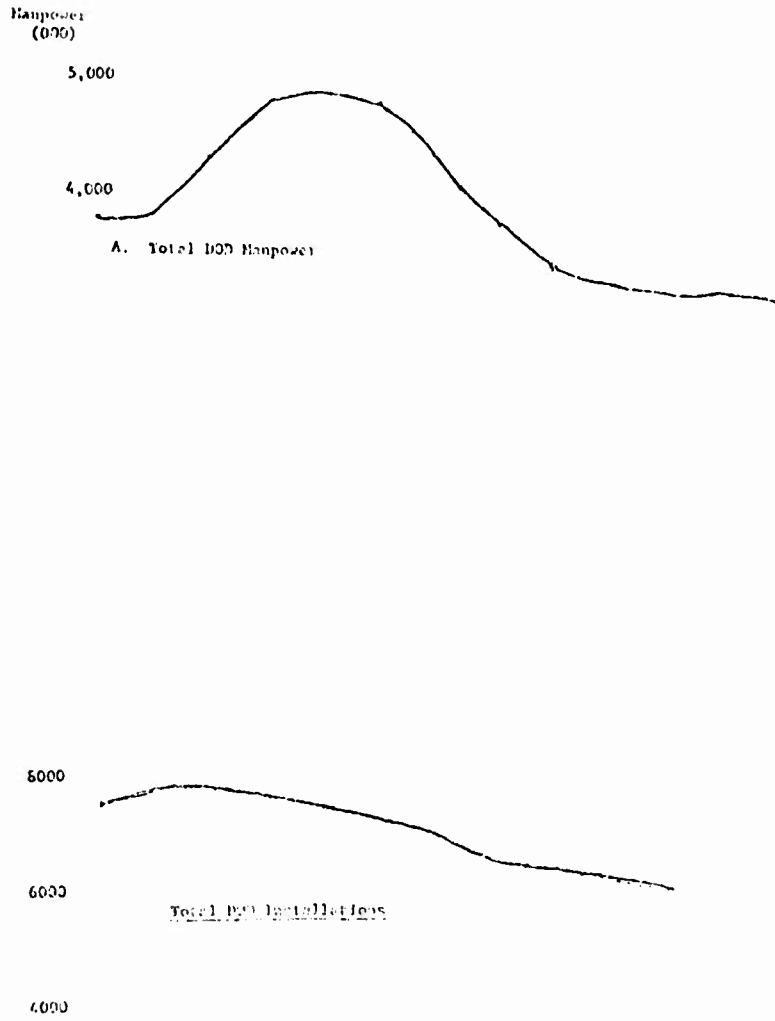
AIR FORCE AIRCRAFT/MISSILE INVENTORIES AND TREND OF INSTALLATIONS



Source: Five Year Defense Program Historical Report.

FIGURE 4

TRENDS IN TOTAL DOD MANPOWER AND INSTALLATIONS



Source: DoD Five Year Defense Program Historical Report.

It is significant to this analysis that neither the OSD nor the Services can point to calculations that optimize the utilization of the bases to bed-down, train and operate the forces. In fact, work has just begun in the OSD to develop such a capability. What has happened instead is that each generation of managers has inherited an established basing structure from their predecessors that was based on requirements and available resources of an earlier era. In some instances, managers have been able to reduce the number of unneeded bases from the active inventory. (Refer back to Figure 4, which shows the slow, gradual, reduction in number of installations.)

A problem, of course, is that base closures are not just a question of efficient national security, but are as much or more so a question of local and regional economics, with inevitable political implications. In many instances, the abrupt closure of a military installation could mean economic disaster to a local community, or in some cases, large portions of entire states. The economic loss would be felt both by former employees of the closed installation, and by the local or regional businesses that have become dependent upon the base work force for revenues. As a result of this potential loss of livelihood, the people who would be displaced by a base closure, acting individually and through political organizations, labor unions, city and state governments, Chambers of Commerce and trade associations, apply intensive pressure on their Congressional representatives to keep the bases open. In other cases, a Congressional representative himself may take the lead for obvious reasons. More often than not, the local interest has taken precedence over the national interest, and the bases have remained intact. As a result, conversations

with civilian officials and general/flag officers in the Pentagon indicate that a "why bother" attitude, or at least a cautious reluctance to act, increases in proportion to the frustration or defeats incurred from attempts to close bases or move to curtail activities thereon that impact significantly on the local economy. Even an awareness of the role and interests of a particularly powerful member of Congress can suffice to influence the location of bases and deter their closure; the member himself does not necessarily have to do or say anything. These are simply realities of the American political system. Nevertheless, the Department of Defense, with Administration blessing, has acted numerous times in the past to effect selected base closures and realignments--showing that it could be done but still leaving much more to be done.

Understanding why things got to be the way they are, we nevertheless believe that a way should be found within the American political system to serve better the overall national interest in this matter. Given the high costs of manpower, there is even more than ever a need to pare down further the inventory of defense installations by eliminating any that are not valid requirements, and thus to reduce the base overhead population to only the levels needed for national security.

Reassessing Base Requirements

As the first and basic major step to cost-effective basing, a determination must be made as to how much basing is really required to support the force. This should be determined at the OSD level for optimal use. The absence of this knowledge is, of course, an underlying foundation of the entire basing problem. Initially, the problem of computing long-term

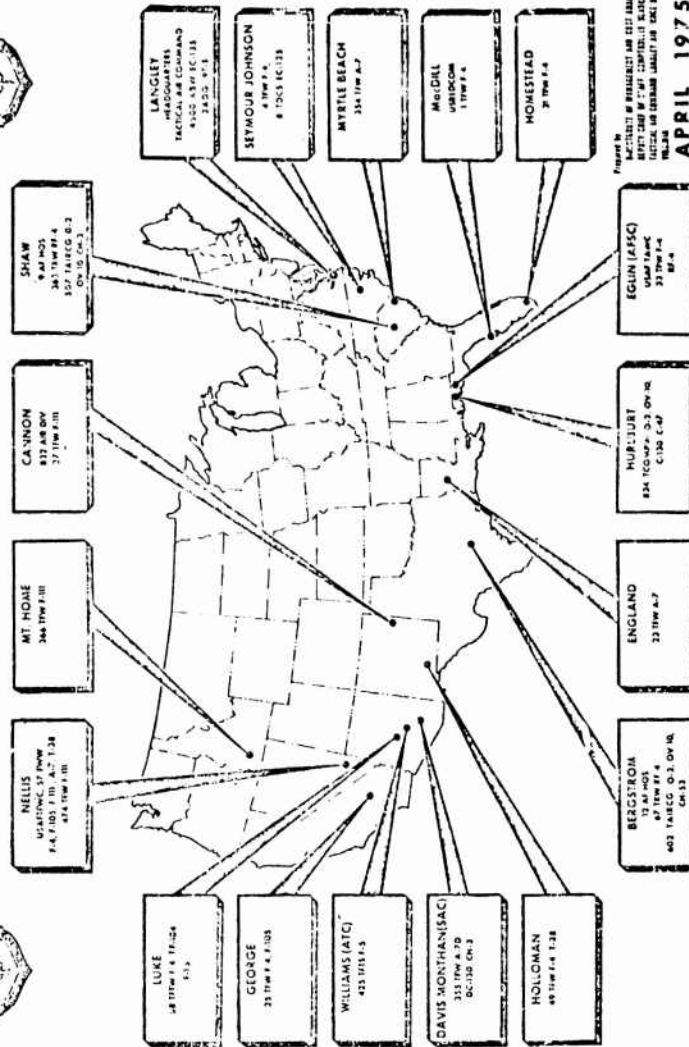
basing requirements, as an objective to work toward, should be kept separate from the further major problems of reducing the numbers of bases and associated overhead personnel that do not contribute to combat capability. What is important first is that the Department of Defense should know, and that the Congress and the public should be informed of, just how much of this national resource is really needed for national defense when the calculation is optimized at the Defense (rather than individual Service) level. The DMC staff is already convinced, beyond any doubt whatsoever, that savings in basing can be achieved. But we do not know how much, because at this point neither DOD nor any one else can say exactly what the requirements would be if based on optimal utilization. Determining and specifying the base requirements (with allowances for contingencies) undoubtedly will provide ample evidence that substantial savings could be made in this area. The following are just a few specific examples of questions which should be pursued.

The Air Force can be questioned for the necessity of its expensive practice of having one-wing bases, such as in the Tactical Air Command. (See Figure 5.) Experience has shown beyond doubt that more than one wing can function effectively on one base. Further, as Figure 6 indicates, the dramatic reduction in the aircraft inventory in the Air Force has had little effect on the total number of Air Force installations. This indicates large amounts of unused capacity at the installations that lost the aircraft and, as such, the opportunity to save manpower resources through organizational realignment. Additionally, there clearly are facilities in the Air Training Command which are surplus to present ATC needs, although the Air Force may want to use them in other



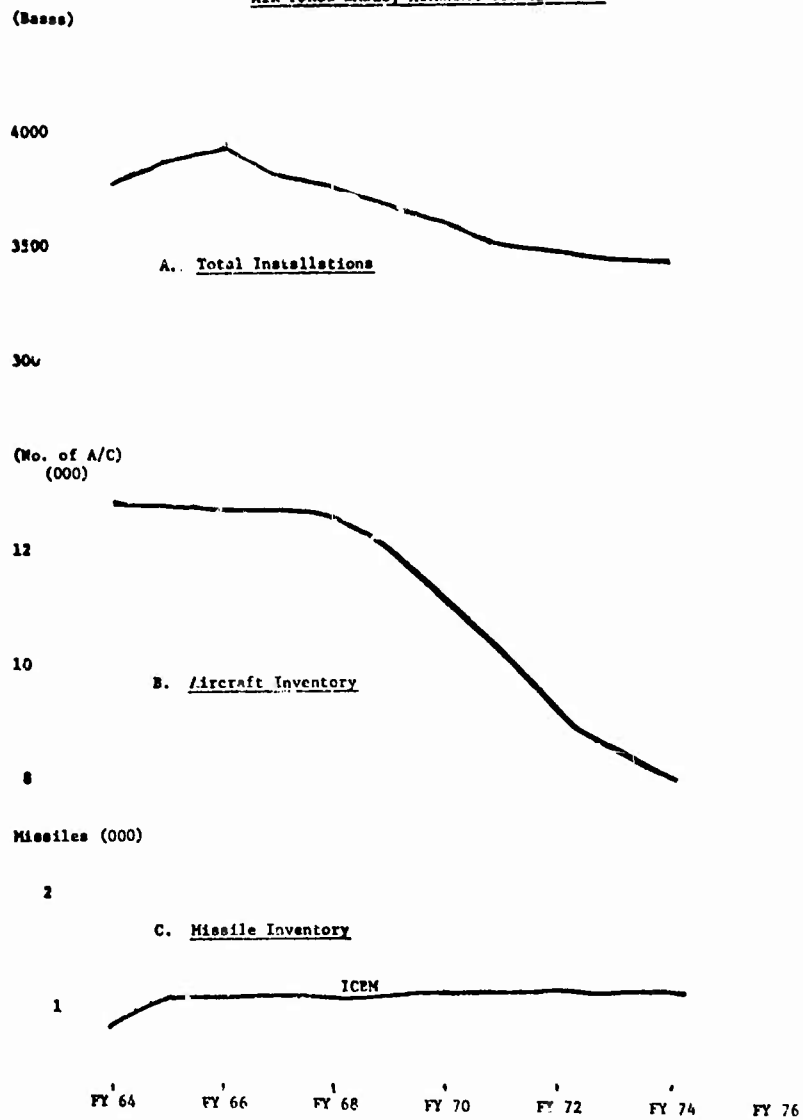
TACTICAL AIR COMMAND

FIGURE 5



Prepared by
 SAC/STAFF OF TACTICAL AIR COMMAND
 4100 13TH ST, FT. WORTH, TX 76114
 8 APR 1975

FIGURE 6
AIR FORCE BASES, AIRCRAFT AND MISSILES



Source: DoD Five Year Defense Program Historical Report.

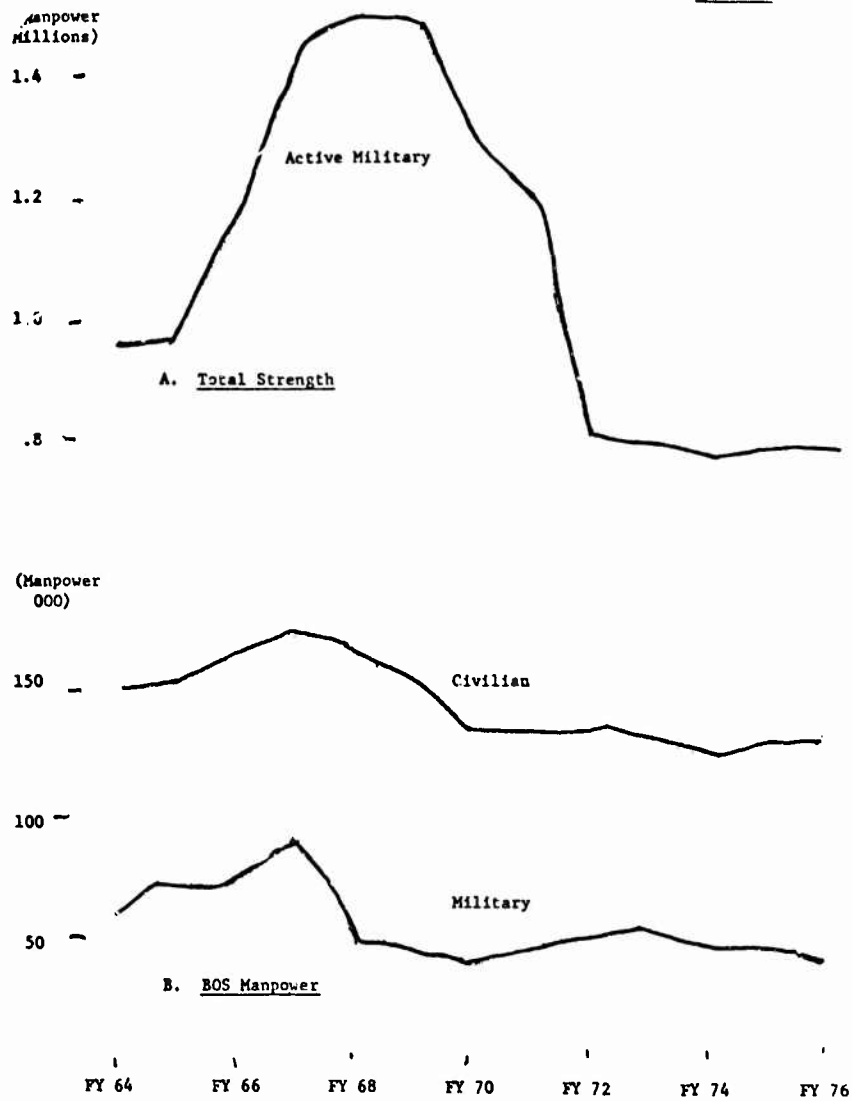
ways in connection with its expansion to 26 tactical wings. Along these lines, preliminary analysis shows the possibility of reductions in the training bases of all the Services, which would lead to savings in support manpower.

Turning to another Service, the Army is operating 93 major installations in CONUS. It is recognized that a great deal of basing and facilities are needed and even more for the additional units for ten active divisions in CONUS under the 16-division program, plus some contingency allowances for mobilization needs. However, it would appear that with the vast land masses covered by these installations, colocation of some of the dispersed activities, carried out over time, would reduce basing requirements and thus base support personnel. Further, a comparison of Figures 7 and 8 indicates that there is little relationship between numbers of personnel and numbers of bases. A close relationship between these factors would be expected in the manpower-intensive Services.

Turning to the Navy, it is appropriate to question the Navy's need for more than twice the number of major shore installations than the Army has (200 versus 93). It is recognized that the Navy has many small installations clustered in a few geographical areas such as Norfolk and San Diego. There may be opportunities, however, to save manpower by additional consolidation of BOS management in these clusters of

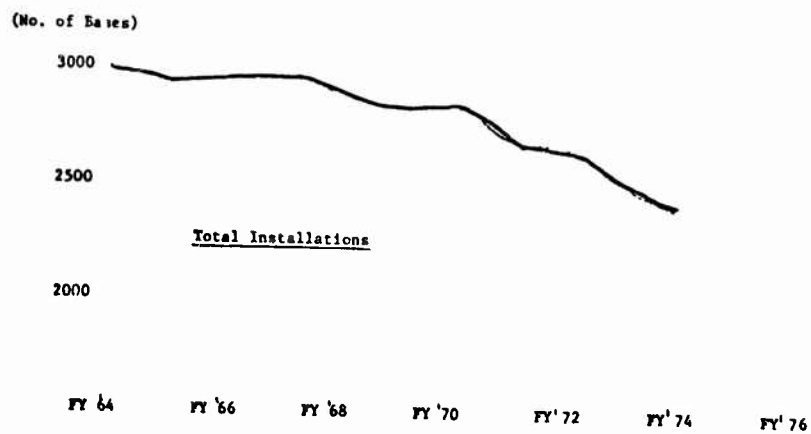
ARMY TRENDS - TOTAL MILITARY AND BOS MANPOWER

FIGURE 7



Source: Five Year Defense Program Historical Report.

FIGURE 8
ARMY INSTALLATIONS



Source: DoD Five Year Defense Program Historical Report.

bases. To the Navy's credit, their use of centralized Public Works Centers appears to present an improvement in the efficiency of installation maintenance. This concept will be analyzed for use by the other Services.

Note also that the ability of all of the Services to sub-allocate large numbers of bases to their subordinate major commands (inherently a non-optimal distribution) indicates an overabundance of the resource. In this regard, truly optimal allocation of this resource on an inter-Service basis could occur only at the Defense Department level.

The DMC staff has encouraged and endorses the work of the OASD(I&L) to develop a model or otherwise a means of objectively calculating basing requirements based on the known, quantifiable determinations of basing requirements. In fact, the potential for improvement is great enough to warrant even a larger investment in management personnel and analysts by the OSD. If only 100 installations (less than 1 out of 7) could be inactivated through optimal distribution of the forces, given an average of 712 overhead personnel at each installation, the amount of overhead affected would be more than 71,000 personnel. Applying the same proportion of losses just to CONUS installations would free up more than 49,000 overhead personnel. Not all of these BOS personnel displaced by these actions would represent a net savings to the Government, since some would have to accompany transferred operating units to provide support; but, in the net, there would be far fewer numbers than were originally used, and major savings would result. This does not mean that the Department of Defense has 100 too many installations.

The problem is that no one knows precisely how many installations could be inactivated, since the Department of Defense does not have a system or any other management mechanism to objectively measure its requirements for bases. The point is that the order of magnitude of the manpower savings opportunity is large; the potential is in terms of hundred of millions of dollars in manpower savings, aside from other major savings involved over time, after affecting initial relocation costs. And all this apparently could be achieved without causing any degradation of combat capability.

As a somewhat separate but related consideration, the consolidation of depot-level maintenance plants was examined with a view to eliminating excess capacity. Although the greatest portion of costs that would be saved by consolidation would be in facilities and equipment, there is also a potential for saving some manpower costs, somewhat as a result of reductions in direct labor requirements, but mostly in overhead manpower. The DMC staff's evaluation of this area found that much of the needed work has already been done as a result of extensive OSD and GAO analyses of maintenance depots. In addition, the Air Force has taken it upon itself to consolidate its depot maintenance system for eight large maintenance depots into five plants now referred to as Air Logistics Centers. The OSD study, called the Depot Maintenance Consolidation Study, resulted in the following major points with respect to plant reductions:

(1) The study supports the previously proposed recommendation to close-out the maintenance portions of the Army's Sharpe, Pueblo, and Lexington-Blue Grass Depots. The maintenance workload would be transferred to other Army depots where unused capacity exists.

(2) Depot-level maintenance performed at the Port Hueneme, Davisville, and Gulfport Construction Battalion Centers would be realigned, with Davisville cutting back on almost all of its Depot maintenance which would be transferred to Hueneme and Gulfport.

(3) An analysis was made of three Navy missile depots--Seal Beach, Indian Head, and Yorktown. Navy agreed to study this problem further with a view toward consolidation. It is still under study by the Navy with close monitorship from the OSD.

The GAO, in a report entitled "Navy's Aircraft Overhead Depots Could Become More Productive," has concluded that the Navy's system of Naval Air Rework Facilities (NARFs) are operating at 81.5% of their one-shift capacity. The study asks for consolidation of the workload to eliminate the unused capacity, which could lead to the closing of one of two NARFs. The kinds of unused capacity were not fully identified in the CAO report, which leaves questions, since the work within the plants is not all interchangeable; e.g., an overage in electronic maintenance cannot be transferred to fill unused capacity in a metal-working shop. Nonetheless, unused capacity apparently does exist and efforts continue between the GAO, OSD, and the Navy to make the system more efficient.

In addition to those studies, intensive work at the OSD is continuing that leaves reason to believe that the entire Defense depot system will be far more efficient. The number of people at the DOD who are working

on this problem exceeds the entire staff of the DMC. Since the DMC staff was satisfied that prudent management efforts were already in progress, the staff studied this part of the basing problem no further.

Further Aspects of Determining Requirements and Allocating Bases

As discussed above, the Department of Defense should determine its true long-term basing requirements, as an objective to work toward. This should be done by fitting the forces to land and facilities, based on the size and characteristics of those forces. In doing this, basing determinants (i.e., the characteristics and requirements of the forces that determine the amount, kind, and location of bases) should be developed. From this, a system of categorizing requirements and bases should be developed to make the problem more manageable -- e.g., requirements for posts, ranges, airstrips, weather, terrain, billeting, and square footage of open space. The paper, "An Analytical Approach to the Management of the Military Base Structure," by E. A. Rogner, could provide a beginning of this task. (Mr. Rogner, presently the Director of Installations Management and Planning, OSD, authored that paper while a student at the Industrial College of the Armed Forces in 1974.)

It is critical to the optimal management of the basing resource, and hence the BOS manpower resource, that the distribution of operating organizations among the Defense bases should be done at the OSD level on an inter-Service basis. The practice of allocating large numbers of bases to the Services, which is followed by a sub-allocation by the Services to their major field commands, is sub-optimal and unnecessarily expensive. It is understood that each Service has unique requirements for basing -- such as the Army and Marine Corps have for maneuver areas

and firing ranges, the Navy for ports and related facilities, and the Air Force for runways, airpace, and ranges, etc. Climate is also a factor. Even so, there is still room for much more intra- and inter-Service sharing of real estate. During this process, the factors already developed by the Services, such as square footage per person and acreage per operating unit, should be incorporated into the planning.

Programming and Implementation

Up to this point, what would be achieved is a determination of time requirements, as a long-term objective, and an optimal target allocation of the bases (hopefully with a number marked for closure or other disposition, or possible reversion to a standby status for use in the event of mobilization). The next step is to complete cost effectiveness and impact analyses of any proposed changes, including the costs of the moves and of any new construction or modifications needed. (Preliminary cost analyses will have been done earlier.) The next steps are those of actual planning and programming, including time-phasing and budgeting, all within the context of overall Defense planning and programming which takes force structure changes and all other factors and priorities into account.

An important objective of the program should be to reduce the number of personnel serving in Base Operating Support, and to sustain the BOS manning levels at its minimum essential requirement when that level has been attained. Accordingly, the OASD(M&RA) should collaborate closely with the OASD(I&L) in the design and implementation of the program.

If a comprehensive, long-range basing requirements plan is ever to be supported by the Congress and successfully carried out, more attention

must be given to the roles of local communities. The President's Economic Adjustment Committee could be used to help in this and should be involved in the programming and the implementation of economic adjustment actions related to base closures and realignments. Administrative assistance to impacted communities is not enough. What is needed would be precisely what would be taken away by a base closure-- jobs and money. Providing these resources would not be necessarily unreachable or impractical when weighing the costs against the impact of base closures on the one hand, and the long-term gains to the nation, on the other. It follows that impacted communities should share the gains as well as the losses, particularly if this is the only way that the gains would be realized in the first place. More to the point, if the impact on specific communities was brought into the comprehensive plan for basing requirements much earlier and the costs needed to compensate those communities were made an integral part of the plan much earlier (as an expense), then the likelihood of the success of the plan would increase. The communities still might not like the planned closures or realignments; but their elected representatives, having something to give in return, would be enabled to take a more positive attitude toward the closing as an improvement in the national interest.

Again, looking at the practicality of this kind of a solution, there must be reason to believe that economic adjustment programs will work, and that, except for the short run, the affected community will not be seriously impaired. Table 5 gives reason to believe that the interests of these communities can be protected. This table shows the

TABLE 5
F2

COMMUNITY ECONOMIC
ADJUSTMENT PROGRAM
PROGRAM STATUS

UNDERLY 56
CONTINUED 75

191

JAN 69 - JAN 73

JAN 73 - JUN 74

	(36 COMMUNITIES RECEIVED MAJOR ASSISTANCE)	(26 NEW COMMUNITIES RECEIVING MAJOR ASSISTANCE)
DEFENSE JOBS LOST	73,456	27,921
NON-DEFENSE JOBS GAINED	85,470	3,007
NEW STUDENTS	15,079 +	27,333
CIVILIAN HOUSING UNITS	3,808 +	773
NEW FIRMS	240 +	500
		NEW CIVILIAN ACTIVITIES 73
		NEW FIRMS 10

Source: Office of the Assistant Secretary
of Defense for Installations & Logistics

recent history of the record of the President's Economic Adjustment Committee. Note that during the 1969-73 period, more jobs were gained by affected communities than were lost. (The table, "Defense Jobs Lost," are included those lost to the communities by transfer and therefore does not represent total savings to the DOD.) There is evidence to believe, therefore, that the ability to fully compensate affected communities does exist. An important problem is how fast since the initial impact and prompt adjustment for it is critical to the people involved. The answer to "How fast?" is a function of the quality of the adjustments, how soon the process is begun, and whether adequate funds are brought to bear on the problem as soon as needed. The experienced Economic Adjustment Committee should have the capability of bringing timely solutions, provided that they are brought into the closure plan early enough. Their history shows that they have been quite adept at working with affected communities to organize the local governments and citizen groups into planning establishments that determine the anticipated impacts and the remedies needed (mostly in terms of attracting new industry). This, of course, could require some new civil construction or modifications to make the community attractive to new industry (e.g., facilities, utilities and local transportation arrangements) and careful planning to avoid the undesirable disruption of the physical and residential characteristics of the community. The Economic Adjustment Committee estimates that it can run as much as \$400,000 just for the initial planning for one area. In the case of the much publicized 1973-74 Defense base closure plan, the Economic

Adjustment Committee will administer the expenditure of more than \$100,000,000 in loans and grants in the first two years of implementation. These funds were provided mostly by HUD, the Department of Commerce, Small Business Administration and the Department of Labor. The plan is projected to save \$3.5 billion over the first ten years.

It is fair to conclude, therefore, that communities impacted by base closures can be protected if the process is begun early enough, and if funds are available. As to the availability of federal funds, it is reasonable to conclude that these funds, as an expense of a base closure, should come from money saved from the closure. In this respect, the closure plan should determine how much money would be needed for community adjustment, and those funds should be programmed for that purpose as a percentage of the anticipated net savings for an established period--say the first ten years at the outside. The set-aside accounts could be administered and disbursed by the Economic Adjustment Committee. The precise amount of money, or the exact percentage of the savings that should be applied to community adjustment would take an extensive, detailed analysis, and should be conducted by the Economic Adjustment Committee.

Even with the best basing requirements plan that DOD could formulate, the hard reality remains that the Department of Defense is constrained in the basing changes it can make within the United States because of the powerful Congressional pressures which reflect the major impact that bases have on local economies. The economic adjustment measures discussed above would help greatly in regard to the economics and therefore should help to ease the political pressures, but it is unreasonable to expect that

parochial Congressional pressures would cease. Accordingly, a new bi-partisan national commission, reporting directly to the President and the Congress, should be established to review the military basing plan, as developed by DOD, and recommend any necessary changes to achieve, over time, an optimal cost-effective basing structure that would be in the best overall national interest, taking all factors into account (including the economic adjustment measures for areas adversely affected).

The composition of such a commission should be such as to ensure the necessary competence and provide for representation and consideration of the various viewpoints and interests involved. There should, of course, be provision for adequate staff expertise and support. This commission and its work should command such respect that its recommendations, based on overall national interests, will be accepted by the President and the Congress and provide a broad basis of support for overcoming any contrary parochial interests and pressures. It is suggested that the composition of such a commission should include at least two members (at least one civilian and one retired military) with high level experience in the Department of Defense); a representative of the Economic Adjustment Committee; an economic authority (outside the foregoing committee); representatives of the viewpoints of labor and industry/commerce; a representative of the viewpoints of the veterans organizations and/or retired military communities; and a member or recent member of each house of the Congress. This list is not meant to be definitive, but illustrative of the various interests which should be considered.

Summary and Conclusions

1. Major savings in BOS manpower, besides other important savings, can be achieved by rationalization of the military base structure over time.

2. The first step of a better, more cost effective basing plan is the establishment of optimal base and facility requirements as an objective to work toward. This would be a difficult task but could and should be done, taking into account the considerations discussed herein. Further steps should be taken for effectively planning, programming and implementing a more cost effective basing structure along the lines outlined herein.

3. The Department of Defense as part of a comprehensive, coordinated Federal program should, insofar as practicable, request the approval of major realignments and closures three years in advance. This time should be taken for local economic adjustment in the communities near the bases, and for priority placement of Federal employees whose jobs were eliminated. This amount of lead time will also provide for voluntary employment behavior such as voluntary transfers, retirements, and the selection of other options by people considering Federal employment at the closing installation. With knowledge of the total plan made public, people accepting employment at affected installations would do so with full knowledge that they would become subject to transfer, or that their jobs will terminate by a specific date. This degree of candor is commonplace in the private sector.

4. In the past, a major obstacle to the closing of bases (and thus the resultant improved use of Defense manpower resources) has been Congressional opposition spurred by local community pressures. The kind

of improvement program suggested in this paper could be successful only with a Congressional commitment to the closing of unnecessary bases made possible by a well-planned local readjustment program along the lines discussed herein. Further, a bi-partisan national commission should be established, as discussed herein, to review the basing plans of DOD and make recommendations to the President and the Congress.

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ANNEX B

DEPARTMENT OF DEFENSE
CIVILIANIZATION PROGRAMS
A REVIEW OF THE EXPERIENCE, FY64-75

(NOTE: This paper is a Department of Defense working paper prepared in the Office of the Assistant Secretary of Defense (Manpower and Reserve Affairs) and was made available informally to the Defense Manpower Commission. It does not represent an official statement by the Department of Defense or the Defense Manpower Commission. It has been included with the DMC assessment of the support forces for its informative, factual content.)

SEPTEMBER 1975

Background

The Department of Defense has had a long-standing policy, stated in DoD Directive 1400.5, that "civilians shall be utilized in all positions which do not require military incumbents for reasons of law, training, security, discipline, rotation, or combat readiness, or which do not require a military background for successful performance of the duties involved." This policy might seem sufficient to assure maximum use of civilian employees, but several factors militate against such a result. These factors include a prudent reluctance to reduce the ability to meet wartime surge requirements for military personnel; the continuing pressure to reduce both military and civilian manpower; and the difficulty of determining which military positions truly are substitutable according to the criteria cited in the DoD Directive. Consequently, DoD has periodically mounted concerted efforts to identify that portion of the military work force that is reasonably substitutable by civilians and to achieve the desired reductions through specific conversion programs. These programs are generally referred to as "civilianization."

Table 1 displays DoD military and civilian manpower and the proportion of civilian manpower from end FY64 through end FY76. The ratio of civilian to military personnel is not in itself a measure of the goodness of a particular military/civilian manpower mix. It does serve as a useful indicator of overall trends.

Table 1
Total DoD Military and Civilian Manpower, FY64-76

<u>Fiscal Year</u>	<u>Total (000)</u>	<u>Military (000)</u>	<u>Civilian* (000)</u>	<u>Civilian (Percent)</u>
1964	3,861	2,685	1,175	31
1965	3,821	2,655	1,168	31
1966	4,361	3,091	1,270	29
1967	4,803	3,377	1,426	30
1968	4,969	3,547	1,406	28
1969	4,746	3,459	1,287	27
1970	4,330	3,066	1,264	29
1971	3,904	2,714	1,190	31
1972	3,481	2,322	1,159	33
1973	3,352	2,252	1,100	33
1974	3,269	2,161	1,108	34
1975	3,209*	2,131	1,078	34
1976**	3,149	2,091	1,058	34

*Includes both Direct and Indirect Hire. Excludes Civil Functions and Youth Programs.

**Recommended in Senate/House Conference Report on FY76 Authorization Bill.

Civilian personnel comprised 31 percent of total active DoD manpower in FY64, declined to 27 percent at the height of the Vietnam conflict, and now stands at about 34 percent. This period is a turbulent one incorporating the war, the subsequent phase-down and changing mix of forces, and reductions in support activities such as headquarters and numerous base closures. Civilianization programs conducted during FY64-68 and FY73-75; the earlier of these periods saw the civilian percent decrease, the later, an increase. Little can be determined about the impact of the programs from reviewing overall trends.

A significant motivation for civilianization is to save money. The potential for savings is seen by examining the two basic elements of personnel costs: the direct costs of salary and related expenses for the employee, and the indirect costs of additional personnel to support the employee. Direct costs of military and civilian personnel are currently about equal. In the draft era, military personnel were relatively less expensive, but general pay comparability has been achieved in the 1970s. Cost savings from civilianization, therefore, result primarily from the fact that military personnel generate more secondary support requirements than do civilian personnel. Military personnel are housed, fed, and provided medical treatment by the DoD; civilian personnel provide their own housing, food, and medical treatment. Military personnel mostly attend DoD training centers and schools, civilian personnel for the most part receive their training and education outside DoD. Thus, a military person generates a requirement for some fractional part of other military personnel to run bases, operate hospitals and schools, and perform other necessary personnel support functions. The removal of a military person allows DoD to cut down to a certain extent (not necessarily in direct proportion) on these functions. Thus, the conversion of a military person to a civilian allows, in addition, the elimination of another one-tenth or two-tenths of a military person. Putting it another way, only 1,000 civilians are needed to substitute for 1,100 to 1,200 military personnel. There are some limitations to this conversion advantage, but savings on indirect support are meaningful financial and manpower advantages of civilianization.

Another significant motivation in practice has been a perceived need to conserve limited military manpower resources by increasing the number of jobs performed by civilians. This factor was particularly important during the buildup for the Vietnam War.

Other motivations are also important. Some perceive that a gradual but substantial reduction in the number of uniformed military personnel is desirable. The necessity to shift from the draft to an all-volunteer environment made it attractive to substitute volunteer civilians for presumably hard-to-get volunteer soldiers. Some people believe that it is advantageous, particularly in support type activities, to have long-term civilian employees who can develop real job expertise rather than short-term military personnel who have barely time to learn their jobs before moving on to other jobs. Another motivation is the perceived necessity by local managers to maintain the size of the total workforce as military strengths were reduced after Vietnam. Faced with certain reductions in military strengths and the uncertainty of recruiting capability in the absence of the draft, managers at all levels (whose workload was not necessarily diminished) sought to carry out their missions by using civilians to perform work formerly accomplished by military men. This necessity to accomplish necessary work somehow has encouraged civilianization.

Agreement on the merits of civilian substitution is not universal. Some object on the grounds that civilianization affects combat readiness adversely in that work that can be done by civilians in peacetime may require a military incumbent in wartime without sufficient time for conversion after mobilization. Some contend that civilianization interferes unduly with military career patterns and depletes the rotation base necessary in CONUS for maintaining the overseas forces. Others believe that military personnel are more useful because they can be ordered to work longer hours and irregular hours, can be used to perform ancillary duties (e.g., guard duty or cleaning the mess) and can be transferred or relieved for inefficiency more easily. These concerns make it difficult to determine the appropriate military/civilian mix without a position-by-position analysis. A major objection is based on the observation that after military spaces are reduced by civilianization actions, there has often been a separate reduction in civilian spaces and a consequent overall loss of effectiveness. This complaint is not without foundation as the discussion on page 2 of this report indicates. Civilianization in practice has often been a straight reduction action; military spaces have been deleted, and the replacement civilian spaces have also been deleted.

Notwithstanding the objections, however, a number of forces both inside and outside of DoD have interacted to bring about civilianization programs in the past decade. The Vietnam war required a large build-up in military strength, and civilian substitution was a way of putting more of this military manpower into combat and combat support activities. Public reaction against the wartime draft made reductions of military personnel accessions a desirable goal. Rising manpower costs were a problem throughout, but more especially after the 1971 military pay increase. DoD was under considerable pressure from the administration and the Congress to reduce costs and responded with programs of civilian substitution, headquarters reductions, and base closures. The resulting civilianization was conducted in two major programs - one from 1964 to 1968 and the other from 1973 to 1975.

The FY64-FY68 Civilianization ProgramGeneral

In April 1964, President Johnson directed the Defense Department to make a comprehensive study of the military manpower system with emphasis on three policy issues: the equity of the draft system, the necessity for the draft to meet military needs, and the conditions under which the draft might be eliminated. This effort stimulated investigation of feasible methods to reduce military personnel requirements. Previous studies had indicated that each of the Services had some capability of substituting civilians for military personnel without adverse effect upon overall defense capabilities or costs. One task of the draft study was to establish both the full extent of the potential and the principal policy implications of military/civilian manpower substitutability.

In order to accomplish this task, a detailed inventory was compiled of all authorized military positions as of June 1964 by such characteristics as type of unit and program category, occupational specialty, pay grade, and geographic location. All military positions were reviewed to determine if they either (1) were military in nature or (2) justified assignment of military personnel for such reasons as training or rotation. Based upon this review, military positions were classified into three broad categories: (1) nonsubstitutability, (2) relatively limited substitutability, and (3) relative high substitutability. A total of 1.4 million military positions, about 60 percent of the 2.4 million in units, were identified as nonsubstitutable. Another 582 thousand were categorized as being somewhat limited in their potential for substitution. Most positions with limited substitutability were in the headquarters and support elements of operating forces organizations or in training functions requiring a military environment.

About 370 thousand positions, considered to have the least need for military incumbents were placed in the high substitutability category. Virtually all of these positions were in occupations with close counterparts in the civilian labor force, and most were in the Continental United States. They were in headquarters, logistical, base maintenance, and other support-type activities.

With the intensification of US involvement in Vietnam in the summer of 1965, implementation of the draft study was superseded by efforts to expand the armed forces. Civilianization was an attractive approach. It was decided, however, not to convert all of the high substitutability positions because of personnel management considerations (e.g., career development), potential turbulence problems associated with eliminating a large number of military men, especially those in senior grades and

because the military personnel would be required for an expansion of the forces. The number of annual military personnel losses, by pay grade of the incumbent, was estimated for the group of high substitutability positions in each Service. This figure was estimated to be about 75,000, concentrated among first term personnel in grades below E-5. The highest rate of turnover was being experienced by the Army in these positions due to the short enlistment periods of first-term enlisted personnel and the low reenlistment rates of draftees. This estimate was used as the basis for the Phase I portion of the FY64-FY68 program.

Phase I

On September 16, 1965, Secretary of Defense Robert McNamara directed the Services to substitute civilian personnel by 30 June 1966, as follows:

Table 2
Phase I of the FY64-FY68 DoD Civilianization Program

<u>Service</u>	<u>Military Reduction</u>	<u>Civilian Substitution</u>
<u>Total</u>	<u>74,300</u>	<u>60,500</u>
Army	36,500	28,500
Navy	15,000	12,500
Marine Corps	2,800	2,500
Air Force	20,000	17,000

The difference between the military and civilian positions were the estimated possible reduction in personnel support manpower required for military personnel. This factor was determined to be about 20% on the basis of the previous study of substitutable positions; however, the factor resulting from the directed program is about 23%.

Overall annual economic cost savings associated with such a reduction, taking account of both direct and second order life-cycle impacts (such as retirement costs) were estimated at \$1,100 per position. The total life-cycle cost savings were estimated to be \$16.5 million, of which about \$11 million affected the FY 1966 budget. ^{1/}

The Services believed that implementation would be seriously impeded by funding difficulties and recommended discontinuance of the program so that O&M funds made available for it could be shifted to pay for expanded Vietnam operations. The Phase I completion date, planned for 30 June 1966, was reestablished as 31 December 1966, because only one-third of the program had been accomplished by the original target date. By December about 90 percent of the program had been completed and the balance was completed in the first six months of 1967.

^{1/} The reported difference between one-year and life-cycle cost savings is due to variable "odd factors" in the costing.

Phase II

During the period of implementation of Phase I, a Phase II program was planned, but was somewhat limited by Vietnam rotation requirements. The new objective was seen to be primarily one of facilitating the build-up for Southeast Asia by use of civilian positions in lieu of military personnel, with the dollar savings no longer emphasized.

The Services first identified by skill and grade level the occupation for which the rotation base was favorable and military career development was adequate. Within these occupations, further positions were identified which should be military because of law or tradition, security requirements, and the need for military discipline.

The Phase II program, approved in September 1966, is shown in Table 3. These figures were based upon the same general premise as the Phase I program except for the reduced substitution requirements for the Army and Marine Corps, due largely to Vietnam rotation problems.

Table 3
Phase II of the FY64-FY68 DoD Civilianization Program

<u>Service</u>	<u>Military Reduction</u>	<u>Civilian Substitution</u>
<u>Total</u>	<u>39,915</u>	<u>34,479</u>
Army	8,004	7,094
Navy	15,381	12,839
Marine Corps	620	522
Air Force	15,910	14,018

Difficulties in implementing the Phase II program resulted in a number of requests by the Services to rescind it. Many shifts in the originally planned objectives were made because of civilian hiring shortfalls and changing military personnel rotation base requirements. As of February 1968, only 38 percent of Phase II had been accomplished. Assistant Secretary of Defense (M&RA) Alfred Fitt reviewed the program at that time and issued new guidelines which specified that all Services except the Air Force agreed to complete their programs by 30 June 1968. The Air Force was to complete its program by 30 September of that year.

Summary

The total Phase I and Phase II programs are shown in Table 4.

Table 4
The FY64-FY68 DoD Civilianization Program

<u>Service</u>	<u>Military Reduction</u>	<u>Civilian Substitution</u>
<u>Total</u>	<u>114,215</u>	<u>94,979</u>
Army	44,504	35,600
Navy	30,381	25,339
Marine Corps	3,420	3,022
Air Force	35,910	31,018

The program was completed as planned except that Public Law 90-364, which established restrictions on civilian employment, limited actual substitutions to about 90,000 civilian personnel. Thus about 5,000 of the civilians which were planned to substitute for military personnel never did because they were eliminated from the DoD workforce by other actions. The most notable short-term benefits were reduced draft calls during the Vietnam build-up, although the net effects of the substitution efforts were somewhat obscured by overall military strength additions. (See again Table 1, above.)

The FY73-75 Civilianization Program

With the planned withdrawal from Vietnam and considerable unfavorable public attention on the draft, the Defense Department started to restudy the all-volunteer concept. The plan for Project Volunteer was approved by Secretary of Defense Melvin Laird in February 1969, calling for a balanced program designed to meet future military manpower requirements without reliance on inductions. In March of that year, President Richard Nixon announced the formation of a commission on an All-Volunteer Armed Force under the chairmanship of former Defense Secretary Thomas Gates. The Gates Commission saw a potential for replacing 117,000 military personnel with civilians in a 2.5 million force at a savings of \$100 million in 1969 dollars. DoD Project Volunteer also recognized the importance of civilian substitution in reaching the zero-draft target.

The Senate Armed Services Committee report on the Department of Defense Authorization Bill for FY 1973 (SR 92-962) stated that:

"As the cost of military manpower has increased and the difficulties of achieving an all-volunteer force become apparent, civilianization programs need to be reassessed. The greatest potential for civilian substitution appears to exist in the Air Force since a large number of base operations positions are located in the United States. The Gates Commission had indicated that of about 100,000 billets that were found to be appropriate for civilian substitution, about three-fourths were Air Force positions. The committee therefore desires that the Department of Defense conduct a thorough analysis of civilian substitution potential and include the results in next year's Military Manpower Requirements Report."

The House Appropriations Committee report on the Department of Defense Appropriations Bill for FY 1973 (HR 92-1389) also addressed civilianization by stating that:

"The Committee wants and expects to see military personnel out from behind desks and back in aircraft, ships and troop units. The Committee hopes to encourage the Department of Defense, at all levels, to move in this direction by setting aside \$25,000,000 of the transfer authority exclusively for this purpose. It should be noted that the amount set aside does not constitute a limitation and such additional amounts of the transfer authority as may be needed may be used for this purpose.

"While the Committee expects the Office of the Secretary of Defense to take the lead in directing the implementation of this program, all other elements of the Department of Defense should be encouraged to actively pursue the objective.

Additionally, the Committee serves notice on all concerned that ceilings on civilian personnel, however imposed, are to be adjusted as and when necessary to permit this program to go forward."

Congressional interest in and support for civilianization is clearly stated in these reports.

The DoD Central All-Volunteer Force Task Force concluded that an objective of converting 35,000 military positions - 10,000 each for the Army, Navy, and Air Force, and 5,000 for the Marine Corps - would be reasonable. The Military Services first opposed the plan, fearing that it would lead to reducing both military and civilian strength, as had in fact happened in 1967-68 (see page 9). However, they later agreed that civilianization was desirable, assuming that OSD and the Office of Management and Budget would protect their civilian spaces. It was also agreed that the Marine Corps substitution program would be reduced to 1,000 because of the relatively fewer support activities in that Service compared to the other Services.

Deputy Secretary of Defense Kenneth Rush established on 11 December 1972 a minimum objective of civilianizing 31,000 military positions DoD-wide by the end of Fiscal Year 1974. In addition to reducing military manpower requirements, it was estimated that annual life-cycle cost savings of \$1,200 to \$1,800 per military space reduced could be achieved. The FY74 Civilianization Program is shown in Table 5. Most of the conversions were to occur in CONUS and most in enlisted positions.

Table 5
The FY74 DoD Civilianization Program

	<u>Total</u>	<u>Army</u>	<u>Navy</u>	<u>Marine Corps</u>	<u>Air Force</u>
Military Jobs to be Converted:					
By 30 Jun 73	4,566	1,000	1,000	243	2,323
By 30 Jun 74	26,434	9,000	9,000	757	7,677
Total	31,000	10,000	10,000	1,000	10,000
Military Support Reduction*	6,622	1,700	1,900	135	2,887
Total Mil Pers Reduction	37,622	11,700	11,900	1,135	12,887
Civilian Jobs Added	31,000	10,000	10,000	1,000	10,000

*Reduction in spaces for trainees, students, transients, patients, and military support.

The program lagged somewhat in implementation in FY 1973. The principle reason cited for the lag was fiscal uncertainty as to Congressional approval of the transfer of funds from the military pay account for new civilian hires. Appropriations Committee approval was granted on June 8, 1973 and the following was reported as accomplished during FY73:

Table 6
FY 74 DoD Civilianization Program Accomplishments During FY 73

	<u>Total</u>	<u>Army</u>	<u>Navy</u>	<u>Marine Corps</u>	<u>Air Force</u>
<u>Planned Conversion</u>	4,566	1,000	1,000	243	2,323
<u>Accomplished</u>					
Number	1,793	404	203	22	1,164
Percent of Plan	39	40	20	9	50

Table 7 provides some descriptive data on the 1,793 conversions accomplished during January-June 1973:

Table 7
Details of Civilianization Accomplished During FY 73

<u>Occupational Distribution</u>	<u>Percent</u>
Administrative and Clerks	43
Service and Supply Handlers	24
Craftsmen	16
Equipment Repairmen	5
All Others	12
Total	100
<u>Grades</u>	
Military	Civilian
Average Grade E-4	Average Grade GS-4
82% E-3 to E-5	67% GS-2 to GS-5
<u>Military Personnel</u>	<u>Percent</u>
Reassigned at same base	74
Transferred to another base	13
Discharged or retired	13
Total	100
<u>Civilian Replacements</u>	
DoD Displaced Employees	14
Vietnam Returnees	5
Retired Military	4
Other	77
Total	100

Performance improved during FY 74. Table 8 shows the progress of the civilianization program during FY74. By the end of the fiscal year, 94% of the program had been completed.

Table 8
FY74 DoD Civilianization Program Accomplishments During FY74

	<u>Total</u>	<u>Army</u>	<u>Navy</u>	<u>Marine Corps</u>	<u>Air Force</u>
Planned Conversion	31,000	10,000	10,000	1,000	10,000
Accomplished by:					
31 March 1974	18,100	7,000	4,600	500	6,000
30 June 1974	29,188	9,600	9,199	989	9,400

During the same period (FY73-75) there were also DoD programs to reduce headquarters manpower spaces, to close or consolidate a number of military bases, and to reduce support manpower. The simultaneous implementation of these various manpower reduction programs make it difficult to assess the real impact of any one of them. It is not clear how many of the savings reported from headquarters reductions, base closures, or support reductions were also included in civilianization reports.

A FY75 program to convert approximately 10,000 military spaces to 3,700 civilian spaces was planned with the Service distribution as shown in Table 9. Also included in Table 9 is a summary of the entire FY73-FY75 program. As of March 1975, about 35,000 of the 40,020 planned civilian hires to replace military personnel had been completed.

Table 9
Overall Summary of the DoD FY73-FY75 Civilianization Program

	<u>Mil (-)</u>	<u>Civ (+)</u>
<u>FY73-4</u>		
Army	11,784	10,000
Navy	11,939	10,000
Marine Corps	1,141	1,000
Air Force	13,048	10,000
Defense Agencies		290
Total	<u>37,912</u>	<u>31,290</u>
<u>FY75</u>		
Army	5,106	4,078
Navy	34	0
Marine Corps	220	194
Air Force	4,626	4,078
Defense Agencies		380
Total	<u>9,986</u>	<u>8,730</u>
<u>FY73-75</u>		
Army	16,890	14,078
Navy	11,973	10,000
Marine Corps	1,361	1,194
Air Force	17,674	14,078
Defense Agencies		670
Total	<u>47,898</u>	<u>40,020</u>

Table 10 shows the results of a cost analysis of the FY73-FY75 program provided in March 1974 in response to a Congressional inquiry.

Table 10
Cost Implication of the DoA' FY73-FY75 Civilianization Program
(Millions of Dollars)

<u>FY 1973/74 Program</u>	
Military Personnel Conversion	\$-255.5
Military Personnel Reduction	- 55.3
Subtotal	\$-310.8
Civilian Personnel Costs	\$+289.3
Less: Operating Support Savings	- 31.1
Subtotal	\$+258.2
Net Savings FY 1973/74 Program	\$- 52.6
<u>FY 1975 Program</u>	
Military Personnel Conversion	\$- 41.2
Military Personnel Reduction	- 5.4
Subtotal	\$- 46.6
Civilian Personnel Costs	\$+ 43.9
Less: Operating Support Savings	- 5.1
Subtotal	\$+ 38.8
Net Savings FY 1975 Program*	\$- 7.8
Total Net Savings, FY 1974/75 Programs*	\$- 60.4

*Assuming completion as planned.

These year-to-year budgetary savings are less than estimated total life-cycle cost savings which include retirement and other long-term costs. The budgeted savings are based on assumed support reductions, grade conversions, and other factors, which may amount to more or less in fact. The savings per position were higher than those reported in the earlier FY64-FY68 program because of the considerable increase in manpower costs between 1968 and 1973.

Observations

The overall results of the two DoD civilian substitution programs from FY64-FY75 (and all other personnel actions affecting the results) may be determined by adding back the military reductions achieved and subtracting the added civilian positions.

Table 11
Results of DoD Civilianization Program, FY64-FY75

	<u>Total</u> (000)	<u>Military</u> (000)	<u>Civilian</u> (000)	<u>Civilian</u> (%)
End FY75 Strengths	3,209	2,131	1,078	34
Military Reductions		+162		
Civilians Added			-130	
Revised Total	<u>3,241</u>	<u>2,293</u>	<u>948</u>	<u>30</u>

The revised total shows what "would have been" in the absence of civilianization.

- Total DoD strength would have been 32,000 higher.
- Civilian strength would have been substantially lower and would have comprised only 30% of the total instead of 34%.
- Military strength is 162,000 lower, or about 7% lower.

The multiplicity of simultaneous and overlapping reduction programs within DoD during the past decade makes it difficult to isolate the specific consequences of each individual program. However, it may be concluded that the civilianization programs were of some value in easing the transition to the all-volunteer force by decreasing military strength requirements.

Civilianization has also helped to reduce total manpower costs.

Unfortunately, civilianization also accelerated the overall decline in DoD strength because the real decline in civilian manpower strengths was hidden by the civilianization program. Table 12 shows civilian strengths for critical periods since FY64.

The revised totals, which take civilianization into account, reveal that DoD civilian employment has declined 228,000 or about 19% from the FY64 base. The reported totals show an apparent decline of only 98,000 or about 8%. Those who assess manpower reductions based on a judgment as to what is a "reasonable" reduction from the previous strength might have been underestimating the real impact of their reductions. From FY73 to FY75, for example, the apparent reduction of only 22,000 civilians, or about 2%, is small compared to the "real" reduction of 68,000, or 6%. Whether or not the difference between 2% and 6% is significant, the fact is that the magnitude of the reduction was masked by the civilian spaces added as a result of civilianization.

Table 12
Impact of DoD Civilianization Programs on Civilian Employment

	<u>FY64</u>	<u>FY68</u>	<u>FY73</u>	<u>FY75</u>
Total Civilians 1/	1,176	1,406	1,100	1,078
Less Cumulative Civilians Added	0	-90	-90	-130
Revised Total	1,176	1,316	1,010	948

1/ Includes direct and indirect hire in military functions; excludes civil functions and summer youth programs.

Improved methods of manpower programming should supersede civilianization programs. For the past few years a concept for integrated manpower programming has been evolving within DoD. Integrated manpower programming means that all forms of manpower--active military, civilian, reserve military, and contract--are to be considered in each instance to perform a job of work. The least costly form of manpower, or the least cost mix of various types of manpower, which can perform the work satisfactorily is to be chosen in each instance. Not only will the specific nature of each individual job of work be considered, but such overall considerations as military necessity, mobilization plans, rotation base, and personnel management will also enter into the manpower mix determination. The integrated manpower approach promises the derivation of a Department of Defense manpower program in which the best mix of the various forms of manpower will already have been determined. Adherence to this policy will eliminate the necessity for separate civilianization programs.

ANNEX C

OPPORTUNITIES FOR MANPOWER SAVINGS FROM BASE CONSOLIDATION

The purpose of this Annex is to illustrate the opportunities for manpower savings from the consolidation of base support functions. Such consolidations may be achieved by closing several smaller bases and combining all of their activities at a larger base or by the consolidation of certain base support functions on a regional basis. For instance, the civilian personnel function for all bases within a given geographic area may be performed by one personnel office. Economies of scale may be achieved by efficient combinations of overhead functions. It is generally accepted that the application of economies of scale would lead to manpower savings. The purpose of the Annex is limited therefore to provide an order of magnitude estimate of the possible savings.

Tables 1, 2 and 3 present data on base support manpower by function for the Army, Air Force and Marine Corps. Manpower requirements for each base support function are shown for three levels of base populations and illustrate the average number of personnel required to perform such function at bases of small, medium and large size. These data were estimated from sources such as listings of military bases by population and staffing guides for each Service, except the Navy, for which no such data are currently available. The manpower requirements are related to base population only by rough approximation and therefore indicate ranges rather than precise measurements. Not all base support activities are shown on the tables, only those for which data were readily available.

Several examples should suffice to illustrate some potential savings. From Table 1, it may seem that the consolidation of three small Army bases, each approximately 5,000 in population, into one base of 15,000 would result in overhead manpower savings of 23%:

Three bases of 5,000 require a total of 3,345 (3 X 1,115) base support manpower. One base of 15,000 requires approximately 2,583 in base support. The difference is 762, or 23%.

Table 2 suggests that if the base support function for two Air Force bases of medium size (say 7,500) located in close proximity were combined to serve the total population, manpower savings of about 10% might be achieved:

Base support manpower for two bases of 7,500 is 5,624 (2 X 2,812). The number required for one base of approximately 15,000 is 5,067. $5,624 - 5,067 = 557$, or 10%.

Consolidation of two medium-sized Marine Corps bases might result in a 12% savings (from Table 3):

Two bases of about 12,000 require 1,416 support personnel (2 X 708). One base of over 20,000 requires 1,252. $1,416 - 1,252 = 164$, or 12%.

The rationale for base closings and consolidation is presented elsewhere in this report. The purpose of this Annex is to provide some order of magnitude potential manpower savings. On this basis, it is not unreasonable to consider savings of 10%, or better in the base support area.

Table 1
Base Support Manpower by Function

Army

<u>Function</u>	<u>Manpower Requirements*</u>		
	(1)	(2)	(3)
1. Commanding Officer/General	32	(No significant variation)	
2. Information Office	9	16	25
3. Staff Judge Advocate	8	21	28
4. Inspector General	8	13	19
5. Mgt. Information Systems	35	71	106
6. Hqs. Commandant	18	30	46
7. Comptroller	60	173	377
8. Directorate of Personnel and Community Activities	163	407	680
9. Directorate of Security	5	9	14
10. Directorate of Plans & Training	102	179	246
11. Directorate of Industrial Operations	483	1,134	1,873
12. Directorate of Facilities Engineering	140	391	665
13. Directorate of Communications/ Electronics	<u>52</u>	<u>107</u>	<u>169</u>
Totals	1,115	2,583	4,280

Source: Staffing Guide for U.S. Army Garrisons, Jan. 72 as changed

* Base population: (1) = 0 - 1,000; (2) = 10,000 - 20,000; (3) = 20,000 +

Table 2

Base Support Manpower by Function

Air Force

<u>Function</u>	<u>Manpower Requirements*</u>		
	(1)	(2)	(3)
1. Judge Advocate	5	23	37
2. Inspection	2	2	2
3. Information	3	10	13
4. Base Chaplain	4	15	27
5. Ground Safety	1	4	6
6. Accounting and Finance	80	208	397
7. Base Personnel Office	59	208	475
8. Base Audio-Visual Library	2	7	11
9. Base Support Photographic Laboratory	4	8	17
10. Base Supply	170	382	592
11. Fuels Management	26	100	183
12. Transportation	81	261	456
13. Security Police	119	181	243
14. Civil Engineering	134	979	1,836
15. Special Services	36	175	315
16. Food Service	33	209	395
17. Base Operations & Training	19	37	57
18. Disaster Preparedness	<u>2</u>	<u>3</u>	<u>5</u>
Totals	780	2,812	5,067

Source: Air Force Manpower Standards, February 1973 as changed

* Base population: (1) 0 - 5,000; (2) 5 - 10,000; (3) 10,000 +

Table 3

Base Support Manpower by FunctionU.S. Marine Corps

<u>Function</u>	<u>Manpower Requirements*</u>		
	(1)	(2)	(3)
1. Correctional Facility	14	41	80
2. Administrative & Clerical	14	17	32
3. Messes & Clubs	14	23	30
4. Food Service	23	78	154
5. Inspector/Instructor Staff	5	6	9
6. Data Processing	40	41	86
7. Postal Services	6	20	50
8. Security Force	19	59	138
9. Fire Protection	13	33	51
10. Armament Repair	1	3	5
11. Disbursing Services	6	53	100
12. Laundry Services	23	60	99
13. Marine Corps Exchange	10	14	19
14. Civilian Personnel Office	6	16	30
15. Special Services	13	34	56
16. Engineer Equipment Operation/ Maintenance	4	40	89
17. Personal Staff of General Officers	2	2	3
18. Marine Air Reserve Training Detachment	44	47	52
19. Office of the Area Auditor	24	30	44

(Continued on next page)

20. Fleet Marine Force Organic Supply	3	27	52
21. Subsistence Supply	3	8	16
22. Traffic Management	2	17	35
23. Bachelor Officers' Quarters	6	13	25
24. Safety Program	<u>6</u>	<u>6</u>	<u>7</u>
Totals	301	708	1,252

Source: U.S. Marine Corps Staffing Guidance

* Base population: (1) = 0 - 5,000; (2) = 5 - 20,000; (3) 20,000 +

ANNEX D

Estimated Savings In Defense Manpower Costs

The assessment of the support forces disclosed many opportunities to reduce the amount and cost of manpower used by the Services without an accompanying degradation of combat capability. It should be noted that improvements recommended by the DMC staff are neither innovative nor hypothetical. All of the DMC staff recommendations to save support manpower costs are based on observations of management actions resulting in manpower savings that were already demonstrated to be successful by at least one of the Services.

The opportunities available to the Department of Defense to save large amounts of manpower dollars are in the following four areas:

1. Basing Requirements
2. Regional consolidation of installation functions
3. Total Force Composition (i.e., the mix of active military, Reserve, Civil Service, and contractor personnel)
4. Alternatives to Manpower (The substitution of capital equipment for manpower)

It is emphasized that the DMC staff recommendations present opportunities to reduce costs. Whether the total Defense budget should be reduced as a result of reductions in the target stress should be decided after considering threat assessments for subsequent years and the advisability of retaining the savings within the Defense appropriation to compensate for inflation or to pay for additional combat capability. It should be recognized also, that a National-level commission such as the DMC is not created to make highly micro-analyses of the Government operations that are subject to its investigation.

Instaed, its purpose (and a far more useful one) is to assess the Department of Defense as a single operating system in terms of recommending institutional changes that engender lasting savings through improved approaches to institutionalized problems. These recommendations are in the form of management principles that are readily translatable by the Department of Defense into management policies that will result in the actual savings. Accordingly, the DMC did not attempt to compute with mathematical precision the exact amount of savings that would result from the application of the management principles it recommends. It was necessary, however, to estimate the order of magnitude of resultant savings to know whether a management area was worth investigating in the first place, and to establish targets for the savings that should be expected when Defense implements the principles recommended by the DMC.

Order of magnitude estimates of the potential savings for each of the major target areas are given and discussed below:

Basing Requirements

The major problem disclosed in the analysis of Defense basing is that the department does not have the capability of computing its comprehensive basing needs and therefore lacks knowledge of its precise requirement (i.e., in terms of an objectively computed, optimized requirement). Many factors point to a potential for large-scale savings in this area: (1) the sheer size of the real estate resource--approximately 20 million acres; (2) the practice of distributing military commands in a ratio of one per base; (3) the practice of sub-optimally allocating bases to Services and to Service major commands. With respect to the latter, it would be more efficient to allocate basing to organizations and missions regardless of the Service in which these organizations and missions reside.

A less traditional (parochial) and more efficient allocation system should result in large savings in the overhead (BOS) manpower generated by the mere existence of the unneeded bases. Potential savings could be in the order of magnitude discussed below:

1. There are approximately 6500 bases worldwide.
2. There are approximately 764 major installations worldwide.
3. The BOS manpower required at the major installations is an average of 712 spaces.
4. There are 449 bases in the CONUS (50 states). These bases generate a requirement for 319,688 base operating support personnel.
5. If land and facilities were allocated optimally to the forces worldwide and resulted in a savings of only one out of every ten or 76 bases, the world-wide BOS manpower from those bases would be 54,112 (76 x 712). Not all would be saved.
6. If a new allocation eliminates only one of every ten CONUS bases, or 45 bases or average size, the BOS manpower from those bases would be approximately 32,000 (not all saved).
7. Looking at an Air Force base with one wing and some tenant units, the manpower authorization of such a wing typically is over 4,000, nearly half in BOS. A second wing, when receiving tenant support from the host wing, typically requires only approximately 2,000 or less. A host wing has to be tailored and augmented to support its tenants, but closing (or not opening) a second base should save a sizeable proportion of the BOS force of a wing stationed separately.

For the Army, the Staffing Guide for U.S. Army Garrisons gives the non-linear effects of increasing the workload of combining the workload of three bases with a population of about 5,000 people each into one base with about 15,000 people. Under the assumptions used the Army Staffing Guide indicates BOS in the order of 23%-say 25%. Under other assumptions the savings could be higher. (The same comparison was not made of Air Force and Marine Corps staffing guides since it was found to be unrealistically linear. The Navy had no such standards to contribute to the analysis.) It is seen that the savings might vary widely for in a low of 23-25% of the BOS manpower effected to potentially much higher figures, as in the case of the USAF wings. Definitive calculations would have to be based on specific actual costs.

8. Applying a conservative 25% figure to the CONUS BOS manpower (32,000) affected by closing just one-tenth of the bases, and assuming that the majority of the BOS manpower spaces would accompany transferred functions, the net reduction would be in the order of 8,000 spaces. A 37.5% savings factor would yield 12,000 spaces. Five percent CONUS base closings with higher savings factors would produce the same reductions.

9. If one out of every seven CONUS bases is found to be in excess of optimal requirements, the savings (using a 25% factor) would be in the order of 64 bases, 45,568 BOS manpower spaces, with a net savings of about 11,392 spaces or about \$170,880,000 per year at the conservative rate of \$15,000 per space. A 50% savings factor would double that.

10. Looking at the various combinations of base closures and assumed savings factors, it seems reasonable to estimate that potential BOS manpower savings in the range of 10-25 thousand might be achieved, at least as an illustrative figure or as an objective.

Regional Consolidation of Installation Functions

It is the practice within the Department of Defense, for the most part, that each military installation will have its own complete set of BOS functions principally in support of organizations located on that base. Looking at the distribution of manpower to installation functions (Annex D), it can be seen that about 50% of the base manpower is allocated to three functions: (1) Civil Engineering, (2) Base Supply, (3) Base Finance and other comptroller functions. (In addition, keep in mind that the Air Force is testing regionalized intermediate maintenance for its SAC aircraft). The three functions numbered above have in common that all or part of those functions can be performed from some distance from the supported organization. For example, considering the present use of computer terminals in base supply and financial accounting, there is little compelling reason why such accounting must occur at every installation. Planning, distribution and disbursement, of course, are another matter. Further, the Navy has been demonstrating for years that the civil engineering function can be regionalized. The recent placement of five activities of Army, Air Force, and Navy, under the Navy Public Works Center in the San Francisco area resulted in a savings of 465 people per year. Think of doing this in the Washington, D.C. area.

The real impact of regionalization of selected base functions (i.e., those amenable to performance from some distance) becomes clear when we recall that we are discussing a CONUS BOS population of about 320,000 positions. If only 10% of the BOS functions could be consolidated, and if consolidation could save 15% (Army staffing guides show as much as 23%), the savings would be in the order of 4800 manpower spaces with @\$15,000 would be an annual savings of \$72,000,000. (This assumes no

prior closure of the bases supported.)

Total Force Composition: i.e., the Total Force Mix

Traditional military customs and practices have evolved into a "cultural" preference of military managers for an active military workforce. The reason most often stated for this preference is that active military members are more reliable, a condition stemming from the absolute control that can be exercised over the workforce to work harder, longer hours, and under adverse conditions. Another feeling expressed about military members (by military members) is that they are more dedicated and are better team players. The extent to which these asserted beliefs are true is certainly open to question. Another question that should be answered concurrently is that if these feelings are to some extent accurate, how much can be afforded, given whatever advantages accrue from the extra cost of using military personnel? Yet another question, how much perceived lack of control and cooperation in the housekeeping force could be restored by using more productive forms of management and supervision?

Unquestionably, some of the military manpower used for installation support functions could be replaced by a less expensive part of the force (Reserves, Civil Service employees, or contractors), without a loss in effectiveness at those installations. (Overall Service effectiveness could be reduced if enough military positions did not remain for Service management purposes such as the personnel rotation base). The DMC staff has suggested that savings might result from a better active/Reserve mix. These suggestions would have an early effect on national military strategy and on the force structures formulated in response to those strategies. As such, the introduction of additional Reserve support roles, and the increased use of Reserve units for weekend and active duty for training

drills, should be tested before the force composition is actually changed.

There is enough knowledge on hand, however, about the impact of the increased uses of Civil Service employees and contractors to make some immediate judgments and changes. Keep in mind that the DMC studies show Civil Service and contractor manpower to cost the taxpayer less than active military manpower, at least in the long run and considering total life-cycle and support costs.

Replacing Military Manpower with Civilian Manpower

The basic Support Forces paper discusses civilian manpower at some length. It is believed to be convincing enough to assure that the Civil Service employee represents a useful capability to the Department of Defense to perform, among other things, installation support duties. It has been argued that these functions of themselves are quite "civilian", i.e., in the realm of city management and service duties. While certainly some differences exist because of the military missions assigned Defense installations, the use of civilians should not be discounted begrudgingly for any reasons considering that the DMC and other studies show civilian cost less than military manpower. Fewer civilian personnel should be required to replace a given number of military personnel, because less support structure is required. Now, let's apply that thought to the 244,800 military personnel in the BOS workforce (FY 1976, worldwide). It has been acknowledged that a large portion of BOS manpower must remain military to support deployable mission and the Service rotation bases. It was learned, however, that in a typical CONUS-based Air Force wing, only about 50% of its manpower is subject to rapid deployment, while 86% of its manpower is military. It would take a complete restudy of the entire support forces on a micro-level to determine the precise amount of military spaces that could be

replaced by fewer civilian ones before deployment and rotation capabilities were affected. Such an analysis should be run only by the Air Force in order to establish long-range annual targets for each kind of manpower, and as such, provide an orderly path to the actual implementation of a more optimal mix. Meanwhile, let us look at the order of magnitude of the savings that might result, assuming that 20% fewer civilians would be needed to replace the military. If the military share of manpower were reduced 25% in favor of civilian manpower, the net savings would be in the order of 12,000 spaces. This is only an illustrative figure. As stated above, the conversion target for each year in the long-range plan would consider the deployment and rotation needs of the Services as well as their needs to reduce manpower costs.

Contracting for BOS Services

The use of contractors to perform installation housekeeping services is more than a substitution of one kind of manpower for another. The Support Forces paper showed that contractors, less constrained by prescribed organizational alignment and personnel utilization rules (e.g., military occupational specialties or Civil Service job classifications), bring fresh, new approaches to the management of installations. The contractor at Vance AFB uses 26% fewer people than the Air Force uses at Reese AFB, mostly because he constructs jobs and his total organization to get the job done. Reese, on the other hand, must satisfy a myriad of regulations that impose manuals full of management generalizations that require the expenditure of energy just to read and implement. In general, it appears that a disproportionate share of the energies of installation managers, compared to BOS contractor operators, is directed toward the satisfaction of administrative regulations than to produce outputs. While centrally developed management systems must be employed in

organization as large as a Military Service, and for that matter, the Civil Service, they have apparently become so "headquarters oriented" at the expense of field operations that an organization not as bound by these constraints can easily come in and do the job cheaper and as well. The Department of Defense and the Civil Service Commission must decide whether their constraining regulations are worth the value gained at the headquarters; whether it would be as well to contract for these services and not have the worry and expense of developing and managing centralized systems; or whether the centralized and local management systems should reflect what has been learned from contractor operations and give the contractors a better run for their money. It would seem that if installation management were to become more efficient the cost of installation services could be driven down regardless of whether it is performed in-house or under contract, although contracting inherently is more flexible in affording opportunities for savings.

Looking at the effects of the application of intensive business management as applied at installations by contractors, the basic Support Forces paper estimates that savings might range from 26-39%. This is not difficult to believe since contractors, like Civil Service employees, require little "garrison support" and thus start off with a lesser commitment from the Government. Savings of this magnitude, if applied to CONUS installations would give the following results:

1. If only 257 of the CONUS installations had their housekeeping performed under contract, then 112 installations would be affected.
2. At an average of 712 BOS positions at each installation, the position population affected would be approximately 79,744 positions; i.e., that many military and federal civilian employees could be eliminated by contracting.

3. With savings of 25% resulting from contracting, a conservative estimate the total number of BOS positions (federal or contractor) could be reduced by 19,936 assuming \$15,000 per position that would save \$299,040,000 per year.

Alternatives to Manpower

Dealing with the substitution of capital equipment for manpower on a very conservative basis, i.e., considering no more than the \$35M per year Defense plans to invest in fast-amortizing capital projects, the savings here would be 1750 positions per year. Going further, it is estimated that for each 1% of increase in Defense productivity, the Department could save 7 - 10,000 manpower spaces each year. Using the mid-point of this estimate, 8,500 spaces, and considering that capital investment is usually responsible for 60% of increases in productivity, using alternatives to manpower should be attributable for savings of 5,100 per year with a productivity increase of only 1%. Defense, of course, would be required to invest more than its planned \$35M to attain the reduction of 5,100 manpower spaces.

Recapitulation:

The order of magnitude of the savings that could be realized by applying the examples used above would be about 31,000 spaces over 10 years as a result of basing resignments and contracting; about 16,500 spaces from civilianization and consolidation of functions on a more or less one time basis; and about 5,100 spaces annually from using alternatives to manpower. (Total 52,600 spaces.)

CONTRACTING FOR SERVICES
IN THE
DEPARTMENT OF DEFENSE

A Report to the
Defense Manpower Commission

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October 1975

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Views or conclusions contained in this document should not be interpreted as
representing official opinion or policy of the Defense Manpower Commission.

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J-1

NOTICE OF PRIVILEGED INFORMATION

This document contains privileged information about the costs, manning, and organization of a contractor's operation at Vance Air Force Base. Access to this information is to be limited to Government agencies only. Specifically, no contractors are to receive Tables 15 thru 19 on Pages 40, 41 and 43; the first two paragraphs of text on Page 42; or the first sentence of the second paragraph on Page 46.

DMC NOTE: The privileged information items referred to above has been deleted from the copies of this report released outside U.S. Government agencies or reproduced for publication in the Defense Manpower Commission Staff Studies. U.S. Government agencies having official need for the deleted portion may request the information from the Defense Manpower Commission or (after the Commission's termination) the Logistics Management Institute.

SUMMARY

This report provides the Defense Manpower Commission with specific information on the use of contractors for base operations support on CONUS military installations.

The Department of Defense identifies and reviews opportunities for using contractors to provide support services through its commercial or industrial activities program. This program implements OMB Circular A-76, "Policies for Acquiring Commercial or Industrial Products or Services for Government Use." Although the program is not oriented toward base management, it encompasses many of the products and services which comprise base operations support.

The annual report prepared under the commercial or industrial activities program shows that of the \$4.3 billion expended for base services and products in FY 74, only 20% was for contractor support. Almost 90% of the contract dollars were concentrated in a dozen functional areas in each Military Department, and 62% of the 7661 activities reviewed under the program included no contractor support at all.

There are valid reasons for not using contractors for base services in many instances. These reasons may relate to the military essentiality of the support, the need for military personnel trained in certain skills, the lack of suitable commercial sources, or the cost advantages of accomplishing the function in-house. However, the Military Departments have only recently placed much emphasis on the commercial or industrial activities program. It is expected that many of the functions now accomplished by Government employees will be converted to contract support as the traditional justifications for continued in-house support yield to the findings of carefully prepared cost comparisons.

Estimating the cost of contract support is one area in which the present DoD procedures for making cost comparisons can be improved. The Army and Navy, adhering

to DoD instructions, use Government prepared estimates of "the going contract price in a local or regional area." Frequently the estimates are made by applying local commercial hourly rates to an in-house workload. This procedure does not allow for the contractor's difference of organization or approach--only his ability or need to pay different wage rates and share overhead with non-Government business. The Air Force, rather than estimating contract costs, solicits bids and prepares an estimate of in-house cost using the same specifications. If a bid from a qualified contractor is lower than the estimated in-house cost, the contract is awarded. If not, the operation continues (or converts to) in-house. The Air Force procedures have proven to be effective; they should be adopted throughout the DoD.

This report identifies 24 functional areas in which the economic feasibility of contract support has been demonstrated either by the present use of contractors or by cost comparisons prepared by the Military Departments. There still are many installations that use no contractor support in most of these functional areas. Thus, the opportunities for greater savings through contracting for base services appear to exist in the same functional areas which now account for most contractor support.

There are other opportunities for effectively using contractors for base operating support which cannot be identified in the present commercial or industrial activities program. The functional areas which are inventoried and reviewed under the program are specific products and services; they are not the generic functions normally used to delineate management responsibilities within base operations support. Yet it is in base management--the function of management--that contractors believe they can contribute the most to efficient base operating support.

An excellent example of the benefits from a contractor approach to base management is provided by a comparison of the base operations support costs of Vance

and Reese Air Force Bases. Vance is contractor-operated; Reese is not. A RAND Corporation study¹ shows that Vance accomplishes the same mission under approximately the same circumstances as Reese with 74% of the manpower and 87% of the budget. Much of the difference is attributed to the contractor's management approach: The way he organized for the task, the ratio of supervisors to employees, and his cost consciousness.

In the long run, efficient base operating support depends on effective management. The present DoD approach to contracting for base services focuses on individual products and services. Contractors believe, and have demonstrated at Vance AFB, that savings in base operations support costs and manpower can be obtained by using commercial sources to provide management as well as products and services. To recognize and exploit opportunities for this type of contract support, functions must be defined to include substantial management responsibility. These opportunities often can be created by grouping together products and services on an installation or within a regional area. The DoD should take measures to develop situations in which contractor management can be used to provide base operating support.

¹Robert M. Paulson and Arnold Zimmer. An Analysis of Methods of Base Support: Contractor Operations vs. Standard Operations at Two Undergraduate Pilot Training Bases, The RAND Corporation, Santa Monica, California, March 1975.

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Appendix A - Functional Codes for DoD Commercial or Industrial Activities and DoD Contract Support Services

Appendix B - Extent of Contract Support: FY 74

Appendix C - Army Cost and Population Data

DEFINITIONS*

A "new start" is a newly established Government commercial or industrial activity involving additional capital investment of \$25,000 or more or additional annual costs of production of \$50,000 or more. A reactivation, expansion, modernization or replacement of an activity involving additional capital investment of \$50,000 or more or additional annual costs of production of \$100,000 or more are, for purposes of this Circular, also regarded as "new starts." Consolidation of two or more activities without increasing the overall total amount of products or services provided is not a "new start."

A Government commercial or industrial activity is one which is operated and managed by an executive agency and which provides for the Government's own use a product or service that is obtainable from a private source. The term does not include a Government-owned contractor-operated activity.

A private commercial source is a private business concern which provides a commercial or industrial product or service required by agencies and which is located in the United States, its territories and possessions, the District of Columbia, or the Commonwealth of Puerto Rico.

* OMB Circular No. A-76, "Policies for Acquiring Commercial or Industrial Products and Services for Government Use."

I. INTRODUCTION

A. PURPOSE

As part of its investigation of the overall manpower requirements of the Department of Defense (DoD), the Defense Manpower Commission is addressing the question "How can manpower be utilized more effectively?" The issue encompasses all manpower available to the DoD: active and reserve military, Government employed civilians, and other civilians whose services are obtained through private commercial sources. Particular interest has been focused on the use of contractors to provide support services on military installations.

This report is the product of a 90-day study conducted by the Logistics Management Institute to provide the Defense Manpower Commission with specific information about the use of private commercial sources by the DoD for base operating support (BOS). The objectives of this study are limited:

- To identify the base operating support functions performed under contract.
- To compare contractual services with similar functions performed in-house and to explain relative efficiencies.
- To identify areas in which contracting for services represents the best opportunities for savings in manpower costs.
- To provide information from which management principles can be translated into effective policies by the DoD.

B. BACKGROUND

Base operating support encompasses a wide variety of activities required to operate and maintain a military installation and provide services to DoD organizations and individuals at or near the installation. These activities include operation of utility systems, maintenance of real property, provision of logistics support to military

organizations, and provision of support services to military and DoD civilian personnel. In FY 74 12% of the active duty military and 29% of the civilian manpower of the DoD were employed in BOS activities. Table I shows the military and civilian manpower in each Military Department that was devoted to BOS at the end of FY 74.²

Although BOS is identified as a subcategory of both Mission Support Forces and Central Support Forces,³ it is neither funded nor managed as a separate support mission. Throughout the DoD the activities comprising BOS are primarily managed as separate functions. For example, the base supply activities are a functional responsibility of the Deputy Assistant Secretary of Defense (Supply, Maintenance, and Services) who establishes policy for supply operations and monitors policy implementation through functionally oriented staff elements at each echelon of command. Similarly, the real property maintenance activities are a functional responsibility of the Deputy Assistant Secretary of Defense (Installations and Housing) who monitors these activities through civil engineering or facility management staffs. Thus, within the Office of the Secretary of Defense, responsibility for BOS is dispersed.

The DoD has established the commercial or industrial activities program for identifying and reviewing opportunities for the use of contractors to provide support services.⁴ It, too, is functionally structured and includes but is not limited to the activities involved in BOS. The program is a functional responsibility of the Deputy Assistant Secretary of Defense (Procurement) and is implemented by functionally oriented

²Department of Defense, Manpower Requirements Report for FY 1976, February 1975.

³Mission Support Forces and Central Support Forces are two of six Defense Planning and Programming Categories used to aggregate units performing similar activities.

⁴Department of Defense Directive Number 4100.15, "Commercial or Industrial Activities," July 8, 1971 and Department of Defense Instruction Number 4100.33, "Operation of Commercial or Industrial Activities," July 16, 1971.

TABLE 1
BASE OPERATING SUPPORT
FY 74 END STRENGTHS

(Thousands)

	TOTAL	BOS	% BOS
<u>Army</u>			
Military	782.9	45.8	5.8
Civilian	342.2	125.7	36.8
<u>Air Force</u>			
Military	643.8	152.1	23.6
Civilian	273.6	99.7	36.4
<u>Navy</u>			
Military	545.7	36.9	6.8
Civilian	306.2	48.2	15.7
<u>Marine Corps</u>			
Military	188.8	24.3	12.9
Civilian	17.5	12.4	70.9
<u>Defense Agencies</u>			
Military*	--	--	--
Civilian	74.7	6.8	9.1
<u>Total DoD</u>			
Military	2,161.2	259.1	12.0
Civilian	1,014.2	292.8	28.9

* Military in Defense Agencies included in the Services above.

Source: Manpower Report for FY 1976
 (DoD Feb. 1975)

staff elements throughout DoD. The DoD program implements OMB Circular A-76, "Policies for Acquiring Commercial or Industrial Products or Services for Government Use."

A-76 establishes guidelines "...in furtherance of the Government's general policy of relying on the private enterprise system to supply its needs." It also allows that "...in some circumstances, however, it is in the national interest for the Government to provide directly the products and services it uses." The circular defines the circumstances under which the Government may provide commercial or industrial products and services for its own use, specifies the use of comparative cost analyses to support decisions to rely upon a Government activity for reasons involving relative costs, and prescribes measures for administering the policy. Those measures include compiling and maintaining an inventory of commercial or industrial activities, conducting triennial reviews of these activities, and evaluating "new starts" to determine whether the product or service can be obtained from commercial sources.

The guidelines of OMB Circular A-76 are implemented by DoDD 4100.15 and DoDI 4100.33. DoDD 4100.15 prescribes Department of Defense policy and assigns responsibilities for implementation of the program. In effect, the directive reiterates policies of A-76 with added emphasis on obtaining at least cost to the Government those products and services which need not be performed internally in order to meet military readiness requirements. DoDI 4100.33 prescribes procedures for implementing the program. It defines 101 functional areas as commercial or industrial activities,⁵ establishes requirements for inventorying and reviewing these functional areas, and specifies procedures for conducting comparative cost analyses. It specifically excludes from the program:

⁵The functional areas are identified in Appendix A.

- Products or services obtainable from other Federal Agencies which are authorized or required by law to furnish them.
- Products or services procured in accordance with treaties or international agreements.
- Managerial advisory services such as those normally provided by an office of general counsel, a management and organization staff, automatic data processing staff, or a systems analysis unit.

C. STUDY APPROACH

There are many facets to the topic of contracting for base services: legal, political, military and economic. This study focuses only on the economics. Furthermore, the emphasis is on presenting quantitative evidence of the extent of contracting for base services and the opportunities for greater use of contractor support.

The major obstacle to conducting a study of this nature is the unavailability of data. As previously noted, BOS is not managed in the DoD as a separate mission. Thus program and budget data are not readily available. For example, the DoD was unable to provide information on the magnitude of BOS in the United States or the extent of contracting within BOS. The raw data exist but could not be compiled within the time requirements of the study.

The only readily available data on the extent of base services contracting is from the commercial or industrial activities program. This program is not oriented to base management. Its purpose is to implement OMB Circular A-76, and its scope neither is limited to BOS nor includes all BOS functions. However, because the commercial or industrial activities program has provided the principal mechanisms for identifying and reviewing opportunities for contractor support, the data compiled under this program do reflect the current state of base service contracting. Consequently, in this study, data from the Commercial or Industrial Activities Inventory Report are used to identify the functional areas in which most contract support now occurs. In addition, information from

cost analyses prepared under the commercial or industrial activities program is used to compare contract and in-house support. The end result is a list of functional areas in which contractor support has been demonstrated to be feasible and in which there appear to be more opportunities to contract for base services.

There are other opportunities for using contractors for BOS which cannot be identified in the commercial or industrial activities program. The functional areas which are inventoried and reviewed under the program are specific products and services; they are not the generic functions normally used to delineate management responsibilities within BOS. Yet it is in base management--the function of management--that contractors believe they can contribute the most to efficient BOS.

An excellent example of the benefits from a contractor approach to base management is provided by a comparison of the BOS costs of Vance and Reese Air Force Bases. Vance is contractor-operated; Reese is not. A RAND Corporation Study⁶ showed that Vance accomplishes the same mission under approximately the same circumstances as Reese with 74% of the manpower and 87% of the budget. Much of the difference is attributed to the contractor's management approach: the way he organized for the task, the ratio of supervisors to employees, and his cost consciousness.

The theme of this report is that the opportunities for better utilization of manpower resources for BOS are in the efficient, effective management of military installations. Some of this management can come from commercial sources. But to fully exploit the potential for this type of contractor support, the functional areas which are contracted must be defined broadly enough to include a substantial portion of base management responsibilities.

⁶Robert M. Paulson and Arnold Zimmer. Op cit.

II. THE PRESENT STATUS OF BASE SERVICE CONTRACTING

A. THE APPROACHES USED BY THE MILITARY SERVICES

The DoD program for operation of commercial or industrial activities implies single function contracting. Each service or product at each base is reviewed to determine if it is feasible to obtain that service or product from private commercial sources. If it is both possible and militarily and economically desirable to use commercial sources, the usual practice is then to obtain each service or product under separate contract. The DoD policies do not preclude other approaches. However, the implementing instructions, including the reviewing, reporting and cost comparison procedures, imply single function contracting, and the Military Departments have generally interpreted DoD policy as prescribing this approach.

Both the Army and Navy have decentralized implementation of the commercial or industrial activities program. In the Army each installation reviews each functional area according to an Army-wide schedule, conducts the comparative cost analysis when required and recommends either continuing the function under the existing method of performance or converting. In general, a cost comparison is required whenever the decision on method of performance is based on economic considerations. If a cost comparison is used to justify in-house performance or if a conversion to contract will result in an adverse personnel action, (e.g., reduction in force, transfer of an individual to a less desirable position, etc.) the cost comparison is audited by the Army Audit Agency. Approval authority, except for new starts, is delegated to major commanders.

The Navy program is very similar to the Army's with the exception that cost comparisons are not audited. The Navy has also just this year established goals of accomplishing 50% of guard services, 60% of refuse collection, and 70% of custodial services via contract support.

The Air Force is taking a different approach. Although the inventorying and reviewing of functions at individual installations is continuing in accordance with DoDI 4100.13, there is strong central direction of the program by the Air Staff. In each of the last several years, the Air Staff has reviewed selected functions, Air Force-wide, and established that some must be accomplished in-house for reasons other than cost (e.g., military essentiality) and others can be accomplished in-house or by contract based on least cost to the Government. When the method of performance of a function can be decided on the basis of cost, the Air Staff has directed the preparation of cost analyses and reviewed their results. For example, the Air Staff has established that, in general, guard services, aircraft refueling services and rodent control are to be performed in-house for reasons other than cost. These reasons include the need to use military personnel to accomplish direct combat support functions, the integration of the civilian workforce with needed military personnel, and the need to maintain sufficient numbers of trained military personnel in CONUS to meet overseas assignment requirements. The method of performance of the following functions will be based on cost considerations: custodial services, laundry and dry cleaning, bus services, food services, office equipment repair, refuse collection and disposal, motor vehicle operations and maintenance, and audio visual services.

The rationale for the centralized approach in the Air Force stems in part from the different role of BOS in the Air Force compared to that in the Army and Navy. In the Army and Navy, BOS primarily provides fixed-site services (e.g., theaters, commissaries, housing, etc.) to military units which provide their own necessary services (e.g., food services, transportation, supply, etc.) In the Air Force, BOS provides both fixed-site and necessary services to operating units. Thus in the Air Force, direct support for mission forces is integrated into BOS; in the other services it is not. Consequently, not only is a greater percentage of BOS accomplished by military manpower in the Air Force, but

decisions to use contract support often must consider the world-wide requirements for military personnel skilled in BOS functions. Only the Air Staff has the perspective needed to make such decisions affecting world-wide manpower.

There is one other major difference between the approach used by the Air Force and that used by the Army and the Navy. It concerns the methods used to obtain the cost of the contract alternative for a function which is being performed in-house. DoDI 4100.33 states that the contract cost used in a cost comparison will normally be "the going contract price in a local or regional area." Several sources are suggested for obtaining assistance in establishing comparable contract costs. The implication is that the contract cost used in the analysis is to be a Government estimate and that the solicitation of firm bids from commercial sources will be a consequence of deciding that contract support is likely to cost less than continued in-house operation. Both the Army and Navy follow the procedures implied by DoDI 4100.33.

The Air Force, rather than estimating contract costs, makes bid solicitation a part of the decision process. Once it is decided that the method of performance is to be based on cost, the Air Force estimates the cost of in-house performance. Bids for performance of the function are then solicited from prospective contractors. If a bid from a qualified contractor is less than the estimated cost of performing the function in-house and the contractor's proposal is otherwise satisfactory, the contract is awarded. Otherwise the operation continues in-house. We believe the Air Force procedures result in more realistic estimates of contract cost than do the procedures used by the Army and Navy. The subject is discussed later in this report.

B. THE EXTENT OF BASE SERVICE CONTRACTING

The primary source of information about the extent of service contracting in the DoD is the Commercial or Industrial Activities Inventory Report. This is an annual report established by DoDI 4100.33. For each installation it identifies the functions that have

been defined as commercial or industrial activities and provides information about the manpower used and cost consumed in these activities, whether performed in-house or by contract.

The scope of the Inventory Report, as well as that of the entire commercial or industrial activities program, is not limited to BOS. Of the eight functional categories defined in DoDI 4100.33 and shown in Table 2, two, noted by asterisks, consist solely of non-BOS functions and are therefore excluded from the study. In the other six categories it is impossible to segregate BOS from non-BOS activities. Consequently, we have compiled information from the Inventory Report on the assumption that all activities in these six categories contribute to BOS.

Figure 1 shows the changes in cost and percentages of in-house and contract support services, as reflected in the Inventory Reports for the last three years. The reports indicate that the Air Force has shown little change over the three-year period, while the Army and Navy have steadily, though slowly, increased the percentage of activities performed under contract. In addition to the activities identified in the Inventory Report, however, the Air Force has six CONUS installations at which a single contractor provides almost all support services. These installations are not included in the Inventory Report because the functional areas defined in DoDI 4100.33 are individual products or services. Since the contractors at the six installations provide multiple products and services their activities cannot be identified to a single functional area and are therefore omitted from the report.

A summary of the FY 74 Inventory Report by functional category is shown in Table 3. Note that no contract activities in category X, "Products Manufacturers/Fabricated In-House" require review or inventory. Hence the inventory reflects zero in this category for both the Air Force and Navy. We assume the 1% contracting in category X for the Army represents former in-house activities that have been converted to contract. A listing of

TABLE 2

COMMERCIAL OR INDUSTRIAL ACTIVITIES
FUNCTIONAL CATEGORY GROUPINGS

CODE

J	Maintenance and/or Repair of Equipment (Intermediate/ Direct/General)
K*	Nonmission-Essential Repair; Maintenance Modification, Alteration and/or Rebuild of Equipment (Depot/Indirect)
M*	Mission-Essential Repair, Maintenance Modification, Alteration and/or Rebuild of Equipment (Depot/Indirect)
S	Installation Services
T	Other Nonmanufacturing Operations
W	Automatic Data Processing
X	Products Manufactured/Fabricated In-House
Z	Repair, Alteration & Minor Construction of Real Property

* Not included in Base Operating Support.

TOTAL IN-HOUSE AND CONTRACTED
SERVICES BY FISCAL YEAR

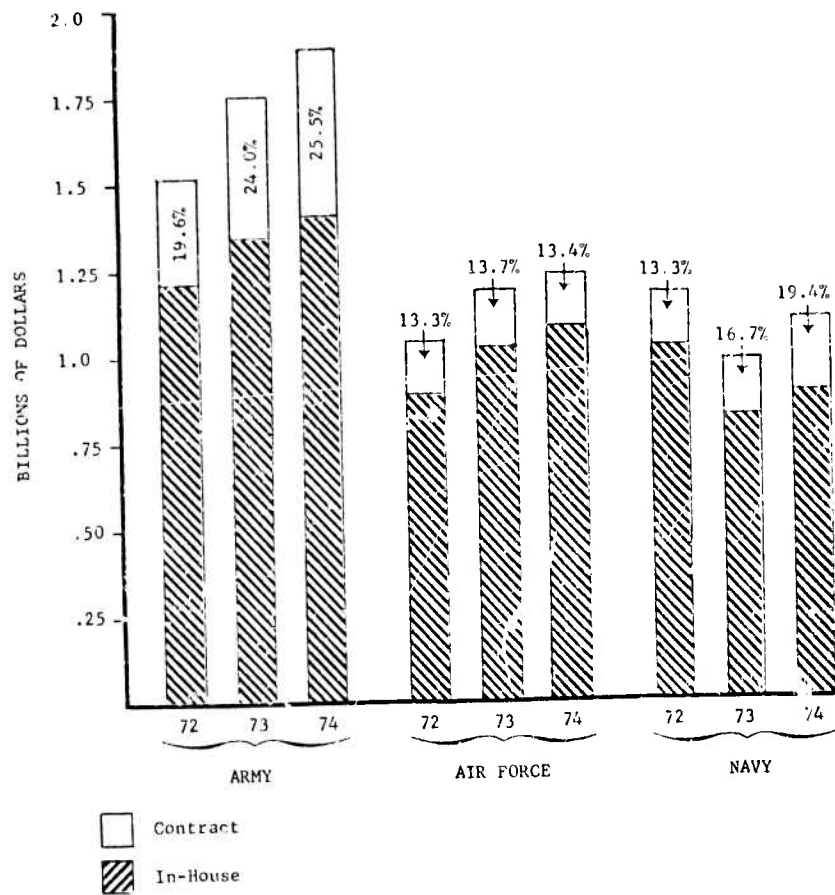


FIGURE 1

TABLE 3
CONTRACTED SERVICES BY FUNCTIONAL CATEGORY
 FY 74 (\$ in Thousands)

CATEGORY	ARMY		AIR FORCE		NAVY	
	\$ TOTAL	% CONTRACT	\$ TOTAL	% CONTRACT	\$ TOTAL	% CONTRACT
J	156,251	38.046	213,298	9.198	70,504	1.755
S	520,428	136.491	449,518	67.725	389,326	51.524
T	726,460	202.961	207,567	9.856	254,395	24.654
W	216,450	50.011	128,749	7.597	153,622	43.394
X	135,990	1.326	2,983	0*	133,809	0*
Z	128,099	51.668	241,127	74.728	99,888	32.071
TOTAL	1,883,678	480,503	1,240,256	166,104	1,101,544	213,398

* Contract activities in Category X (Products Manufactured/Fabricated In-House) do not require review or inventory.

total cost, contract cost, and percentage on contract for every functional area in each Military Service is in Appendix B.

Although there are 101 functional areas defined in the commercial or industrial activities program, 88% - 90% of the contract expenditures are concentrated in a dozen functional areas in each Military Department. Table 4 identifies the 12 functional areas in each Military Department in which the most contracting (in dollars) has occurred.

A different perspective on the extent of contracting can be obtained by examining the number of bases reporting each function and, of these, the number which have contracted for at least a part of the workload. Table 5 shows the functions accomplished most frequently by contract support in the Army, Air Force, and Navy. A complete listing of the number of installations reporting each activity, the number of installations which accomplish a portion of the workload by contract support, and the average cost of the function at each installation is included in Appendix B.

C. COMPARISON OF IN-HOUSE AND CONTRACTOR SUPPORT

There are at least three approaches which can be used for comparing contracted services with similar functions performed in-house.

- Directly compare efficiencies (output/input).
- Compare the existing method of performance with a hypothesized alternative.
- Examine conversions between in-house and contract support.

Each approach has its limitations. Usually there are few situations in which the needed parameters can be identified and observed. The situations in which the parameters are identifiable and observable frequently are a biased representation of support activities. Despite the limitations, however, the combined information obtained via these approaches provides insight into the circumstances under which contractor support has been demonstrated to cost less than in-house support and the reasons contractors have been able (in these circumstances) to provide base services for lower costs.

TABLE 4

CONCENTRATION OF CONTRACTING: THE TWELVE FUNCTIONAL AREAS
IN EACH MILITARY DEPARTMENT WITH THE GREATEST CONTRACT DOLLARS

CODE	FUNCTION	ARMY	AIR FORCE	NAVY
J501	Aircraft Maintenance	X	X	
S708	Laundry, Dry Cleaning Services	X	X	
S709	Custodial Services	X	X	X
S712	Refuse Collection & Disposal Services	X	X	X
S713	Food Services	X	X	X
S715	Office Equipment		X	
S717	Motor Vehicle Maintenance		X	
T802	Cataloging		X	
T804	Training & Consultant Services	X		
T807	Photographic, Film & TV Services		X	
T809	Administrative Telephone Services	X		X
T813	Contractor Engineering & Tech. Svcs. (CETS)			X
T814	Fueling Service (Aircraft)			X
T817	Other	X		X
W824	Data Processing Services	X		X
W825	Maintenance of ADP Equipment	X		X
W826	Systems Design, Development & Programming Services	X	X	X
Z992	Buildings & Structures	X	X	X
Z994	Surfaced Areas		X	X
CONTRACTS COST FOR 12 FUNCTIONS		\$380,690,000	\$137,019,000	\$175,466,000
% OF TOTAL CONTRACTS		88.7%	90.1%	87.8%

TABLE 5

FUNCTIONS ACCOMPLISHED MOST
FREQUENTLY BY CONTRACT SUPPORT*

(FY 74 Inventory Report)

CODE	FUNCTIONS	ARMY	AF	NAVY
S709	Custodial Services	X	X	X
S712	Refuse Collection and Disposal Services	X	X	
S713	Food Services	X		X
S717	Motor Vehicle Maintenance	X	X	X
S725 - S730	Utility Systems	X		X
T807	Photographic, Film and TV Services	X		
T809	Admin. Telephone Services	X		
W824	Data Processing Services	X		
Z992	Buildings and Structures		X	
Z994	Surfaced Areas		X	

*These are the functions:

1. Which are identified as commercial or industrial activities at more than 75 installations in a Military Service, and
2. For which at least 25% of the installations which have the function accomplish a portion of it under contract.

1. Direct Comparison of Output Per Unit Input

If one were able to identify and measure all outputs and inputs of an operation as well as the influences of the circumstances under which the outputs were produced, the most objective method of determining the relative efficiencies of contractor and in-house operations would be to compare output per unit input for the two methods of performance. Unfortunately, the conditions for such an ideal comparison do not exist. Base services outputs, though similar at most bases and sometimes easily described, are seldom quantitatively measurable and are frequently produced under different circumstances. Even the Government inputs, whether to a contractor or an in-house operation, frequently cannot be completely identified or quantified. Thus, to conduct comparisons of output per unit input, it is necessary to substitute for true outputs and inputs proxies which are identifiable, measurable and, hopefully, representative of the relative magnitudes of actual inputs and outputs.

The time and data limitations of this study did not permit full execution of this approach to comparing contractor with in-house operations. However, early in the study we tried it, using some readily available information from 25 Army bases. Our first effort was to look for correlation between the efficiency of an installation in providing base services and the percentages of support provided by contractors. Efficiency was defined as output per unit cost. Cost was total in-house (less investments) and contract costs for all commercial or industrial activities reported in the FY 74 Inventory Report. Base population (resident and non-resident) was used as the output proxy. The rationale for this selection of an output proxy was that a primary mission of Army base operations support is to provide services to the personnel employed by or assigned to the base. The percentage of support provided by the contractor was defined as the cost of contractor support (X 100) divided by the total in-house and contract costs for the base, as reported in the Inventory Report. Figure 2 is a plot of the efficiency versus percentage of contractor support for the sum total of commercial and industrial activities on each of the

EFFICIENCY OF BASE SERVICES
AS A FUNCTION OF CONTRACT SUPPORT *

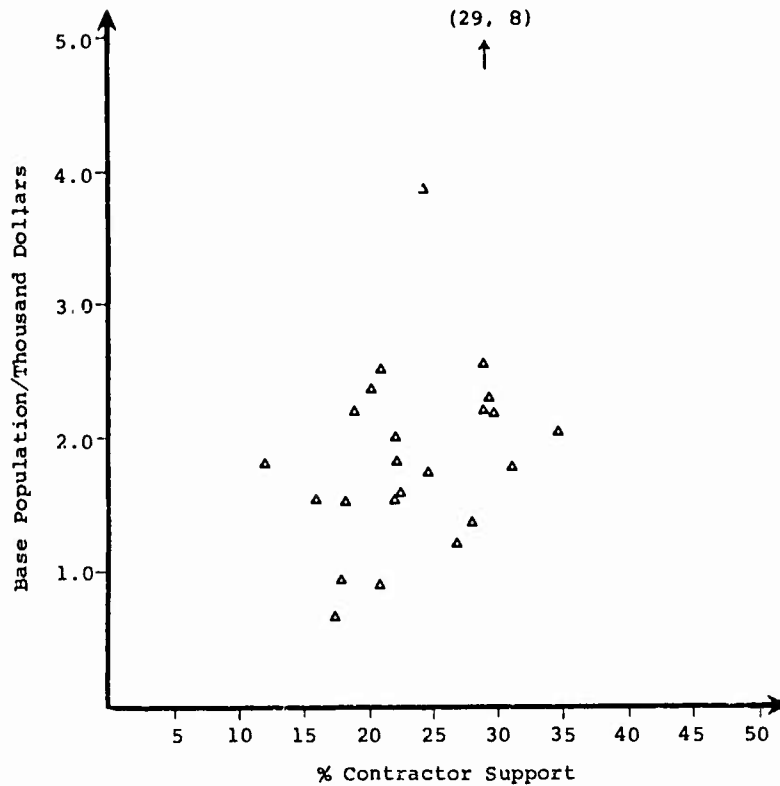


FIGURE 2

* The data are tabulated in Appendix C.

25 largest (by population) Army bases. No trend is apparent. Statistical analysis of the data reveals that there may be a positive correlation between efficiency and the percentage of contractor support. A positive correlation would indicate that, in general, bases with a high percentage of contractor support also provide these services more efficiently. However, the indication is weak. Therefore, one can only conclude that the results are inconclusive.

The same type of analysis for the food services function produced more useful results. Figure 3 is a plot of the number of people supported per thousand dollars of food services expenditures versus percentage of contract support. Only those bases spending over one million dollars on food services are included. This time a trend is evident and statistically significant. The more contractor support used, the more efficiently the food service function is performed. This confirms what the Military Services already know: food service is a function for which contractor support frequently costs less than in-house support. As of the end of FY 74 the Army accomplished 32 percent of the food services function by contract; the Navy 18 percent. Food services was also one of the functional areas selected for review by the Air Force during FY 75; indications are that most food services activities reviewed will be converted to contract support.

Several other comparisons of output per unit input were attempted. None produced conclusive results. For most functional areas we were unable to identify suitable output proxies. In a few cases, reasonable output measures existed, but it was apparent that many factors other than percentage of contractor support had substantial influence on the cost of services. Some of these factors are the type of facilities, the type of military forces tenant on the base, the geographical location, the local economy, and the climate. Additionally, many of the activities were so infrequently performed under contract that there was no basis for directly comparing contractor efficiency. Nonetheless, we believe that the statistical comparison of efficiencies is a potentially

EFFICIENCY OF FOOD SERVICE
AS A FUNCTION OF CONTRACT SUPPORT*

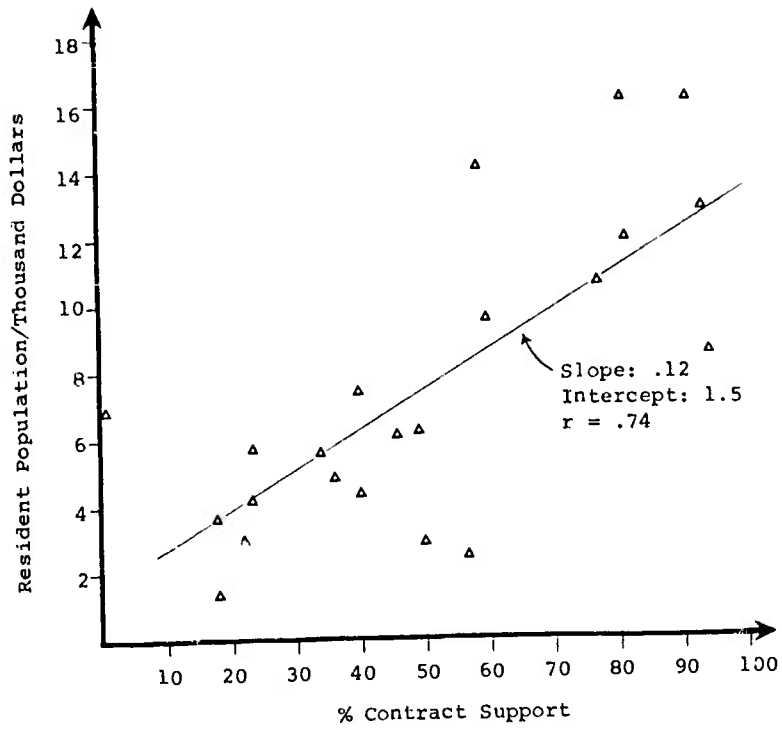


FIGURE 3

*The data are tabulated in Appendix C.

rewarding method of analyzing the economic benefits of contract support. We encourage the DoD to more fully explore this approach.

2. Comparison With A Hypothesized Alternative

The DoD commercial or industrial activities program requires, under certain circumstances, that a comparative cost analysis be made to compare the cost of continuing an activity under its present method of performance with the cost of converting to a hypothesized alternative. If the activity is being performed under contract, the alternative is usually the initiation or expansion of an in-house operation. If the present method is in-house, the alternatives may include contract support, interservice support, or support from another Government agency.

Cost comparisons are made at the installation level. Since they are very time consuming methods for justifying in-house or contract performance, the Military Departments tend to avoid them if possible.⁷ This means justifying the method of performance on a basis other than cost. However, when the decision as to the method of performance of an activity is based solely on economic considerations a cost comparison is required. Cost comparisons are also required when: (1) the decision to rely on a commercial source will cause the Government to finance, directly or indirectly, \$50,000 or more for costs of facilities and equipment; (2) services being procured from commercial sources might possibly be provided by Government sources at a lower overall cost to the Government; or (3) additional manpower authorizations are needed by installations to convert uneconomical contracts to inservice operation. Also, a cost comparison may be made any time if requested by: a commander investigating economic efficiency, a higher headquarter level conducting a special study, or a nonservice source.

⁷Air Force Regulation 26-12 "Use of Contract Services and Operation of Commercial or Industrial Activities," 29 January 1974, specifically directs the use of noncost comparison justifications whenever possible.

LMI examined 193 cost comparisons from the three Military Departments. The Air Force, directing the program from a centralized position, provided 79 comparisons covering four functional areas. The Army (represented by TRADOC) provided 69 comparisons covering 23 functional areas. The Navy (represented mostly by Public Work Centers) provided 47 comparisons covering 18 functional areas. The number of cost comparisons reviewed in each functional area, by Service, is shown in Table 6. Table 7 shows the number favoring each type of performance--contract and in-house.

All but nine of the Air Force cost comparisons favored contract support. Two of those nine were in installation bus service (S706), one in food service (S713) and the others were in laundry and dry cleaning services (S708). All but six of the Navy cost comparisons favored in-house performance, usually by a large amount.

The Army cost comparisons were about equally split between contractor and in-house. Nine of the functions were shown by the cost comparisons to cost less, in most cases, if accomplished by contract support. Four of the functions predominately favored in-house performance. For the other ten functions, the Army cost comparisons showed mixed or inconclusive results. These findings are summarized in Table 8.

3. Examination of Conversions

This approach to comparing in-house and contract support examines only those activities that have been converted from one to the other method of performance. The objective is to determine how much was gained (saved) by the conversion.

The first thing that becomes apparent upon examination of conversions is that there have not been very many. During the three year period FY 72-FY 74 over five thousand in-house activities were reviewed by the Services for possible conversion to contract support. Less than one hundred were either completely or partially converted.

The FY 74 Inventory Report identified 53 activities that were converted to contract for reasons of cost. These conversions are identified by function in Table 9.

TABLE 6
NUMBER OF COST COMPARISONS BY FUNCTION

CODE	FUNCTION	ARMY	NAVY	AIR FORCE
J501	Aircraft Maintenance	3	1	
J503	Missile Maintenance	2		
J505	Combat Vehicle Maintenance	1		
J506	Noncombat Vehicle Maintenance	3	1	
J507	Electronic & Communications Equipment Maintenance	1		
J511	Special Equipment Maintenance	4		
E706	Installation Bus Services	5		3
E708	Laundry, Dry Cleaning Services	4		16
E709	Custodial Services	9		27
E710	Insect & Rodent Control	1	3	
E712	Refuse Collection & Disposal Services	6	3	
E713	Food Services	4	1	33
E714	Furniture	2		
E715	Office Equipment	5		
E716	Motor Vehicle Operations	4	4	
E717	Motor Vehicle Maintenance	3	1	
E724	Guard Services	4		
E725	Electrical Plants & Systems		5	
E726	Heating Plants & Systems		4	
E727	Water Plants & Systems		5	
E728	Sewage & Waste Plants & Systems		4	
E729	Air Conditioning & Refrigeration Plants		5	
T801	Packing & Crating	1		
T807	Photographic, Film & TV Services	2		
T811	Air Transportation Services		1	
T812	Rail Transportation Services	1		
T814	Fueling Service (Aircraft)	1	1	
WB24	Data Processing Services	3	1	
WB25	Maintenance of ADP Equipment		1	
WB26	Systems Design, Development & Programming Services	3	1	
Z992	Buildings & Structures		5	
TOTAL		69	47	79

TABLE 7
SUMMARY OF COST COMPARISON RESULTS

	NUMBER OF COMPARISONS	COMPARISONS FAVORING CONTRACT	COMPARISONS FAVORING IN-HOUSE
AIR FORCE	79	70	9
ARMY	69	33	36
NAVY	47	6	41

TABLE 8
SUMMARY OF ARMY COST COMPARISONS

Functions Favoring Contract

J501 Aircraft Maintenance
 J503 Missiles Maintenance
 J505 Combat Vehicles Maintenance
 J506 NonCombat Vehicles Maintenance
 J507 Electronic & Communications Equipment Maintenance
 S709 Custodial Services
 S712 Refuse Collection & Disposal Services
 S713 Food Services
 S724 Guard Services

Functions Favoring In-House

J511 Special Equipment Maintenance
 S717 Motor Vehicle Maintenance
 T807 Photographic, Film & TV Services
 W826 Systems Design, Development & Programming Services

Half of the conversions were in the Air Force, and most of those were in the custodial services function (S709). Table 9 also shows the average percent of in-house cost saved by the conversions. Although the indicated savings are substantial, we note that the savings are strongly weighted by Air Force data. In no functional area were Army or Navy savings identified in the Inventory Report at more than one installation. (There may have been savings at other installations, but the savings are not identified in the report.) The FY 74 Inventory Report also showed nine partial conversions from contract to in-house. All but one was in the Army. No savings were identified.

Although the FY 75 Inventory Report has not yet been compiled, we were able to obtain a list of FY 75 conversions in the Army Training and Doctrine Command. There were a total of twelve, one of which was a conversion from contract to in-house in the missile repair function (J503). The other eleven conversions were to contract. The eleven conversions and the average percent saved by the conversions in each function are shown in Table 10. Not only are the savings modest, but 45 percent of the savings are in costs which are not funded by the Army: Federal taxes, depreciation, interest and insurance.

The only other information on conversions which was available for examination was from recent cost studies conducted by the Air Force. In FY 75, the food service function (S713) at 33 Air Force installations were reviewed for possible conversion to contract. All but one review indicated that performance by contract would cost less than by in-house. The cost differences ranged from 13% to 53%. The average savings as a percentage of in-house cost was 31%. The one cost comparison favoring in-house performance did so by 24%.

The difference in results obtained from Air Force cost comparisons and those of the Army and Navy are striking. The Air Force, as previously noted, centrally directs the cost comparisons. When the Air Force decides that the method of performance of a function is to be based on cost, the cost comparisons have shown contract support to be the preferred method of performance, usually by a wide margin. In the Army and Navy,

TABLE 9

FY 74 CONVERSIONS FROM IN-HOUSE TO CONTRACT

CODE	FUNCTION	A	AF	N	AVG** SAVINGS
S708	Laundry, Dry Cleaning Services	0	2	1	39%
S709	Custodial Services	4	19	2	39%
S712	Refuse Collection & Disposal Service	1	2	1	47%
S713	Food Services	1	3	1	22%
S715	Office Equipment	1	1	0	--
W825	Maintenance of ADP Equipment	1	0	1	--
OTHER*		9	0	3	--
TOTAL		17	27	9	

* One conversion per function.

** Average Savings are computed only for those function for which savings were identified at more than one activity.

TABLE 10

FY 75 CONVERSIONS FROM IN-HOUSE TO CONTRACT

(ARMY TRAINING AND DOCTRINE COMMAND)

CODE	FUNCTION	#	AVG % SAVINGS
J507	Electronic and Communications Equipment Maintenance	1	10
S712	Refuse Collection and Disposal Services	1	3
S713	Food Services	4	8
S715	Office Equipment	1	9
S724	Guard Service	2	9
T814	Fueling Service (Aircraft)	2	10

the cost comparisons are directed by the local commander, and the estimates of contract support cost are made by Government personnel employed at the base. The conversions are few, and the expected savings are small. We believe the reason for the difference in results is the more reliable method used by the Air Force for obtaining estimates of contract cost.

The Air Force first produces an estimate of the in-house cost for the activity. It then solicits bids for performance of the activity under contract. The lowest responsive commercial bid is compared with the estimate of in-house cost; the lower of the two operates the function. This procedure accomplishes two major goals: (1) reliable estimates of contract cost are obtained because commercial sources are induced to give accurate estimates, and (2) because the lowest bidder probably will be awarded the contract, the activity will be performed at the lowest possible cost.

In contrast, the Army and Navy produce Government estimates of both in-house and contract cost. If contract support appears to be the least cost method of performance, then bids are solicited. The estimates of contract cost are usually unreliable. Frequently they are generated by applying estimated local hourly rates to an in-house workload. This does not allow for the contractor's difference of organization or approach--only his ability or need to pay different wage rates and share overhead with non-Government business. Sometimes informational quotations are requested from potential commercial sources. Not only may the requests be vague, but the contractors often believe that the quotations will be used solely to support the installations' decisions to continue activities in-house. Thus realistic contract estimates are viewed by the contractors as a waste of time. Consequently, Army and Navy estimates of contractor cost frequently are based on assumptions and "polite" responses from contractors; seldom are they based on accurate information.

III. OPPORTUNITIES FOR GREATER USE OF CONTRACTOR SUPPORT

A. OPPORTUNITIES WITHIN THE PRESENT DoD PROGRAM

In Section II of this report, we identified the activities in which the greatest use of contractors now exists. In addition, our reviews of Military Department prepared cost comparisons permitted identification of other areas in which greater use of contract support seems likely. More contract support in these same areas can be expected in the future. Only in the past couple of years have the Military Departments placed much emphasis on the commercial or industrial activities program. The Air Force, using its deliberate approach, has initially concentrated on those functional areas in which contracting is most prevalent in the Army and Navy. In the Army and Navy, as installation commanders become aware of successful contracting at other bases and feel the pressures of tight budgets, contract support can be expected to expand in these same functions.

In Table II we list the functional areas in which the economic feasibility of contract support has been demonstrated either by the present use of contractors or by cost comparisons prepared by the Military Departments. We also show the number of installations in each Military Department that are not now accomplishing a part of the workload in these functions by contract. There appear to be many opportunities for greater use of contract support in most of these functional areas.

The DoD is fully aware of the deficiencies in implementation of the commercial or industrial activities program. Actions are being taken by the Military Departments to improve procedures for conducting cost analyses and contracting for base services. There is every indication that as procedures improve, contractor support will be found economically feasible in a larger percentage of commercial and industrial activities.

TABLE 11
DEMONSTRATED OPPORTUNITIES
FOR CONTRACT SUPPORT

CODE	FUNCTION	ARMY		AIR FORCE		NAVY	
		# OF ACTIVITIES	# NOT USING CONTRACT	# OF ACTIVITIES	# NOT USING CONTRACT	# OF ACTIVITIES	# NOT USING CONTRACT
J501	Aircraft Maintenance	21	4	49	34	17	14
J503	Missiles Maintenance	5	4	2	1	6	3
J505	Combat Vehicles Maintenance	16	12	-	-	1	1
J506	Noncombat Vehicles Maintenance	44	13	-	-	7	4
J507	Electronic & Communications Equipment Maintenance	40	22	72	62	7	6
S708	Laundry, Dry Cleaning Services	42	22	21	6	23	16
S709	Custodial Services	109	18	88	4	104	40
S712	Refuse Collection & Disposal Services	80	19	76	43	61	15
S713	Food Services	105	43	158	138	111	38
S715	Office Equipment	51	3	25	2	13	2
S717	Motor Vehicle Maintenance	82	45	129	98	80	47
S724	Guard Services	60	42	108	108	108	88
6725-5730	Utility Systems	442	134	633	545	401	245
T802	Cataloging	9	8	5	2	5	4
T804	Training & Consultant Services	46	5	27	27	25	14
T807	Photographic, Film & TV Services	98	60	99	98	52	38
T309	Administrative Telephone Services	92	61	90	90	66	14
T813	Contractor Engineering & Technical Services	3	0	-	-	7	0
T814	Fueling Service (Aircraft)	15	13	83	83	36	12
W824	Data Processing Services	122	44	98	91	115	6
W825	Maintenance of ADP Equipment	38	0	5	0	32	7
W826	Systems Design, Development & Programming Services	83	20	57	54	68	51
Z992	Buildings & Structures	65	6	114	30	82	17
Z994	Surfaced Area	54	8	97	40	34	10

Unfortunately, the present DoD approach to seeking opportunities to use contractor support may not in the long run, result in much savings to the DoD. The reasons lie in the DoD definition of commercial or industrial activities as individual products and services; the best opportunities for contractor support of DoD installations appear to be available only through a much broader definition of commercial or industrial activities.

B. OPPORTUNITIES THROUGH BROADER DEFINITION OF ACTIVITIES

1. Limitations of Single Function Contracting

The present DoD program for using commercial sources for base services has been described as single function contracting. Individual products or services at each base are obtained from separate contractors. Frequently, the contractor is a small business which, in the case of services, provides what amounts to the labor force and first line management. Types of activities which are or will be accomplished by contract under the existing DoD program are predominately either those requiring specialized skills which are readily available in the local economy (elevator inspection, tile work, generator rewinding, etc.) or those requiring a low skill, labor intensive effort (custodial services, food service, refuse collection, etc.). Those in the former category constitute a very small fraction of the total cost of base services and have traditionally been accomplished by contractor support. Those in the latter category now cost less through contract primarily because the contractor can pay lower wage rates. Although the law provides that pay rates for Federal blue collar employees be adjusted in accordance with local prevailing rates, under present procedures for making the adjustments the Government rate is likely to be 12 percent over the average rate prevailing in the local area.⁸

A specific example is provided by a General Accounting Office review of contracted janitorial services at McGuire Air Force Base. The review concluded that the

⁸ Comptroller General of the United States. Report to the Congress: Improving the Pay Determination Process for Federal Blue Collar Employees, (FPCD 75-122), The General Accounting Office, June 3, 1975.

annual savings are due primarily to the lower wage and benefits paid by the contractor. It was estimated that the Government's direct man-hour costs exceeded the contractor's by \$1.35, or 37%.⁹

Effort is being made to remove the wage differences. The General Accounting Office has called for revision of procedures for establishing Federal blue collar wages. In addition, the Congress in 1972 amended the Service Contract Act of 1965 for the express purpose of eliminating the gap between the wage and fringe benefit rates of service contract employees and the Federal Wage Board employees. The intent was to insure that service contract employees receive wages and benefits comparable to those received by Federal employees.¹⁰ In other words, any advantage contractors may now have in the cost of labor may be short-lived.

The present definitions of activities as individual products and services also make it difficult for the Government to either recognize the magnitude of overhead associated with in-house operations or to realize reductions of overhead when activities are contracted. The cost comparisons now conducted under the DoD commercial or industrial activities program examine only the incremental cost of an in-house or contract operation. This incremental costing approach is in accordance with the guidelines of OMB Circular A-76. However, because the DoD has defined activities as individual products and services, the total workload being evaluated in any one cost comparison is usually such a small portion of the total workload of the installation that seldom is any overhead allocated to the Government in-house operation.

⁹Comptroller General of the United States. The Air Force Should Review Contracting Out for Services at McGuire Air Force Base, (FPCD 75-119). The General Accounting Office, November 5, 1974.

¹⁰Subcommittee on Labor Management Relations of the Committee on Education and Labor, House of Representatives, Congress of the United States. Congressional Oversight Hearings: The Plight of the Service Worker Revisited, U. S. Government Printing Office, Washington, D. C., April 1975.

The impact of the incremental costing approach when activities are defined as individual products and services can be demonstrated by examining the maintenance operation at Ft. Sill, Oklahoma. Table 12 shows the manning for the in-house maintenance activities at Ft. Sill as reflected in the FY 74 Inventory Report. (Aircraft maintenance is being conducted under contract.) The in-house method of performance of the activities was justified on the basis of least cost to the Government. LMI examined comparisons of in-house and estimated contractor cost for the six activities indicated by an asterisk. None included Government overhead. Taken individually each activity is so small that conversion of the activity to contract would probably not reduce manpower requirements in any other installation activity. But suppose the entire maintenance of materiel function were considered as one activity, and a comparison of in-house and contractors cost then made. What then would be the incremental overhead attributable to this more broadly defined activity?

To make a rough estimate, LMI identified from the Staffing Guide for U. S. Army Garrisons those additional organizational positions that might be eliminated if the strength of the Maintenance Division were reduced by 199 people, the number now employed by the maintenance activities. Table 13 shows the possible manpower reductions that were identified. All identified reductions could be considered production overhead because they would occur in either the Maintenance Division or its parent organization, the Directorate of Industrial Operations. Staffing for general and administrative activities, such as finance and accounting or civilian personnel management, was also examined; reductions of one or two people in these activities would be possible but unlikely. The rough estimate indicates that the reduction of 199 manning spaces in the individual activities could generate a reduction of an additional 31 production overhead spaces, approximately 15% of the maintenance division reduction. In contrast, of the 71 Army cost comparisons LMI reviewed, only 17 showed any overhead at all. For those 17 the overhead ranged from 1 to 9 percent and averaged 3 percent.

TABLE 12

FT. STIL IN-HOUSE MAINTENANCE ACTIVITIES
FY 74 MANNING

CODE	FUNCTION	CIV	MIL	TOTAL
J503	Missiles*	14	1	15
J505	Combat Vehicles*	33	4	37
J506	Noncombat Vehicles*	43	1	44
J507	Electronic & Communications Equipment*	21		21
J511	Special Equipment*	7		7
J512	Armament	20		20
J513	Mess Hall Equipment	4		4
J515	Containers, Textiles, Tents & Tarpaulins	3		3
J520	Other	7		7
J517	Motor Vehicle Maintenance*	41		41
TOTAL		193	6	199

* Cost comparisons for these functions were reviewed by LMI.

TABLE 13

POSSIBLE REDUCTIONS IN OVERHEAD MANNING

	ESTIMATED PRESENT AUTHORIZATION	Δ	NEW STRENGTH
<u>MAINTENANCE DIVISION</u>			
Office Chief of Maint.	2	0	2
Admin. & Mgt.	4	2	2
Budget & Analysis	3	1	2
Office Chief Prod. Plan & Control	2	1	1
Production & Control	7	6	1
Data Collection	-	-	-
Maint. Supply	21	16	5
Chief, Ship Operations	4	1	3
<u>OFFICE OF THE DIRECTOR OF INDUSTRIAL OPERATIONS</u>			
Industrial Engineers	2	1	1
Procurement Div. - Contracts Branch	Unknown	3	UNKNOWN
<u>TOTAL REDUCTION</u>		31	

There is evidence that even the 15 percent figure generated from the Ft. Sill data may greatly underestimate the production overhead for support services at an installation. In the Navy, Public Work Centers provide maintenance of real property, utilities, and transportation services to installations at 8 major Naval complexes. These services are the same as those normally provided by base civil engineers and transportation divisions or squadrons in the Army and Air Force. The Public Work Centers are industrially funded organizations. Under the industrial fund concept each center operates as a private corporation, providing services and billing its customers for services rendered. Rates are designed for a break-even result: no profit; no loss. Significant to this study is that overhead (exclusive of capital investment and military personnel) is fully allocated and recovered in the rates. Thus, it is possible to identify the production and general and administrative overhead associated with a set of activities that normally comprise a large portion of base operating support.

Table 14 shows the ratios of overhead labor (or cost) per direct labor hour (or dollar) at each of five CONUS Naval Public Work Centers during FY 75. On the average, there were 18 production overhead hours expended for every 100 hours of direct labor. In cost, production overhead was 29 percent of direct labor cost. We have called attention only to the production overhead because G&A expenses are not likely to change much and would therefore not be allocated on the incremental costing approach. However, production overhead should be fully allocated because it is an in-house cost that could be avoided if contractors provide both the management and services for broadly defined commercial or industrial activities. However, under the present DoD program which defines activities as individual products and services, production overhead is not recognized as a cost of in-house operations. It is not included in cost comparisons and is not significantly reduced when these narrowly defined activities are separately contracted.

TABLE 14

OVERHEAD RATIOS AT
CONUS NAVAL PUBLIC WORKS CENTERS

(FY 75)

	1 PROD/DIR (Hours)	2 G&A/DIR (Hours)	3 PROD/DIR (\$)	4 G&A/DIR (\$)
NORFOLK	17.8	15.9	29.6	21.4
PENSACOLA	18.9	15.0	28.6	20.2
GREAT LAKES	18.7	20.8	33.4	26.6
SAN DIEGO	15.7	19.8	25.1	23.8
SAN FRANCISCO	20.2	16.5	30.2	21.0
AVERAGE	18.26	17.6	29.38	22.6

1. Production overhead hours per 100 direct labor hours.
2. General & administrative hours per 100 direct labor hours.
3. Production overhead cost as a percent of direct labor dollars.
4. General & administrative cost as a percent of direct labor dollars.

Another limitation of contracting for individual products and services is that the magnitude of some workloads is not attractive to commercial sources. Our reviews of Military Department prepared cost comparisons indicated that this situation is prevalent in both the Army and Navy. The workloads of some activities are too big for local contractors' capabilities and cannot be made smaller without incurring the inefficiencies of multiple, similar operations. Yet, they are too small to attract outside firms because they address only individual products or services.

2. The Multi-Function Approach

Largely unexploited in the present DoD program are opportunities for effectively using commercial sources to provide middle and higher level management of base operation support. To take advantage of such opportunities requires combining multiple functions under a single contract. The objective is to create a workload that is large enough to attract businesses whose principal service is good management.

Not surprisingly, the principal advocates of the multi-function approach are large companies of the aerospace and technical services industries. Some of these companies now operate and maintain installations for Government agencies, including the DoD, both overseas and in CONUS. A frequently cited example of contractor support of a non-DoD installation is the Kennedy Space Center at which Boeing Aerospace Company provides NASA with installation and technical support services. Within the DoD there are a half-dozen Air Force installations which are operated and maintained by contractors. In addition, the DoD has made frequent use of contractors to provide BOS overseas; Canada, Alaska, Puerto Rico, Spain, Turkey and Ethiopia are a few of the major locations.

During the course of this study LMI talked to several contractors and visited an installation operated under contract for HEW. We discussed the approaches contractors take or would take in operating a military installation and the reasons they believe contractor support is a more efficient method of providing base services. We were

also shown proposals for contractor operation of specific military installations. Contractors believe their operations to be more efficient than in-house operations for the following reasons:

Civilians replace military personnel. Military personnel require more training than civilian employees; turnover at a higher rate; because of military duties are less available to their primary job; and require more Government support (food, housing, clothing, recreation, etc.)

Functionally structured organizations are replaced by organizations structured according to tasks and skills. The result is fewer organizational units, fewer supervisors and, frequently, fewer workers.

There is greater flexibility in the use of personnel. Part of this is a result of organizing according to skills and tasks rather than functions. However, part also is a result of viewing total base operations as the principal mission and applying available resources, without regard to assigned functional responsibility, to the highest priority tasks.

Competition in private industry and the profit motive are effective incentives to the contractor but are unavailable to Government in-house operation. The difference is in cost consciousness. The Government manager is motivated to do the job without wasting resources. The contractor is motivated to do the job at minimum cost.

An excellent quantitative example and analysis of a contractor's approach to base management is a comparison of Vance and Reese Air Force Bases conducted by

RAND.¹¹ Reese Air Force Base is organized and managed according to standard Air Force practices. Vance Air Force Base is primarily contractor operated. Both bases have the same pilot training mission and are approximately the same in terms of student load, number of assigned aircraft, flying program, plant capacity and geographical area. Both have met expected Air Force standards in all phases of their operation. In other words, the outputs of the two bases and the circumstances under which the outputs are produced are, for all practical purposes, the same. The principal difference between the bases is the method of accomplishing base support.

The RAND comparison first shows that Vance Air Force Base is operated with substantially fewer personnel and at a lower budget. Table 15 summarizes the manning of the two bases; Table 16 the budgets. Note that at both bases, most of the budget is for manpower and that the major differences in manning are in the Wing Staff, the Air Base Group and Logistics.

Paulson and Zimmer then examine the reasons for the manning differences, focusing on three of the support areas in which the differences are the greatest: supply, civil engineering, and transportation. Table 17 summarizes the differences by function and attributes the differences to three sources: availability, trainees and management. The additional manpower at Reese attributed to availability and trainees is the result of using military personnel. Combined, these account for 34% of the manning difference between the two bases in the three functions examined. The other 66% of the manning difference is attributed to the management approach: organization, supervision, incentive, etc.

The organizational structure of Vance is different from that of the standard Air Force Training Base. Although the contractor must support the same functions that are supported at other bases, he has not adopted the standard organization. Instead he has

¹¹Robert M. Paulson and Arnold Zimmer. Op cit.

TABLE 15
MANPOWER AUTHORIZATIONS*

	REESE AFB					VANCE AFB **				
	OFFICERS	AIRMEN	CIVIL	CONTRACT	TOTAL	OFFICERS	AIRMEN	CIVIL	CONTRACT	TOTAL
WING STAFF	10	18	10	0	38					
AIR BASE GROUP	39	353	211	55	799					
LOGISTICS	26	856	256	0	1,238	Deleted by DMC				
HOSPITAL/CLINIC	41	118	33	6	198	See note, page 11				
OPERATIONS	315	90	15	0	420					
TOTAL (ATC)	431	1,435	666	61	2,593					
COMMUNICATIONS (AFCS)	4	96	6	0	108					
TOTALS	435	1,531	674	61	2,701					

* Paulson & Zimmer, p. 12.

** Costs and manning at Vance AFB are privileged information. Distribution is limited to Government agencies only.

TABLE 16
ELEMENTS OF BUDGET ESTIMATED FY 1974
(\$000s)

	OPERATION AND MAINTENANCE APPROPRIATION				MILITARY PERSONNEL APPROPRIATION	TOTAL
	CIVIL SERVICE PERSONNEL	CONTRACT PERSONNEL	OTHER EXPENSES	TOTAL O&M		
REESE AFB	\$7,092.0	\$345.3	\$6,650.7	\$14,102.4	\$17,150.6	\$31,253.0
VANCE AFB **		Deleted by DMC		See note, page 11		

* Paulson and Zimmer, p. 17.

** Costs and manning at Vance AFB are privileged information. Distribution is limited to Government agencies only.

TABLE 17

MANNING DIFFERENCE ANALYSIS *
By function

Deleted by DMC. See note, Page 11

* Paulson and Zimmer, P. 48.

** Costs and manning at Vance AFB are privileged information. Distribution is limited to Government agencies only.

organized to perform the specific tasks under the specific circumstances at Vance.

Privileged information

Deleted by DMC. See note, Page 11

Paulson and Zimmer also identified, but did not quantify other reasons for the manning differences between Vance and Reese. The most significant of these reasons, judging by LMI experience in conversations with contractors and observation of a contractor support operation, is the attitude of the contractor and the work force. As observed by Paulson and Zimmer:

There was also evidence of the effect of a clearly defined objective function on the motivation of the total contractor labor force. At both supervisory and working levels, the labor force is aware that the success of the contractor effort could be most easily measured in the generation of serviceable aircraft to support the Vance Air Force Base UPT training mission, at the stipulated contract price--and within the set of resources currently available. Thus functional and organizational goals and performance indices are subordinated to the

TABLE 18*

NUMBER OF ORGANIZATIONAL UNITS EMPLOYED
IN THE SUPPLY, CIVIL ENGINEER, AND
TRANSPORTATION OPERATIONS

Deleted by DMC. See note, Page 11

TABLE 19**

SUPERVISORS UTILIZED

Deleted by DMC. See note, Page 11

* Paulson and Zimmer, p. 51.

** Ibid, p. 52.

*** Costs and manning at Vance AFB are privileged information.
Distribution is limited to Government agencies only.

flying mission goal, whenever this is required. There can be no advancement in a career field, such as supply or civil engineering, unless there is good performance on the entire contract. Each employee knows that his job security depends on the corporation management team. With this kind of working level motivation and the monetary incentive that the contract placed on management, there is a constant pressure for minimum manning and high performance.

Surprisingly, the most important finding that emerged from the Vance/Reese comparison is that substantial savings can be realized in BOS management without converting to contractor support. These savings can be obtained by minimizing the use of military personnel for BOS, by tailoring task oriented organizations, and by increasing the span of control for supervisors. Even the contractor's motivation to minimize costs could be instituted in Government operations by revising the incentive structure for key people. But the fact is, these actions have been taken at Vance Air Force Base under a contractor's management; they have not been taken at other Air Force Training Command bases.

Vance Air Force Base is an extreme example of multi-function contracting. A single contractor provides most support services. The support requirements of every base may not lend themselves to complete contract support or to support by a single contractor. Nonetheless, opportunities for exploiting contract management can be created by grouping products and services on a single installation or by providing regional support for some services.

Consider, for example, a multi-activity function comprised of the real property maintenance activities (RPMA). These are the support services normally provided by the civil engineers on an installation. Only in the Army are we able to identify the fraction of CONUS BOS attributable to RPMA: approximately 1/3 (see Table 20); however, we are confident that in the Air Force and Navy RPMA also accounts for a substantial portion of a base operating support. The cost of in-house labor, funded

¹² ibid., pp. 55-56.

TABLE 20

ARMY CONUS BASE OPERATION SUPPORT
FY 74 OMA

(\$M)

FUNCTION	COST	%
Audio Visual	2	1
Supply Operations	72	6
Maintenance of Material	114	10
Transportation Services	66	6
Laundry & Dry Cleaning	16	1
Food Service	124	11
Personnel Support	49	4
Bachelor Housing Furnishings	22	2
Real Property Maintenance Activities	381	33
Administration	220	19
ADP Activities	38	3
Base Communication	38	3
Total*	\$1,144	100

* Entries may not add to totals because of rounding.

contracts and total expenditures for each activity worldwide is shown in Table 21. Table 22 shows the approximate strengths and cost of RPMA manpower.

In the Vance-Reese study, Paulson and Zimmer show that the entire civil engineering function (equivalent to RPMA) has been accomplished under contract at Vance with * fewer personnel than at Reese. Furthermore, 53% of the difference in manning was attributed to the management approach. Although one cannot assume that such savings would be realized at every installation, the magnitude of RPMA and the demonstrated potential for contract support indicate that the opportunities for contracting RPMA should be explored. Under the present DoD commercial and industrial activities program, they are not and will not be explored. The only contracting normally considered in these activities is for the purchase of utilities, minor construction and repair projects, and individual services, such as custodial services, refuse removal, rodent control, etc. Even routine maintenance of buildings and grounds is not included in the reviews of commercial and industrial activities. In effect, the contractable activities are so narrowly defined that the possibility of exploiting contractor management of the function is not recognized.

It is feasible to accomplish some BOS on a regional basis. The Navy Public Works Centers, for example, provide regional support of RPMA and transportation services. In fact, one center provides support to several Army and Air Force, as well as Navy, installations in the San Francisco Bay area. It is not unreasonable to suggest that other BOS services might also be provided on a regional basis, in some cases by contract support. The Army recognizes this approach as a potentially effective means of providing some of the base services that are too small and specialized to be efficiently contracted at each base. For example, it is considering a proposal to provide all CONUS audio visual services through a single contractor.

* Privileged information deleted by DMC. See note, Page ii.

TABLE 21

REAL PROPERTY MAINTENANCE ACTIVITIES
APPROXIMATE FY 74 EXPENDITURES
(\$ Millions)

	OPERATION* OF UTILITIES	MAINTENANCE OF REAL PROPERTY	MINOR CONSTRUCTION	OTHER ENG SPT	TOTAL
<u>ARMY</u>					
Total	\$419	\$597	\$47	\$318	\$1,382
Labor**	15%	37%	27%	64%	36%
Contract	45%	44%	49%	28%	41%
<u>AIR FORCE</u>					
Total	\$234	\$345	\$71	\$418	\$1,164
Labor**	22%	59%	21%	80%	53%
Contract	44%	27%	62%	13%	31%
<u>NAVY</u>					
Total	\$122	\$199	\$13	\$129	\$462
Labor**	17%	38%	8%	69%	40%
Contract	34%	29%	66%	12%	27%
DoD TOTAL	\$775	\$1,141	\$151	\$865	\$3,008

* Most contracts are for purchased utilities (e.g., electricity).

** In-House Labor.

TABLE 22

REAL PROPERTY MAINTENANCE ACTIVITIES
END STRENGTHS AND LABOR COST

FY 74

	END STRENGTH	IN-HOUSE LABOR COST (\$M)	APPROX % BOS MANPOWER
ARMY	57,981	\$496	29
AIR FORCE	58,826	\$617	23
NAVY	NOT AVAIL	\$187	-

IV. RECOMMENDATIONS

A. THE DOD SHOULD DEVELOP OPPORTUNITIES FOR USING CONTRACTOR MANAGEMENT IN BASE OPERATING SUPPORT

In the long run, efficient base operating support depends on effective management. The present DoD approach to contracting for base services focuses on individual products and services. Contractors believe, and have demonstrated at Vance AFB, that savings in BOS costs and manpower can be obtained by using commercial sources to provide management as well as products and services.

The key is to consider contract support as an alternative to in-house management of some BOS functions. To recognize and exploit opportunities for this type of contract support, functions must be defined such that substantial management responsibility is included. These opportunities often can be created by grouping together products and services at an installation or within a regional area. For example, the real property maintenance activities constitute an area of management responsibility which might be suitable for contract support. The activities involve fixed-site services, many of which are often individually contracted. A single contractor is managing the real property maintenance activities on at least one Air Force Base. In the Navy, Public Works Centers have demonstrated the feasibility of providing the services on a regional basis.

B. THE DOD PROCEDURES FOR CONDUCTING COMPARATIVE COST ANALYSES SHOULD BE CHANGED TO ENCOURAGE THE USE OF SOLICITED CONTRACTOR BIDS AS THE PRIMARY SOURCE OF CONTRACT COST ESTIMATES

When the decision as to whether to contract for base services is based on relative costs, the cost of each alternative should be obtained from the best possible source. The best source for the contract alternative is a contractor. However, contractors are unwilling to devote resources to the evaluation of a military installation's workload unless there is a good chance that a contract will be awarded.

The Air Force screens functional areas to identify those for which contract support is likely to cost less. Bids are solicited and an estimate of in-house cost is prepared using the same specifications. If a bid from a qualified contractor is lower than the estimated in-house cost, the contract is awarded. If not, the operation continues (or converts to) in-house.

The Air Force procedures have proven to be effective. These same procedures should be adopted throughout the DoD.

APPENDIX A

FUNCTIONAL CODES FOR DoD COMMERCIAL OR
INDUSTRIAL ACTIVITIES AND DoD CONTRACT SUPPORT SERVICES

(Source: DoDI 4100.33)

Maintenance and/or Repair of Equipment (Intermediate/
Direct/General)

J501 Aircraft
J502 Aircraft Engines
J503 Missiles
J504 Vessels
J505 Combat Vehicles
J506 Noncombat Vehicles
J507 Electronic & Communications Equipment
J510 Railway Equipment
J511 Special Equipment
J512 Armament
J513 Mess Hall Equipment
J514 Medical & Dental Equipment
J515 Containers; Textiles, Tents & Tarpaulins
J516 Metal Containers
J519 Industrial Plant Equipment
J520 Other

Nonmission-Essential Repair, Maintenance Modification, Alter-
ations and/or Rebuild of Equipment (Depot/Indirect)

K531 Aircraft
K532 Aircraft Engines
K533 Missiles
K534 Vessels
K535 Combat Vehicles
K536 Noncombat Vehicles
K537 Electronic & Communications Equipment
K538 Railway Equipment
K539 Special Equipment
K540 Armament
K541 Industrial Plant Equipment
K542 Mess Hall Equipment
K543 Medical & Dental Equipment
K544 Containers; Textiles, Tents & Tarpaulins
K545 Metal Containers
K546 Other

Mission-Essential Repair, Maintenance Modification, Alteration
and/or Rebuild of Equipment (Depot/Indirect)

M531 Aircraft
M532 Aircraft Engines
M533 Missiles
M534 Vessels
M535 Combat Vehicles
M537 Electronic & Communications Equipment
M538 Railway Equipment
M539 Special Equipment
M540 Armament

Installation Services

S706 Installation Bus Services
S708 Laundry, Dry Cleaning Services
S709 Custodial Services
S710 Insect & Rodent Control
S712 Refuse Collection & Disposal Services
S713 Food Services
S714 Furniture
S715 Office Equipment
S716 Motor Vehicle Operations
S717 Motor Vehicle Maintenance
S724 Guard Services
S725 Electrical Plants & Systems
S726 Heating Plants & Systems
S727 Water Plants & Systems
S728 Sewage & Waste Plants & Systems
S729 Air Conditioning & Refrigeration plants
S730 Other Services or Utilities

Other Nonmanufacturing Operations

T801 Packing & Crating
T802 Cataloging
T803 Acceptance Testing
T804 Training & Consultant Services
T805 Operation of Bulk Liquid Storage
T806 Printing & Reproduction (except JCP approved
printing plants)
T807 Photographic, Film & TV Services, including CATV
T808 Mapping & Charting
T809 Administrative Telephone Services

T810 Air Transportation Services
T811 Water Transportation Services
T812 Rail Transportation Services
T813 Contractor Engineering & Technical Services
T814 Fueling Service (Aircraft)
T815 Scrap Metal Operation
T816 Communications & Electronic Services
T817 Other

Automatic Data Processing

W824 Data Processing Services
W825 Maintenance of ADP Equipment
W826 Systems Design, Development & Programming Services
W827 Other

Products Manufactured/Fabricated In-House

X931 Ordnance Equipment - Ammunition & Related Products
X932 Products made from Fabric or Similar Materials
X933 Container Products & Related Items
X934 Food & Bakery Products
X935 Liquid, Gaseous & Chemical Products
X936 Rope, Cordage & Twine Products
X937 Logging & Lumber Products
X938 Communications & Electronic Products
X939 Construction Products
X940 Rubber & Plastic Products
X941 Optical & Related Products
X942 Sheet Metal Products
X943 Foundry Products
X944 Machined Parts
X945 Other

Repair, Alteration & Minor Construction of Real Property
(Excludes Repair Incident to Maintenance & Military Construction
(MILCON) Funded Projects)

Z992 Buildings & Structures
Z993 Grounds (Improved)
Z994 Surfaced Areas
Z996 Grounds (Other than Improved)
Z997 Railroad Facilities
Z998 Waterways & Waterfront Facilities
Z999 Other

APPENDIX B

EXTENT OF CONTRACT SUPPORT: FY 74

ARMY

(Costs in Thousands of Dollars)

FUNCTION CODE	IN-HOUSE COST	CONTRACT COST	CONTRACT TOTAL COST	# OF ACTIVITIES	AVERAGE COST PER ACTIVITY	% ACTIVITIES CONTRACTED	% ACTIVITIES CONTRACTED
J501	19,932	29,205	59	25	1,965	21	84
J503	6,551	6	A	5	1,311	1	20
J504	2,353	1,576	40	5	786	5	100
J505	12,139	82	1	16	764	4	25
J506	22,415	1,067	5	44	534	31	70
J507	15,812	2,657	14	48	385	26	54
J510	640	5	1	4	161	1	25
J511	12,243	1,305	10	52	261	24	46
J512	7,239	34	1	26	280	4	15
J513	1,120	1	A	10	112	1	10
J514	5,853	1,051	15	33	209	9	27
J515	2,806	624	18	23	149	8	35
J516	6	0	0	1	6	0	0
J519	5,636	219	4	8	757	4	50
J520	3,260	212	6	17	204	8	47
SUB	118,205	38,046	24	317	493	147	46
S706	12,155	1,430	11	59	230	18	31
S708	26,740	818	3	42	656	20	48
S709	17,147	24,574	59	109	383	91	83
S710	3,001	111	4	35	89	12	34
S712	6,000	6,570	52	80	158	61	76
S713	86,748	41,135	32	105	1,238	62	59
S714	4,193	948	18	36	143	22	61
S715	2,831	4,768	63	51	149	48	94
S716	45,010	324	1	102	444	19	19
S717	25,579	1,187	4	82	331	37	45
S724	36,097	3,450	9	60	659	18	30
S725	9,024	10,366	51	79	257	59	75
S726	66,736	11,947	15	83	948	61	73
S727	9,128	2,130	19	79	142	55	70
S723	7,014	3,150	31	78	130	47	60
S729	12,903	1,631	11	74	196	51	69
S730	10,241	23,952	20	46	743	35	76
SUB	381,937	138,491	27	1,200	434	716	60
T801	28,328	4,719	14	46	740	6	13
T802	13,267	5	A	9	1,475	1	11
T803	7,101	750	10	5	1,570	2	40
T804	15,173	9,594	39	46	538	41	89
T805	2,694	447	14	6	523	1	17
T806	3,681	496	13	32	137	15	47
T807	27,163	4,979	16	98	328	38	39
T808	17	0	0	1	12	0	0
T809	29,622	10,035	25	92	431	31	34
T810	1,741	288	14	14	145	3	21
T811	796	66	8	6	144	2	33
T812	2,199	57	3	34	66	4	12
T813	0	1,124	100	3	375	3	100
T814	2,586	936	27	15	235	2	13
T816	11,295	551	5	42	282	10	24
T817	376,639	164,914	31	60	9,093	27	45
SUB	532,499	202,961	28	509	1,445	186	37

A - less than 1%

ARMY (CONT'D)
(Costs in Thousands of Dollars)

FUNCTION CODE	IN-HOUSE COST	CONTRACT COST	CONTRACT TOTAL COST	TOTAL # OF ACTIVITIES	AV COST PER ACTIVITY	# ACTIVITIES CONTRACTED	% ACTIVITIES CONTRACTED
W824	74,870	32,363	30	122	879	78	64
W825	90	9,051	99	38	241	38	100
W826	82,208	6,521	7	83	1,069	13	16
W627	9,315	2,076	18	16	712	4	18
SUB	166,449	50,011	23	259	836	135	52
X931	81,003	769	1	7	11,682	2	29
X932	1,819	0	0	4	455	0	0
X933	7,285	0	0	9	809	0	0
X934	830	253	23	5	217	1	20
X935	173	0	0	1	173	0	0
X938	10,508	31	A	3	3,513	1	33
X939	266	8	3	2	137	1	50
X940	2,643	7	A	4	662	1	25
X941	5,428	64	1	7	785	1	14
X942	1,053	7	1	5	212	1	20
X943	310	5	2	2	157	1	50
X944	20,475	176	1	4	5,163	2	50
X945	2,869	6	A	4	719	1	25
SUB	134,664	1,326	1	57	23,648	12	21
Z992	53,046	36,496	41	65	1,378	59	91
Z993	8,711	2,953	25	58	201	34	59
Z994	5,935	6,232	47	54	244	46	85
Z996	1,646	177	10	21	87	8	38
Z997	1,101	715	29	23	79	14	61
Z998	78	1,745	96	4	456	4	100
Z999	4,914	3,350	41	19	435	17	89
SUB	76,431	51,668	40	244	2,880	182	75
TOTAL	1,410,175	482,503	25	2,586	732	1,378	53

A - less than 1%

AIR FORCE
(Costs in Thousands of Dollars)

FUNCTION CODE	IN-HOUSE COST	CONTRACT COST	% CONTRACT COST	TOTAL # OF ACTIVITIES	AV COST PER ACTIVITY	# ACTIVITIES CONTRACTED	% ACTIVITIES CONTRACTED
J501	161,120	5,373	4	49	3,408	15	31
J503	390	375	49	2	382	1	50
J507	41,190	2,719	6	72	610	10	14
J514	1,400	231	14	16	102	1	6
SUB	204,000	8,698	4	137	3,502	27	21
S706	4,702	351	7	30	168	3	10
S708	1,970	551	62	31	168	25	81
S709	4,169	22,857	84	88	309	84	95
S710	6,000	151	3	63	75	2	3
S712	5,442	3,379	38	76	116	33	43
S713	67,100	9,659	13	158	487	20	13
S714	0	314	100	1	314	1	100
S715	50	3,390	86	25	157	23	92
S716	51,350	1,217	2	132	398	5	4
S717	65,666	4,475	6	109	544	31	28
S724	37,909	0	0	108	351	0	0
S725	35,031	4,671	12	158	251	24	15
S726	17,446	4,825	8	157	397	25	16
S727	9,669	285	3	96	104	4	4
S728	8,024	314	4	91	92	5	5
S729	11,017	5,392	15	131	278	10	21
SUB	384,793	64,725	14	1,454	4,209	315	22
T801	41,797	840	2	82	520	5	6
T802	24,030	107	18	5	5,877	3	60
T803	775	0	0	1	775	0	0
T804	972	0	0	27	36	0	0
T805	13,008	0	0	87	150	0	0
T806	3,624	613	15	51	87	2	4
T807	25,936	3,125	11	99	294	1	1
T809	16,365	0	0	90	182	0	0
T810	3,641	0	0	11	331	0	0
T811	481	0	0	2	241	0	0
T812	1,372	0	0	29	47	0	0
T814	2,210	0	0	83	352	0	0
T816	12,212	171	1	40	837	2	2
SUB	194,725	9,856	5	607	9,679	13	2
W624	10,566	754	1	98	626	7	7
W625	0	1,759	100	5	0	5	100
W626	60,866	5,084	8	57	1,155	3	5
SUB	27,152	7,537	7	160	2,220	15	9
X932	30	0	0	1	30	0	0
X934	221	0	0	1	221	0	0
X935	1,451	0	0	47	31	0	0
X942	1,201	0	0	12	107	0	0
SUB	2,983	0	0	61	389	0	0
Z592	115,167	51,251	31	114	1,466	84	74
Z593	23,174	2,379	9	30	280	22	24
Z594	10,592	15,174	48	37	412	57	59
Z596	7,175	1,263	15	43	176	6	13
Z597	291	461	61	6	125	3	50
SUB	166,399	74,728	31	352	2,457	172	48
TOTAL	1,074,152	166,104	13	2,776	447	542	20

NAVY
(Costs in Thousands of Dollars)

FUNCTION CODE	IN-HOUSE COST	CONTRACT COST	% CONTRACT COST	TOTAL # OF ACTIVITIES	AV COST PER ACTIVITY	# ACTIVITIES CONTRACTED	% ACTIVITIES CONTRACTED
J501	15,348	393	2	17	955	3	18
J502	5,470	0	0	13	421	0	0
J503	7,764	58	3	6	1,337	3	50
J504	19,629	18	1	5	3,983	2	40
J505	81	0	0	1	81	0	0
J506	2,738	516	16	7	464	3	43
J507	3,196	6	0	7	457	1	14
J510	119	1	1	1	120	1	100
J511	9,363	223	2	13	737	6	46
J512	2,973	9	A	6	479	1	17
J513	77	0	0	1	77	0	0
J514	413	62	15	3	137	2	67
J515	86	0	0	1	86	0	0
J519	335	5	2	2	170	1	50
J520	427	0	0	1	757	0	0
SUB	68,749	1,755	3	84	839	23	27
S706	3,291	137	4	33	104	7	21
S708	3,227	701	18	23	171	7	30
S709	20,734	15,188	42	104	345	64	62
S710	1,099	10	1	12	92	2	17
S712	5,489	3,590	40	61	149	46	75
S713	68,183	13,524	18	111	691	73	84
S714	454	24	5	4	119	3	75
S715	361	930	72	13	99	11	85
S716	30,729	1,075	3	95	335	18	19
S717	21,271	1,554	7	80	285	33	11
S714	58,755	1,306	2	108	556	20	29
S725	35,513	5,905	14	73	567	32	44
S726	65,950	3,230	5	85	814	30	35
S727	8,434	1,521	15	71	140	25	25
S720	4,571	1,880	29	71	91	26	37
S729	6,603	530	7	59	121	25	42
S730	6,150	409	5	42	204	14	33
SUB	337,802	11,524	13	1,045	373	436	42
T801	16,102	73	1	47	343	1	2
T802	3,589	1	A	1	718	1	20
T803	5,684	935	14	14	473	5	36
T804	24,901	1,333	5	25	1,049	11	44
T805	6,717	225	3	39	178	9	23
T806	2,689	117	4	15	187	5	33
T807	12,625	1,686	12	52	275	14	27
T809	8,240	17,252	68	66	386	57	79
T810	6,168	1,726	22	13	607	7	31
T811	20,648	782	4	18	1,191	3	17
T812	2,401	47	2	21	117	3	14
T813	0	44,967	100	7	6,424	7	100
T814	2,689	3,946	60	36	184	24	67
T815	65	0	0	1	65	0	0
T816	4,242	685	14	9	547	3	33
T017	52,981	10,879	17	12	5,322	8	67
SUB	169,741	84,654	33	383	669	153	40
W824	57,872	20,107	33	115	748	79	69
W825	1,940	4,883	72	32	213	25	78
W826	48,973	10,265	17	68	871	17	25
W827	1,441	134	9	5	315	1	20
SUB	110,228	43,394	28	220	698	122	55

A - less than 1%

NAVY (CONT'D)
(Costs in Thousands of Dollars)

FUNCTION CODE	IN-HOUSE COST	CONTRACT COST	% CONTRACT COST	TOTAL # OF ACTIVITIES	AV COST PER ACTIVITY	# ACTIVITIES CONTRACTED	% ACTIVITIES CONTRACTED
X931	83,869	0	0	9	9,319	0	0
X932	64	0	0	1	64	0	0
X933	452	0	0	3	151	0	0
X934	132	0	0	2	61	0	0
X935	145	0	0	2	72	0	0
X936	773	0	0	1	773	0	0
X938	1,778	0	0	3	593	0	0
X940	124	0	0	1	124	0	0
X941	2,928	0	0	1	2,928	0	0
X942	2,113	0	0	4	528	0	0
X943	59	0	0	1	59	0	0
X944	13,717	0	0	6	2,286	0	0
X945	27,655	0	0	7	3,951	0	0
SUB	133,809	0	0	41	3,264	0	0
2992	56,355	5,628	31	82	1,000	65	79
2993	5,089	1,620	24	47	143	27	64
2994	2,577	3,232	56	34	171	24	71
2996	176	115	40	3	97	2	67
2997	661	674	44	8	192	5	63
2998	2,587	802	24	10	337	6	60
2999	192	0	0	1	192	0	0
SUB	67,817	32,071	32	185	540	129	70
TOTAL	888,146	213,398	19	1,955	801	863	44

MARINE CORPS
(Costs in Thousands of Dollars)

FUNCTION CODE	IN-HOUSE COST	CONTRACT COST	% CONTR. COST	TOTAL # OF ACTIVITIES	AV COST PER ACTIVITY	# ACTIVITIES CONTRACTED	% ACTIVITIES CONTRACTED
J505	556	0	0	1	556	0	0
J506	3,959	302	7	14	304	1	7
J507	2,022	63	3	4	521	1	25
J511	1,975	21	1	10	200	1	10
J512	765	0	0	2	383	0	0
J513	781	3	A	6	131	1	17
J519	65	0	0	1	65	0	0
SUB	10,123	389	4	38	277	4	11
S706	1,465	47	3	13	116	1	8
S709	2,376	97	4	8	309	1	13
S709	1,640	695	30	11	212	7	64
S710	535	0	0	5	107	0	0
S712	2,096	392	16	13	191	8	62
S713	23,044	3,178	12	15	1,740	6	40
S714	229	69	23	4	75	2	50
S715	362	613	63	9	108	9	100
S716	10,455	57	1	16	657	2	13
S717	65	0	0	1	65	0	0
S724	10,672	0	0	16	667	0	0
S725	1,247	160	11	14	101	4	29
S726	9,063	444	5	15	634	2	13
S727	2,584	215	8	14	200	4	29
S720	2,331	169	7	13	192	5	39
S729	976	42	4	9	113	3	33
S730	298	34	10	5	66	1	20
SUB	69,439	6,212	8	181	418	55	30
T801	3,399	0	0	6	567	0	0
T802	936	178	16	1	1,084	1	100
T804	433	67	11	3	182	1	33
T805	936	0	0	9	104	0	0
T806	594	27	4	7	89	2	29
T807	2,290	0	0	12	191	0	0
T809	2,391	0	0	10	239	0	0
T810	1,027	61	6	1	1,088	1	100
T811	138	0	0	1	138	0	0
T817	140	3	2	3	48	1	33
T014	1,069	198	16	7	181	1	14
T517	323	352	52	3	144	2	67
SUB	13,746	886	6	63	232	9	14
W824	8,493	180	2	12	723	2	17
W825	9	1,355	99	10	136	10	100
W826	4,696	19	A	11	429	2	18
W827	97	0	0	1	97	0	0
SUB	13,295	1,554	10	34	437	14	41
X933	981	0	0	2	491	0	0
X934	546	0	0	3	182	0	0
X939	76	0	0	1	76	0	0
SUB	1,603	0	0	6	267	0	0
Z992	5,191	3,144	38	11	758	9	82
Z993	276	342	55	5	124	4	80
Z994	187	1,872	91	5	412	5	100
Z996	28	0	0	1	28	0	0
SUB	5,682	5,358	49	22	502	18	82
TOTAL	113,888	14,399	11	344	373	100	29

A = less than 1%

Source: Commercial Industrial Activities Inventory
Report: FY 74

APPENDIX C

ARMY COST AND POPULATION DATA

FOOD SERVICES COST AND POPULATION DATA

INSTALLATION	ACTIVE RESIDENT POPULATION	TOTAL COST (\$000)	% CONTRACT COST	POPULATION/ TOTAL COST
Ft. Belvoir	10,086	3,337	21.7	3.02
Ft. Benning	32,556	4,374	40.0	7.44
Ft. Bliss	23,425	1,653	58.5	14.17
Ft. Bragg	49,057	4,568	76.9	10.74
Ft. Campbell	30,171	1,868	90.8	16.15
Ft. Carson	18,551	2,184	93.8	8.49
Ft. Devens	13,506	1,426	60.0	9.47
Ft. Dix	20,608	3,691	34.1	5.58
Ft. Eustis	11,403	2,740	23.1	4.16
Ft. Gordon	10,872	3,752	50.4	2.90
Ft. Hood	34,190	2,855	81.1	11.98
Ft. Jackson	17,257	13,484	18.3	1.28
Ft. Knox	28,394	5,861	36.1	4.83
Ft. Lee	9,271	1,365	0.0	6.79
Ft. Leonard Wood	25,039	4,361	23.3	5.74
Ft. Lewis	34,181	2,638	92.9	12.06
Ft. McClellan	6,069	2,377	56.8	2.55
Ft. Ord	24,705	6,700	17.7	3.69
Ft. Polk	16,286	2,556	46.0	5.13
Ft. Riley	28,249	1,746	81.2	16.18
Ft. Sill	16,346	2,652	49.1	6.21
Redstone Arsenal	6,599	1,495	40.1	4.41

Sources: Commercial/Industrial Inventory Report FY 74;
Department of the Army, Office of the Chief of
Engineers.

BASE SERVICES* COST AND POPULATION DATA

INSTALLATION	BASE** POPULATION	TOTAL COST (\$000)	% CONTRACT COST	POPULATION/ TOTAL COSTS
Ft. Belvoir	20,442	22,893	21.0	.89
Ft. Benning	43,442	23,988	22.5	1.81
Ft. Bliss	37,136	24,107	15.9	1.54
Ft. Bragg	59,582	25,342	29.5	2.31
Ft. Campbell	35,742	16,320	29.5	2.19
Ft. Carson	32,989	16,197	34.8	2.04
Ft. Dix	24,054	17,540	28.0	1.37
Ft. Eustis	15,265	23,254	17.6	.67
Ft. Gordon	19,785	12,936	21.7	1.53
Ft. Hamilton	16,890	6,662	28.8	2.54
Ft. Huachuca	17,585	14,908	27.0	1.18
Ft. Hood	55,485	22,220	21.3	2.50
Ft. Houston	21,748	9,133	20.1	2.36
Ft. Jackson	23,887	25,218	18.0	.95
Ft. Knox	43,304	25,084	24.7	1.73
Ft. Leonard Wood	29,839	13,642	18.9	2.19
Ft. Lewis	36,470	24,124	22.2	1.59
Ft. Meade	40,662	10,544	24.4	3.86
Ft. Ord	30,126	16,686	11.7	1.81
Ft. Polk	19,502	12,914	18.3	1.51
Ft. Riley	30,816	14,145	29.0	2.18
Ft. Rucker	20,727	11,550	31.2	1.79
Ft. Sheridan	57,700	7,006	29.1	8.23
Ft. Sill	28,727	19,043	22.3	1.51

* Base Services include all those activities identified in the Commercial/Industrial Inventory Report FY 74.

** Base Population includes both resident and non-resident populations.

Sources: Commercial/Industrial Inventory Report FY 74;
Department of the Army, Office of the Chief of Engineers.

WORKING PAPER
Not official position of Commission

ALTERNATIVES TO MANPOWER

A STAFF ISSUE PAPER
for the
DEFENSE MANPOWER COMMISSION

by Marvin N. Gordon
Requirements Group
Defense Manpower Commission Staff

Based on a study for the DMC by Operations Research, Inc.
(ORI Technical Report No. 944; Principal Author: Echardt Bennewitz)
September 1975

EXECUTIVE SUMMARY

ISSUE: The substitution of capital investment for labor as a means of increasing manpower productivity and thus reducing manpower and overall costs.

BACKGROUND: Manpower costs now represent 53% of the Defense budget. Rising manpower costs constrain sensible force structures based on national security requirements, and are encroaching on other important Defense programs.

PROBLEM: What steps can be taken to increase Defense productivity through capital investment and as a result reduce manpower costs?

ALTERNATIVES: There are various ways to contribute to increased productivity, including improved training and motivation, the increased application of work measurement, and the restructuring of organizations and functions. This paper concentrates on one major way: the use of fast amortizing capital investment programs to acquire equipment as substitutes for people.

CONCLUSION: While the DOD has made some excellent beginnings of a capital investment program, these programs require expansion and should be better integrated and controlled within and among the services.

RECOMMENDATION: The paper gives nine recommendations that would result in a better managed capital investment program to enhance productivity and save manpower and overall costs in certain support areas of the Department of Defense.

NOTE: This DMC staff paper is based on Technical Report No. 044, Alternatives to Manpower, Operations Research, Inc. (Principal Author, Echardt Bennewitz) Prepared on contract for the Defense Manpower Commission, August 1975

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ALTERNATIVES TO MANPOWER

Introduction

With manpower costs greater than all other Defense expenditures put together, it is essential that the Department of Defense reevaluate its resource options. Table No. 1, developed by Defense, depicts the problem of manpower costs growing over time at the expense of other important Defense programs. As a means of reapportioning these expenses, programs that reduce the requirement for manpower resources in favor of less expensive substitutes should be established. The prospects for further inflation and continuing substantial increases in Federal pay make this a matter of urgency. There are various ways to reduce manpower costs, including improved training and utilization, behavioral programs designed to improve motivation, and the restructuring of organizations and functions. Other DMC staff papers and the final report of the DMC will address some of these. This particular paper as part of the DMC study of manpower in support forces, concentrates on the use of capital equipment as a substitute for both civilian and military employees in manpower intensive, industrial-type support activities in the Department of Defense.

A study of this subject entitled, "Alternatives to Manpower," was designed by the DMC staff (Requirements Group) and conducted under contract by Operations Research Inc. (ORI Technical Report No. 944, Alternatives to Manpower, August 13, 1975). This paper draws heavily from the more lengthy ORI study, which should be referred to for further details.

The increased use of capital equipment as an alternative to manpower would increase manpower productivity within the Department of Defense and, as a result, permit that Department to reduce its manpower costs. It should be noted that the need for increased productivity is not limited to the Department of Defense. Rather, it is a national problem, with manifestations evident in Government as well as in the private sector. To be more explicit, growth in capital per man-hour has been an important factor in productivity growth. More and better equipment can enable a worker to perform his job more effectively. Since growth in output per man-hour is closely related to the amount of capital supporting each worker, the ratio of capital investment to output is a precursor of potential growth in productivity.* Productivity is more likely to increase rapidly in countries where this ratio is high. The United States has long enjoyed a high level of industrial productivity relative to other countries of the World. Since World War II, however, the rate of increase in productivity in the United States has been only about three percent per year. Except for the United Kingdom, this is the lowest rate of increase of any of the Western nations and Japan. During the 1960's the United States had the lowest average new capital investment ratio in manufacturing of the major Free World industrial nations, as well as the lowest average increase in manufacturing productivity. Japan, on the other hand, had the highest investment ratio during this period and the highest rate of productivity gain.

* National Commission on Productivity, Productivity and the Economy, Bulletin 1779, 1973, pp. 48-51. This data was developed by the Bureau of Labor Statistics in conjunction with the National Commission on Productivity.

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TABLE 1

**PERSONNEL COSTS AS PERCENT
OF THE DOD BUDGET**

(OUTLAYS IN \$ BILLIONS)

	<u>FY 64</u>	<u>FY 68</u>	<u>FY 73</u>	<u>FY 74</u>	<u>FY 75</u>	<u>FY 76</u>
DOD BUDGET TOTAL (OUTLAY)	50.8	78.0	73.8	78.4	84.8	92.8
PERSONNEL COSTS:						
MILITARY BASIC PAY ^{1/}	8.5	12.8	17.6	18.1	18.9	19.4
MILITARY SPECIAL PAY AND ALLOWANCES	4.5	7.1	5.6	5.6	6.2	6.5
CIVIL SERVICE PAYROLL	7.3	10.3	13.0	13.4	14.6	15.4
FAMILY HOUSING	0.5	0.4	0.6	0.7	0.9	1.1
MILITARY RETIRED PAY.	<u>1.2</u>	<u>2.1</u>	<u>4.4</u>	<u>5.1</u>	<u>6.3</u>	<u>6.9</u>
TOTAL PAY AND ALLOWANCES	22.0	32.6	41.2	43.0	46.8	49.2 ^{2/}
% PERSONNEL COSTS	43.3	41.8	55.8	54.8	55.2	53.0

^{1/}Basic pay plus items denominated in basic pay

^{2/}Includes \$1.2 billion contingency for 5% pay increase

Source: OSD

Defense Productivity in General

It is generally held that capital investment and technology account for about 60% of increases in productivity, with increased productivity being the soundest way to offset inflation and rising manpower costs. Figure 1 displays the productivity trends of the Department of Defense from FY 1967 to 1974. As a base of departure for more detailed discussion to follow, the following general background information should be noted with respect to Defense productivity.

- From 1967 to 1971 DOD increased its productivity by almost 12 percent, while significantly reducing activities with the withdrawal from Southeast Asia (31 percent decrease in input and a 20 percent decrease in output).
- Productivity, however, over the four years 1971-74 remained at a fairly constant level.
- DOD productivity measurement coverage is inadequate. Although some excellent measurement systems are in use in various activities with the Defense establishments, only 34 percent of the DOD civilian work force were covered by productivity measures in 1974, compared to 83 percent for the rest of the Federal Government. Coverage is spotty in DOD, across and within the Services. Overall, DOD's productivity measurement and evaluation program has lacked the cohesion and thrust to make it the visible management tool it could and should be.

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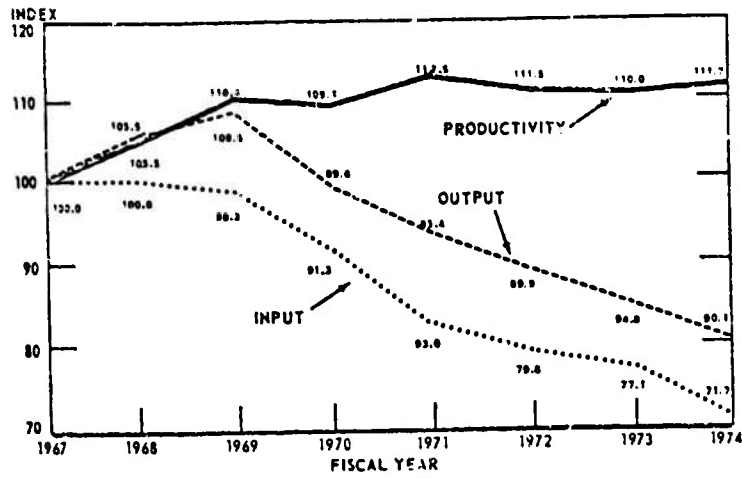


FIGURE 1. MANPOWER PRODUCTIVITY TRENDS
DEFENSE FY 1967 - FY 1974

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The DOD is concerned about productivity and exerting new initiatives. The Secretary of Defense has established as an objective an annual increase in productivity in the support and logistics areas of 1.7 percent in FY 76, at least 1.5% in the "out years", and expanded coverage of 55 percent of the civilian work force (MBO objective provided to President in July 1975). The 1.7% represents the amount of the last annual increase that occurred in Defense productivity (Refer back to Figure 1) and on that basis is considered realistically attainable. Major changes in program emphasis is required to accomplish these objectives.

Opportunities for Savings

The areas most susceptible to productivity improvement through capital investment are Base Operating Support (BOS) and Central Logistics (the Logistics portion of Central Support Forces, as used in the Defense Planning and Programming Categories). In FY 76, there will be approximately 936,000 personnel engaged in BOS and Central Logistics activities. Even savings of a small percentage, therefore, would yield large manpower dollar returns. In this respect, ORI estimates that a 1% increase in annual productivity would save \$200M and 7 - 10,000 employees. Along these lines, Army experience in certain programs has been that for each dollar of capital investment, a 75 cent saving in cost of labor and a more than 25 cent saving in other resources could be attained in the first full year of operation. Given such fast amortization in the first year, labor savings will continue to accumulate in all subsequent years. Of course, some worthwhile capital investments will take longer to amortize, but the ORI study shows an abundance of fast amortizing opportunities in the one-two year range. ORI estimates (and we agree) that a Defense program starting in FY 77, that includes \$35M per year for five years for fast amortizing

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capital investments, could result in a reduction of 1,750 personnel per year, or approximately 8,750 personnel over a five year period (based on actual returns on investments made by the Services). There would be no difficulty in identifying areas in which capital could be put to work in place of people. In one OSD assessment alone, \$106M worth of unfunded capital investment programs were identified. This assessment was made before emphasis was placed on fast amortizing capital projects. The real opportunity would be in multiples of this.

(NOTE: It should be noted that the manpower cost savings estimated in the ORI report--See pages 39 and A-1,2--were based on DOD figures which do not include total life cycle personnel costs and, therefore, were extremely low.)

Several management actions recently undertaken by the Office of the Secretary of Defense are intended to turn the corner on productivity increases through better defined, deliberately managed capital investment programs. A major step was the establishment of the new MBO objective already cited. Some of the other actions are described below.

1. On April 11, 1975, the Deputy Secretary of Defense sent a memorandum to the Service Secretaries giving guidelines for the management of the DOD Manufacturing Technology (MT) Program.* The memorandum told the Services to take advantage of the "... numerous opportunities to obtain significant cost savings in the production of Defense materiel

* Reproduced in the ORI report (Exhibit 3, following P. 77).

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by increasing the application of state-of-the-art manufacturing techniques and by the development of new or improved manufacturing technology." One hundred million dollars will be set aside in the Defense budget for this purpose. Although Secretary Clements' memorandum specifically addressed weapons acquisition costs, the contents are quite relevant to the general subject of productivity increases within DOD.

2. Starting in FY 77, \$35 million will be identified annually in the Five Year Defense Program for quick payback capital investments (\$10 million for each Service; \$3 million for the Marine Corps; \$2 million for the Defense Agencies).

3. Within the industrial fund, the OSD has given authority for procurement of productivity-increasing equipment up to \$100,000 per project (projects up to \$25,000 can be approved by the industrial fund commander; projects from \$25 - 100,000 by the OSD Comptroller). This can be charged to overhead funds at no additional charge to the customer under the conditions that the:

- a. Equipment can be amortized in two years; or
- b. If related to a specific job order, equipment can be amortized within the period of that job order.

As seen above, the Office of the Secretary of Defense has taken some commendable steps toward finding cost-effective alternatives to the use of manpower. Nonetheless, there are many problems associated with increased productivity for which management improvement action needs to be taken. The most immediate are listed below:

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1. The authorization process (outside industrial fund activities) requires revision. Even if funds were available for an investment with a reasonably certain payback, it can take as much as a year or two to get the necessary change to the Service's table of allowances which provides a standing authorization for such an organization to have the item of equipment. While the new equipment should be made a matter of record in such authorization documents, the process should be speeded up. Possibly the formal documentation could be published after the equipment has been acquired, using a quicker form of authorization in the interim.

2. Some Civil Service personnel grading policies are a disincentive to increased productivity. Specifically, criteria that make supervisory grades dependent upon the number of personnel supervised create an incentive to increase personnel, not decrease them. An innovative supervisor who develops a means of reducing his workforce should be given a reward, not a demotion. (An example of this problem, actually observed at a military installation, is given on Page 57 of the ORI report.)

3. Economic analysis should be required to justify capital investments, but the level of detail of the analyses should be tailored to the size of the investment. Some organizations require the same level of detail for a small project as for one of over \$100,000. This creates a reluctance to pursue many labor saving, productivity enhancing proposals.

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4. While the recent OSD capital investment initiatives are commendable, the scope of the programs seems to be directed toward specific Defense communities--most notably, large manufacturing, supply, and maintenance plants. These investments are certainly encouraged but it would be useful for a well-defined program to direct investments also to the area of Base Operating Support (BOS).

5. Numerical control (NC) machine tools, where applicable, have proven to be highly useful in reducing manpower requirements. Defense organizations, even though leaders in NC, are inconsistent in their use. Standards for their manufacture and use should be developed. In addition, possibilities for the increased use of Computer Aided Manufacturing (CAM) and Computer Assisted Design (CAD) should be pursued. In some instances, CAM has yielded productivity improvements of more than 400%.

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Financing

At the beginning of the paper, it was noted that the need for productivity increases is a national problem shared by the Department of Defense. Another national problem shared by the Department of Defense is the raising and allocation of capital, even when excellent returns can be expected. To the credit of the Department of Defense, it has allocated \$100 million for its Manufacturing Technology program, \$35 million annually (FY 1977 - 81) for fast amortizing projects, and continuing substantial sums for plant modernization. It is still a problem, however, to get large sums of money optimally allocated within the Services so that as many military support programs as possible can benefit from the potential increases in productivity. Some of the successful financing programs used by the Services that were discussed earlier are as follows:

Set Aside Funding

The Government-owned, Contractor-operated (GOCO) Ammunition Program, the Productivity Enhancing Capital Investment Program (PECIP), and the set aside funds in the Operations and Maintenance Account (Army) were examples of programs that could be generalized in scope.

Industrial Fund

Changes recently approved by the Secretary of Defense that permit larger amounts of dollars from the fund to be used for fast amortizing capital investments have already yielded significant returns on investments.

Several other approaches should be given serious study as possible additional approaches to financing capital investments:

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- Permit borrowing from the Industrial Fund for capital investment.
- Establish a Productivity Bank, which would operate in a manner similar to a commercial bank, operating under a Congressional approved capital fund and charter. The bank would lend funds for capital investment, with a repayment schedule tailored to the projected savings. Funds would not be taken away from DOD for capital improvements, nor would the competition between operating costs and investment funding occur. The bank would be repaid from savings, possibly with interest. The bank would have a first lien on the Service appropriations for repayment, if the scheduled savings did not materialize. The necessity for repayment would in fact reduce the amount of "brochuresman" in the original request.
- Establish a capital budget for the Government. In the Federal Government, capital outlays in operating appropriations are budgeted and accounted for as current expenses and financed from current revenues. The charging of capital outlays to current expense and their financing out of current revenues reduces the level available for internal operating programs. The alternative is to establish a capital budget. Investment designed to increase the capacity and/or productivity would be financed from borrowing, as in

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industry. Interest and depreciation would be charged as a current expense under the capital budget concept.

- Establish a separate centrally managed DOD revolving working capital fund for procurement of modern production equipment. This fund would finance the procurement of fast amortizing capital investments at nonindustrially funded installations. Repayments can be made to the working capital fund on an annual basis until the cost is recovered from the benefitting appropriation on the basis of budgeted savings.

NOTE: The following conclusions and recommendations are based largely on the ORI study and are consistent with it, although there are some differences in presentation.

Conclusions

1. Defense capital investment programs can engender significant increases in productivity which permit decreases in manpower costs. Savings in manpower costs are urgently needed to offset inflation, anticipated payroll increases, and the further encroachment of the manpower budget on other high priority Defense programs.
2. The Department of Defense, at the policy level, has initiated some extremely promising productivity enhancing programs, most notably the \$100 million Manufacturing Technology program, the \$35 million fast-amortizing capital investment program, and the increased availability of capital from the industrial funds for fast amortizing projects. If previous returns on investment continue, the \$35 million program should result in a reduction of 1,750 personnel per year, or approximately 8,750 over a five year period.

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3. On a case-by-case basis, the Department of Defense has implemented many successful productivity enhancing capital investment projects that have enabled the Department to reduce manpower costs. In the aggregate, however, even more money needs to be made available for capital investments since the returns have proven to be high and manpower cost reduction is so sorely needed.

4. Although successful capital investment programs are numerous, the Department of Defense has no adequate structure or system for maximizing the return from these investments by implementing the improvement in organizations or functions similar to the one in which the successful project was executed. In this respect, capital investment projects often are conducted in organizational isolation. Seldom is knowledge of proven methodologies transferred from installation to installation -- even less frequently from function to function (e.g., depot maintenance to base operating support), or from Service to Service. Not only is the gain not maximized, but there is risk that the same result will be paid for more than once.

5. The establishment of a goal for annual productivity increases of 1.7% in FY 1976 and 1.5% thereafter was a commendable management decision on the part of the Department of Defense. It and the associated implementing actions should result in a positive move away from the productivity inertia experienced in the last few years. In the future, however, productivity targets should be calculated more on the basis of management needs, such as the need to compensate for increasing payroll costs. In turn, the amount of dollars programmed

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for fast amortizing capital investment projects should be heavily influenced by the goal established for increased productivity. It is important that these relationships are kept well integrated since it is estimated that capital investment and technological improvements are responsible for approximately 60% of productivity increases, and since it has been estimated (in the ORI study) that for each 1% increase in productivity, 7-10 thousand personnel and at least \$200 million annually can be saved. The OSD first year goal of an increase of 1.7%, and 1.5% in the following four years, would translate to a savings of 11,900-17,000 in the first year and 10,500-15,000 each year in the following four years. Even further significant savings should be achieved by implementation of the recommendations herein, although we are unable to compute specific estimates of these savings.

6. The areas in this study that lend themselves to capital investment programs are the Defense Central Logistics and Base Operations Support functions. These labor intensive areas, comprising over 935,000 people, are engaged in industrial-like activities for which non-human substitutes for labor already exist in many instances.

7. Since the opportunities for manpower savings through capital investments presently are so numerous (based on actual examples drawn from the Services), investment criteria during the initial phases of this program generally should require two-year amortization. In due course that initial limitation could be reviewed and, if warranted, extended to three years.

8. The Manufacturing Technology Program (MT) has brought good results and should therefore be expanded to more in-house activities, including Base Operating Support. The MT program complements fast-amortizing capital investment programs.

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9. Defense organization for capital investment programs requires restructuring and expansion to take full advantage of investment opportunities, maximize return on investment, integrate capital investment programs with other areas of resource management (e.g., fiscal and manpower), identify investment capital, and reduce the present barriers to sensible investment programs and projects. Strong, adequately manned (not necessary large) staffs should be established in the Office, Secretary of Defense, and on the staffs of the Military Departments. These staffs are needed to work exclusively on productivity enhancing programs. The initial size of the staffs should be determined largely in relation to the amounts of manpower and dollars targeted for savings. Thereafter the continuing manpower authorization of these staffs could be expanded or contracted in relationship with the amounts of resources saved as a result of their efforts.

10. The present coverage of the work force by productivity programs within the Defense Department is highly inadequate. Only 34% of the civilian workforce was covered by productivity measures in 1974, compared to 83% for the rest of the Federal Government. Further coverage is spotty within and among the Services. Increased coverage is necessary to permit more intensive management, to serve as target incentives, and to serve as an additional basis for rating the effectiveness of individual managers.

Recommendations

1. Establish management organizations in the Office, Secretary of Defense and in the Military Departments to expand capital investment

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programs to take full advantage of identified opportunities, to maximize return on investment by spreading the results of successful projects across other organizations and functions, and to coordinate the capital investment program with other resource management programs. The size of the staffs should be determined in relation to the manpower and cost savings achieved as a result of their efforts.

3. Develop new DoD and Service programs, or expand existing ones, to extend Manufacturing Technology (MT) to in-house activities, and both MT and capital investment programs to base support activities.
4. Establish DoD and Service targets for the expanded coverage of productivity measures of Defense support activities.
5. Successful achievement of increased productivity should be a directed mission and command responsibility of each Major Command and of lower commands where applicable. To assist the Commander, each such headquarters should have a small staff or field office dedicated to productivity measures and programs that increase productivity, such as by MT and fast amortizing capital investment. The staffs should have qualified industrial engineers as well as resource oriented management personnel. The command-level staffs would be authorized direct informational communications with each other and with the counterparts staffs at all echelons.
6. Establish a post audit capability to identify savings resulting from capital investment programs.
7. The Civil Service Commission should develop alternative criteria for grading personnel when existing criteria (such as number of personnel supervised) are a disincentive to increased productivity.

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8. Authority for acquisition of fast payback items should be decentralized (but subject to post audit).
9. Expand the training programs for management personnel and industrial engineers to improve their capability of identifying opportunities and managing the program.

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WORKING PAPER
Not official position of Commission

OPERATIONS RESEARCH, Inc.

SILVER SPRING, MARYLAND

ALTERNATIVES TO MANPOWER

13 AUGUST 1975

PREPARED FOR
DEFENSE MANPOWER COMMISSION
WASHINGTON, D. C.

K-1

FOREWORD

Alternatives to Manpower is a study directed by the Defense Manpower Commission to "reduce the amount or cost of manpower required by the Department of Defense (DoD) to meet its national security objectives through the development and application of capital equipment such as tools and mechanized or electronic systems and equipment." The study involved the examination of DoD labor intensive areas in logistics, manufacturing, and base support civil engineering and housekeeping functions. The opportunities for quick payback capital investments within DoD to reduce manpower were identified in terms of past experience and future potentials. The Study involved extensive field visits to Army (Army Materiel Command, Picatinny Arsenal, Armaments Command), Navy (Norfolk Shipyard, Norfolk Air Rework Facility, and Norfolk Public Works Center), Air Force (Warner Robins Air Logistics Center, Air Force Logistics Command, and Military Air Command), and Marine Corps (Albany, Georgia Supply Center). Discussions were held with key logistics and financial management personnel at the Pentagon of all Services and the Office of the Secretary of Defense. These included the DSD Comptroller, the three Service Assistant Secretaries (Financial Management), key staff from the DSD, Services, Assistant Secretary (Installation and Logistics) offices and key military personnel. Cooperation was outstanding at both the Washington and field levels. Captain Joseph Murray, the Special Assistant for Defense Manpower Matters for the Assistant Secretary of OSD (Manpower and Reserve Affairs) provided high, responsive cooperation in permitting this study to meet its expected time schedule.

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I. BACKGROUND— WHY ARE CAPITAL INVESTMENTS NEEDED

Capital investment for productivity enhancement in the Department of Defense (DoD) is essential to reduce manpower costs in labor intensive areas and to maintain current levels of defense, thereby offsetting continued personnel salary increases and inflation. With military and civilian personnel costs amounting to over 53 percent of the Defense budget, major emphasis must be directed toward labor intensive areas to determine more efficient means of performance, without reducing military effectiveness. Increased capital investment and technological improvements provide the major thrust for productivity advances. Economists are of the opinion that capital investment and technological innovation in industry contribute to over 60 percent of the growth in productivity. A similar potential exists in DoD.

With almost one million civilian and military employees engaged in base support, logistics, and manufacturing operations in DoD, this is the area of major opportunity for applying the capital investment and technology to enhance productivity. This study highlights the opportunities that exist for increased capital investment and the significant return on investment that will result. A well integrated and dynamic program of productivity enhancement, of which capital investment is a major element, can result in estimated savings of \$200 million for each one percent increase in DoD productivity, including savings of 7,000-10,000 military and civilian personnel.

Capital investments have been successfully applied to DoD manufacturing, logistics and base operations support areas on a selected basis. Personnel reductions and increased productivity occurred. The most notable example has been its application to government-owned contractor-operated (GOCO) munitions plants, with an immediate high rate of return. The success

of this effort, lauded by General Accounting Office (GAO) and the Congress, has led to extensions to the depot, installation and arsenal levels. Using FY 1973-FY 1975 experience as a base, each dollar of capital investment has resulted in a minimum saving of:

- Over 75 cents in personnel
- Over 25 cents in other resources, with the total cost of the project amortized in one year.

Constraints in financing have existed inhibiting the initiation of fast amortizing capital investment programs. Lengthy processing time of projects, sometimes exceeding two years, have deterred initiation of capital investment programs. Investments have frequently been assigned low priority since savings materialize in future years and investments are in direct competition with today's force operating requirements, new weapon systems, or projects for safety, health, energy conservation or pollution abatement. Small projects (as low as \$1,000) and large projects of millions of dollars have in many cases been given the same review process for authorization and budget approval. This long time cycle and review process and the uncertainty of approval have created frustrations in even requesting fast amortizing projects. Earlier this year, the General Services Administration (GSA) requested from all agencies a listing of unfunded fast amortizing projects. DoD, in response, submitted a list of over \$106 million of productivity enhancing investment projects with an average payback period of 2.2 years. This backlog indicates the potential of projects for which funds can be applied.

Recognition now exists of the benefits of capital investment for productivity enhancement. The Secretary of Defense has taken two positive steps to expedite the application of a capital investment program. These are:

- An increase in the authority of the industrial fund commander to invest in industrially funded equipment from \$1,000 to \$25,000, and authority to use an industrial fund for projects up to \$100,000, subject to OSO Comptroller approval and a two year amortization period. (June 5, 1975.)
- A Program Decision Memorandum for the 1977-82 POM authorizing \$35 million per year (\$10 million for each Service, \$3 million for Marine Corps and \$2 million for Defense agencies) for fast amortizing capital investment projects starting in FY 1977. The \$35 million will be added to the FYDP approved programs.

The application of capital investment programs, however, is still spotty. Fast amortizing capital investment programs exist only in the Army (GOCO, arsenals, depots and installations) and Air Force (depot maintenance). Instructions on the implementation of the industrial fund increase in funding authority are still being prepared by the Services. A major effort is thus required to develop a strong productivity enhancing capital investment program in DoD, to implement the funding program now approved, and attain the return on investment objectives and manpower savings.

This Study will highlight the extensive opportunities for fast amortizing programs that exist in each Service, the barriers and the problems that must be overcome to develop a successful program, and recommend the actions required to have a dynamic, organized, and integrated capital investment enhancement program to which DoD's top management is committed. The development of a successful program must include such areas as:

- Identification of capital investment opportunities— methods and training
- Incentives— removal of barriers
- Financing— fast amortizing projects and major capital investment improvements including military construction
- Diffusion of knowledge
- Post audit.

II. PRODUCTIVITY AND CAPITAL INVESTMENT IN DoD

This Study is directed toward the application of capital investments to enhance productivity and reduce manpower costs in DoD. To understand the need for a major capital investment program, the DoD productivity record must be briefly reviewed, as well as clarifying what is meant by productivity measurement.

Productivity is the ratio between the units produced or services provided by an organization (output) and the resources consumed in their production during a specified period of time. Twenty-seven functions of the DoD support structure are measured with over 70 input/output summary indicators, which represent true measures of the prime mission of each functional area. Units of output include requisitions processed, tons shipped, health care composite units, end items processed, and number of meals served. Input is expressed in man-hours and costs. The measures of productivity are thus units of manpower per unit of output or dollars per unit of output. Thus, if we decrease the manpower or dollar cost per unit of output by substituting capital investment for manpower, an increase in productivity occurs.

From an overall viewpoint, the following points should be noted relative to DoD productivity:

- From 1967-74 DoD increased its productivity by almost 12 percent, while significantly reducing activities with the withdrawal from Southeast Asia (31 percent decrease in input and a 20 percent decrease in output). Figure 1 provides a summary of productivity trends in Defense from 1967-74.
- Productivity, however, over the past four years (1971-74) has remained at a constant level.

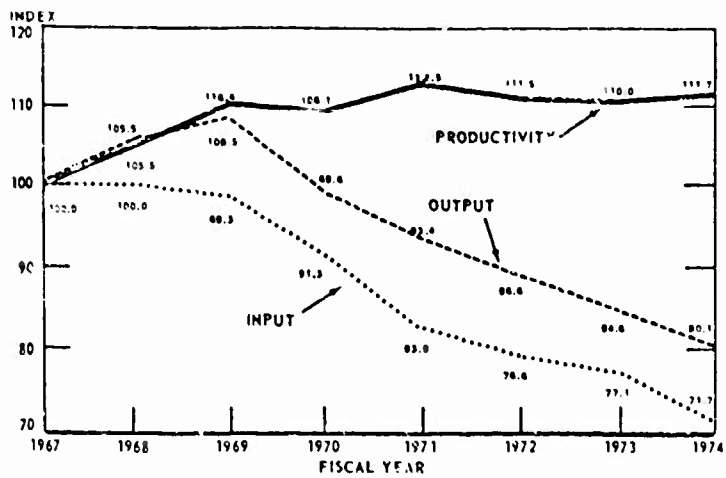


FIGURE 1. PRODUCTIVITY TRENDS DEFENSE FY 1967- FY 1974
(361,500 STAFF YEARS)

- DoD productivity measurement coverage is inadequate. Only 34 percent of the civilian work force are covered by productivity measures in 1974, compared to 83 percent for the rest of the Federal Government. Coverage is spotty in DoD across and within the Services.
- DoD objective is an annual increase in productivity in the support and logistics areas of 1.7 percent and coverage of 55 percent of the civilian work force (MBO objective provided to President in July 1975). Major change in program emphasis is required to accomplish these objectives.
- From 1964-72, pay increases exceeded inflation. Since 1972, the rate of inflation has exceeded pay increases (see Table 1). Projections from the FY 1976 Budget show that inflation will be below pay increases starting in 1976. If the Budget projections of inflation rates and Federal pay increases actually occur, DoD will of necessity require productivity increases to stay even with the pay increases, placing increased emphasis on the need for capital investment.
- Productivity measurement is fundamental to any analysis of productivity. Input/output measurement is important to determine if functions of DoD are performed efficiently and to see if functions are necessary or worthwhile to perform at all. DoD's productivity measurement and evaluation program lacks the cohesion and thrust required to make it the viable management tool it could and should be.

TABLE 1
 ECONOMIC ASSUMPTIONS FOR U.S. BUDGET—FY 1976*
 (CALENDAR YEARS)

Item	Actual 1973	Actual 1974	Assumed for Purposes of Budget Estimates						
			1975	1976	1977	1978	1979	1980	
Prices (percent change)									
GNP deflator	5.60	10.20	10.8	7.50	6.50	5.10	4.10	4.00	
Consumer price index	6.20	11.00	11.3	7.80	6.60	5.20	4.10	4.00	
Federal pay raise, October 1975 (Percent)	4.77	5.52	5.0	8.75	7.25	6.50	5.75	5.25	

* The Budget of the United States Government—Fiscal Year 1976, p. 41.

ASSESSMENT OF DoD OPPORTUNITIES FOR CAPITAL INVESTMENT
AND TECHNOLOGICAL INNOVATIONS

III. OFFICE OF THE SECRETARY OF DEFENSE

INTRODUCTION

Long-term productivity growth reflects basic changes in the factors underlying productivity improvement. These include increased availability of capital and advances in technology. Other factors include quality of labor, improvements in the allocation of resources, increased economies of scale, and advances in managerial know-how. According to leading economists, capital investment and technology are considered responsible for over 60 percent of the productivity growth in the private sector. This same relationship applies to DoD. Consequently the emphasis of this study is on expanding capital investments and technology.

This section will examine the Office of the Secretary of Defense and Service programs currently underway for productivity enhancement through capital investment, the interchange or diffusion of information on equipment which will increase productivity, the programs which can be used for identifying opportunities for capital investment, examples of deferred and unfunded capital investment opportunities to illustrate the potentials for productivity enhancement and resultant personnel reductions that exist at the Service level, approaches for financing, and barriers that exist limiting an effective capital investment program. The emphasis is on the DoD support and logistics areas covering the depot maintenance and supply area, manufacturing and housekeeping (civil engineering) functions. This includes the so-called base operating support area—mission and central support forces—and the logistics area, totalling 950,000 military and civilian personnel in FY 1975 and a Congressional request of 936,200 in FY 1976, as shown in Table 2.

OFFICE OF THE SECRETARY OF DEFENSE

Deputy Assistant Secretary of Defense Clements on 11 April 1975 directed a major study effort to develop a list of potential DoD initiatives to reduce the cost of material acquisition and improve the productivity of our contractors. This cost reduction initiative recognized that "there are numerous opportunities to obtain significant cost savings in the production of Defense material by increasing the application of state-of-the-art manufacturing techniques and by the development of new or improved manufacturing technology."

TABLE 2

SUMMARY OF PERSONNEL IN AREA OF GREATEST POTENTIAL FOR
CAPITAL INVESTMENT PRODUCTIVITY ENHANCEMENT

	FY 1975		FY 1976	
	Military	Civilian	Military	Civilian
<u>Base Operating Support</u>				
Mission Support Forces				
Army	26.5	89.3	25.8	90.8
Navy	37.1	26.7	36.7	26.4
Marine Corps	17.6	10.7	17.6	10.7
Air Force	<u>125.3</u>	<u>64.7</u>	<u>119.8</u>	<u>63.2</u>
Total	206.5	191.4	199.9	191.1
	397.9		391.0	
Central Support Forces				
Army	18.1	42.3	17.1	39.6
Navy	2.8	20.7	2.8	21.4
Marine Corps	4.6	1.9	4.6	1.7
Air Force	20.7	31.0	20.4	30.1
Defense Agencies	—	<u>6.8</u>	—	<u>6.5</u>
Total	46.2	102.7	44.9	99.3
	148.9		144.2	

TABLE 2 (CONT)

	FY 1975		FY 1976	
	Military	Civilian	Military	Civilian
<u>Logistics</u>				
Army	7.4	102.3	7.1	101.5
Navy	8.0	155.8	7.8	159.7
Marine Corps	0.9	2.1	0.8	3.0
Air Force*	4.8	74.7	4.6	70.5
Defense Agencies	<u>-</u>	<u>47.2</u>	<u>-</u>	<u>46.0</u>
Total	21.1	382.1	20.3	380.7
		<u>403.2</u>		<u>401.0</u>
Total	950.0		936.2	

* Air Force also has Logistics in Command Category— special maintenance, ammo maintenance and disposal and Civil Engineering Center.

The emphasis of this program is on contractor effort to reduce weapon system acquisition costs, with new initiatives to provide greater incentive for contractor capital investments in modern, more efficient manufacturing facilities, Production Support Engineering (PSE) funding— "seed money" aimed at manufacturing productivity improvement (similar to IR&D), evaluation of ASPR provisions to insure that cost-effective contractor capital equipment investments are encouraged, reevaluation of feasibility of multi-year contracting, and identification of a number of major weapon system programs where the application of existing or new manufacturing technology promises a high return on investment.

With 936,200 DoD in-house personnel devoted to base operations and logistics support activities, the emphasis needs to be on in-house effort, as well as weapon system acquisition and contractor effort. Discussions with Service personnel indicated that this OSD effort was not directed toward the areas of major in-house opportunity for personnel savings. No DoD-wide concerted effort for improving manufacturing methods in-house is underway. An identification of major problems in the base support and logistics areas and an intensive DoD-wide effort to solve these in-house problems would have a great return on investment. At present there will be only limited fallout for base operations and logistics from the OSD 11 April 1975 directive. The Navy, for example, had identified only one naval shipyard manufacturing technology (MT) project in the Navy's five year MT Program. As the Navy indicated, it is difficult to believe that, if funds were made available for special productivity improvement analysis or development of new methods or plant equipment to solve particular production problems, unique equipment or methods for improvement, mechanization, or automation of operations could not be developed in drydock, shipboard, and shop work. Thus, the approach of Mr. Clement's 11 April 1975 memorandum has wide application to in-house activities and the thrust of the study is to point out those opportunities that can materialize with resultant manpower savings.

OSD, in response to a GSA request, submitted a list of unfunded fast amortizing projects. These totalled over \$106 million, with a payback capability of 2.2 years, as shown in Table 3.

Examples of the items included in the OSD submission are contained in Table 4 showing by Service and Command, selected unfunded projects. This provides specific identification of the potential of financing of projects with a high rate of return on investment.

TABLE 3
UNFUNDED FAST AMORTIZING PROJECTS

Category of Value of Each Project	Number	Investment Cost (Millions of Dollars)	Gross Annual Savings (Millions of Dollars)	Amortization Period (Years)
\$10,000-\$50,000	301	\$ 7.4	\$ 5.3	1.4
\$50,000-\$1,000,000	.02	24.8	11.4	1.9
Over \$1 million	<u>22</u>	<u>74.8</u>	<u>29.9</u>	<u>2.4</u>
Total unfunded	425	\$106.9*	\$46.6	2.2
* Do not add due to rounding.				

TABLE 4
 OOD SUMMARY OF CAPITAL INVESTMENT PROJECTS

	Project	Capital Investment	Time to Amortize	Annual Savings
	Army			
<u>Army Materiel Command (AMC)</u> Radford Army Ammunition Plant Radford, Virginia Lake City Army Ammunition Plant, Independence, Missouri Sharpe Army Depot, Lathrop, California	Electric pallet truck system	\$ 107,740	54 workdays	\$ 520,560
	Turbo generator governor	50,000	10.8 months	55,200
	Sellite washer #3	107,837	135 workdays	224,295
	Oust collecting system	73,960	95 workdays	217,910
	Automatic case feeder	59,480	180 workdays	85,795
	Automatic assembly machines	195,300	1.7 years	109,975
	Retort furnace	260,000	1.0 year	245,000
	Shredder/baler	62,800	1.3 years	45,493
	Automatic weighing and dimensioning equipment	61,600	2.9 years	20,896
	Warehouse mechanization Phase II, Increment I	195,661	3.2 years	61,080

TABLE 4 (CONT)

	Project	Capital Investment	Time to Amortize	Annual Savings
	Army			
Army Materiel Command (AMC) (Cont.)				
Anniston Army Depot, Anniston, Alabama	Overhead electric powered crane	\$ 130,000	1.1 years	\$ 115,392
	Care, preservation, and modernization of capital equipment	1,106,172	4.1 years	269,358
Pueblo Army Depot, Pueblo, Colorado	Cincinnati N/C milling machine	92,750	3.3 years	27,884
Savanna Army Depot, Savanna, Illinois	River porc facility	8,440,000	12.6 months	8,025,764
Harry Diamond Laboratories, Washington, D. C.	Machine Tool Requisition, Test and Digitizer System and Multi-Discipline Engineering Design Evaluation and Analysis System (MEDIA)	420,000	3.1 years	132,200
	Machine forming, finishing, inspection, testing, layout and methods	500,000	3.5 years	139,800
Army Communications Command (ACC)	Interservice Telecommunications Consolidation (ITC)	4,349,000	2.6 years	1,624,000

TABLE 4 (CONT)

	Project	Capital Investment	Time to Amortize	Annual Savings
	Army			
<u>USATRAOOC</u> Ft. Eustis, Virginia	Computer monitoring and control of boiler plants	\$ 400,000	10.2 months	\$ 469,028
<u>Directorate for Supply</u> RRAD, AMC	Ground level shipping and receiving ammunition rail dock	63,100	1.9 years	32,305
<u>Army Aviation Test Board</u> Fort Rucker, Alabama	Modular Engine Test Stand (METS)	426,000	1.1 years	381,000
<u>Army Forces Command (FORSCOM)</u> XVIII Airborne Corps Ft. Bragg, North Carolina	Central surveillance of boiler and chiller Automotive diagnostic equipment Electronic supply injection system	60,000 64,880 95,000	3.7 years 15.6 months 2.0 years	16,000 49,734 45,000
Camp McCoy, Wisconsin	Vehicle washing equipment	75,000	2.0 years	36,000

TABLE 4 (CONT)

	Project	Capital Investment	Time to Amortize	Annual Savings
	Army			
Army Corps of Engineers Waterways Experiment Station, Mississippi	Film writer Technicon auto analyzer system	\$ 97,000 75,000	3.8 years 1.5 months	\$ 25,000 455,000
New England Division	Automatic hydrographic survey system #2 High speed plotter	206,000 60,000	3.4 years 1.7 years	60,000 34,120
Memphis, Tennessee Division	Integrated hydrographic survey and positioning system	184,704	11 months	200,000
North Atlantic Division	Automated Integrated Dragtending System (AIDS)	58,800	1.9 months	372,247
Facilities Engineering Division, Ft. Lewis, Washington	Closure of Boiler Plant #2. Building 4228	71,000 95,000	6 months 9 months	134,191 (Electric) 127,562 (Oil)

TABLE 4 (CONT)

	Project	Capital Investment	Time to Amortize	Annual Savings
Army				
<u>Army Corps of Engineers (Cont)</u> Facilities Engineering Division, Ft. Rucker, Alabama	Recovery of waste heat	\$ 120,000	2.7 years	\$ 44,255
Army Engineer School	USAES academic computer system	50,000	2.5 years	19,800
Subtotals		\$18,418,784		\$14,421,744
Navy				
<u>Naval Facility Engineering Command</u> Norfolk, Virginia	Central steam plant (P-122)	\$ 1,413,000	9.5 months	\$ 1,784,700
<u>Naval Air Systems Command</u>	Automatic data acquisition and analysis for testing jet engines	4,732,000	3.9 years	1,191,720
	Grinding machine	75,000	2.4 years	30,650
	N/C drill machine	85,000	3.3 years	25,878

TABLE 4 (CONT)

	Project	Capital Investment	Time to Amortize	Annual Savings
Navy				
<u>Naval Ship Systems Command</u>	Four latnes	\$ 104,800	1.5 years	\$ 69,575
<u>Naval Supply Systems Command</u>	Ship-to-shore conveyor	80,000	1.9 years	42,300
	Key entry system	205,488	2.1 years	98,131
	Mini computer	55,396	3.4 years	16,204
Navy/Marine Corps	Automatic washer-dryer system	800,000	5.6 years	140,905
	Subtotals	\$ 7,670,684		\$ 3,432,063
Air Force				
<u>Air Force Logistics Center</u> <u>Air Lift Command</u>	Landing gear overhaul facility MMHS	\$ 1,550,298	1.8 years	\$ 822,218
Hill Air Force Base, Utah	Air freight terminal addition	1,180,650	2.1 years	566,985

TABLE 4 (CONT)

	Project	Capital Investment	Time to Amortize	Annual Savings
	Air Force			
Warner Robins, Georgia	Mechanized rack item storage system	\$ 477,535	1.6 years	\$ 295,206
	Mechanized small/medium item storage system	630,250	2.9 years	216,589
Kelly Air Force Base, San Antonio, Texas	MMHS for new warehouse	680,000	1.9 years	341,991
Tinker Air Force Base, Oklahoma City, Oklahoma	Automated Maintenance Inventory Control (MIC)	450,000	11.2 months	480,929
	Automated cleaning system	500,000	2.3 months	214,032
	Overhead conveyor	150,348	2.9 years	50,348
McClellan Air Force Base, California	Depot maintenance hangars	2,523,330	3.9 years	643,568
<u>Military Air Lift Command</u> Scott Air Force Base	Aircraft fuel dispensing facility	1,540,000	4.7 years	322,475

TABLE 4 (CONT)

	Project	Capital Investment	Time to Amortize	Annual Savings
Air Force				
Air Training Command				
Randolph Air Force Base, Texas	72 inch rotary mowers	\$ 51,000	8.7 months	\$ 70,201
Air Force Academy, Colorado	Conveyor dishwashing system	67,500	9.0 months	90,200
	Overhead chain conveyor system	65,430	4.7 years	13,873
	Supply delivery system	298,000	4.9 years	60,300
Subtotals		\$10,164,341		\$ 4,188,915
Defense Supply Agency				
Defense Depot (DCSC), Cameron Station	Equipment replacement and modernization of clothing factors (FY 1975 project)	\$ 565,000	3.7 years	\$ 154,220
	FY 1976 project	260,000	3.7 years	69,720
Defense Depot (DDMT), Memphis, Tennessee	Mechanization of C&T and medical items	560,000	1.9 years	292,282
Subtotals		\$ 1,385,000		\$ 516,222
Totals		\$37,633,809		\$22,558,944

IV. ARMY

A major capital investment productivity enhancing program was started in the government-owned contractor-operated (GOCO) munitions plants in 1973. This showed a high rate of return on investment, with one project amortized in 29 days. Gross annual savings for the projects undertaken in the first year showed savings double the cost from an overall standpoint, i.e., amortization in six months once project is installed and operating. Table 5 provides specific illustrations of savings which materialized in the first year of the GOCO program. Senator Proxmire issued a most favorable press release on this project after being briefed, concluding that, "it is great to find a military program that has turned out to be a gold mine for the taxpayer." ^{1/} GOCO productivity has increased by over 42 percent from FY 1967 to 1975 despite decreases in input (33 percent), with capital investments assisting in creating this favorable environment. The success of the GOCO program has led to significant extension of the capital investment program to depots, arsenals, and the installation level. Three additional programs were established to cover Quick Amortizing Projects, funded from the Weapons Procurement Army Appropriation, Operation and Maintenance, Army Appropriation, and Other Procurement, Army Appropriation. The scope and savings of these four capital investment programs are shown in Table 6. The coverage and criteria for the four programs are shown in Table 7.

The Army Productivity Enhancing Capital Investment Program (PECIP) is designed to provide for rapid approval and to cover installations on a world-wide basis. This program authorizing the use of a fund administered on a decentralized basis, operating under DA guidance and criteria, providing rapid approval of projects meeting the quick amortizing criteria, is recommended for Defense-wide application. Approval is at the Command level (FORSCOM, TRADOC, USAEUR, Communications Command), with the AMC Troop Support Command (TROSCOM) serving as the bookkeeper, but with no veto power. Review of the project from the installation level in terms of meeting criteria is made at the Command level and funding approval from TROSCOM is provided within five days. In fact, approval has been provided in many cases on the same day from TROSCOM. As of 30 June 1975, 102 projects with a value of over \$2.5 million have been approved as productivity enhancing capital investments in FY 1975. Examples of projects under PECIP are shown in Table 8 based on a report from the Training and Doctrine

^{1/} Hearings, Joint Economic Committee, Subcommittee on Priorities and Economy in Government, December 17, 1973, on Productivity in Government.

TABLE 5
 EXAMPLES OF FY 1973 GOCO CAPITAL INVESTMENT PROJECTS—
 ARMY MUNITIONS COMMAND SELF AMORTIZING PROJECTS

Ammunition Plant	Item	Capital Investment	Time to Amortize (Workdays)	Projected Savings (Annual)
Lone Star	SEALANT Dispenser Eliminate manual application of sealing compound in assembling booster to M904E3 and M904E4 fuze. Reduce three of six operators. Operational 19 May 1973.	\$ 7,000	75	\$25,000
Indiana	Clothes Dryer Completely dry clothes rather than use of drying tunnel and manual handling. Reduce 5 of 12 laundry employees. Operational 10 May 1973.	25,000	130	50,000
Twin Cities	Scrap Compactor Replace present taling operation for brass scrap. Brass solids bring increase in price and reduce storage space. Operational 1 March 1973.	28,200	160	47,450
Twin Cities	Automatic Carton Feed Replace manual carton feed for carton packing machine, reducing two packers on 5.56 mm blank ammunition line. Operational 22 February 1973.	3,100	47	18,250

TABLE 5 (CONT)

Ammunition Plant	Item	Capital Investment	Time to Amortize (Workdays)	Projected Savings (Annual)
Lake City	<p>Ultrasonic Test Equipment</p> <p>Determine sidewall flaws of 5.56 mm cartridge cases and permit salvage of three million cartridges. Operational 5 September 1973.</p>	\$27,000	87	\$49,000
Lone Star	<p>X-Ray Film Processor</p> <p>Provide new equipment updating and improving processes and techniques for x-ray facilities. Use less expensive paper back film. Operational 4 April 1973.</p>	13,500	58	58,000
Kansas	<p>Automatic Addressing Machine</p> <p>Purchase addressing machine now on lease. Purchase cost less than annual lease. Operational 4 August 1973.</p>	2,400	156	3,250
Joliet	<p>Relocate Melt-Mix GRP3</p> <p>Consolidate mixing operation, reducing one person per station. Operational 1 June 1973.</p>	24,300	128	49,400

TABLE 6
ARMY SELF AMORTIZING PROJECTS

Fiscal Year	Program	Projects	Cost	Gross Annual Savings
1973	Ammo (GOCO)	23	\$ 467,510	\$ 918,940
1974	Ammo (GOCO)	32	1,173,737	1,890,349
	OMA	9	105,343	342,326
	Weapons	3	41,640	38,186
1975	Ammo (GOCO)	31	1,574,132	4,906,386
	OMA	14	90,008	211,503
	Weapons	8	57,400	52,882
	PECIP-TROSCOM	102	2,524,021	2,303,573
1976	Ammo (GOCO)		1,000,000	-
	OMA	-	200,000	-
	Weapons	-	500,000	-
	PECIP	-	3,000,000	-

TABLE 7
PROGRAM COVERAGE AND CRITERIA

Program	Coverage	Criteria	Administered By
Weapons (Procurement)	Arsenals	Three-year amortization \$50,000 limitation on single project	Armaments Command
Ammunition	GOCO ammo plants	Three-year amortization	Armaments Command
Operations and maintenance funds	Arsenals	Three-year amortization; no dollar limitation on each project	Armaments Command
Productivity Enhancing Capital Investment Program (PECIP)	Depots and in- stallations Depots, installatics, arsenals	Two-year amortization; no dollar limitation on each project Limited to Category 5300 type items which are non- centrally controlled \$100,000 dollar limitation on single project; three- year amortization	Headquarters, AMC Command approval, for- warded to IROSCOM, which has five days to process item

TABLE 8

TRAINING AND DOCTRINE COMMAND FY 1975 PECIP FUNDED PROJECTS

Project	Installation	Estimated Annual Savings (Dollars)	Cost (Dollars)	Time to Amortize
1. Intrusion detection system	Eustis	\$ 38,259	\$ 17,221	.5 year
2. Capacitor	Eustis	2,822	5,300	1.9 year
3. Chlorine cylinder	Rucker	7,950	10,500	1.3 year
4. Boiler controls	Rucker	49,380	8,000	.2 year
5. Programmable calculator	Sill	2,983	3,597	1.2 year
6. Laundry equipment	Knox	65,044	81,600	1.3 year
7. Lime silo	Knox	5,280	10,000	1.9 year
8. Navigational equipment	Sill	7,200	4,356	.6 year
9. Laundry equipment	Gordon	53,725	68,000	1.3 year
10. Laundry equipment	L. Wood	29,945	29,350	1.0 year
11. Boiler controls	McClellan	66,800	99,300	1.5 year
12. Filing equipment	Belvoir	14,992	20,676	1.4 year
13. Laundry equipment	Benning	34,431	35,000	1.0 year
14. Plastic packaging equipment	Sill	6,233	6,757	1.1 year
15. Laundry equipment	Lee	14,310	13,000	.9 year
16. Laundry equipment	Belvoir	25,022	34,900	1.4 year
17. Laundry equipment	Bliss	46,143	88,000	1.9 year
18. Plastic packaging equipment	Benning	22,932	35,000	1.5 year
Total		\$493,451	\$570,557	1.2 year

Command (TRADOC). Total personnel savings are estimated to be 50 civilian and military. Only the first project approved, however, had military personnel savings, since TRADOC did not accept subsequent projects based on military personnel savings. This is a criteria which is questionable and needs change on an Army-wide basis. Seven of 18 TRADOC projects involved no personnel savings, only nonpersonnel resource savings. This will be the case in a number of projects. For example, Picatinny has been leasing a street sweeper for \$51,000 per year. Procurement of the street sweeper would cost about \$48,000. An interpretation originally placed on PECIP indicated that only projects with productivity enhancement could be procured under PECIP. Thus, the street sweeper was a one-to-one replacement and was not considered eligible under an ARMCOM interpretation. This interpretation has subsequently been reversed after discussion with the Deputy Commanding General of ARMCOM. The street sweeper, providing a resource saving with a one year amortization, can now be procured under PECIP.

On personnel savings, the Commands have assumed that they are applicable to meet other priority requirements. For example, personnel savings in TRADOC for the installation of automatic boiler controls in Building 8795 at Ft. Rucker were applied against a personnel requirement for another boiler plant in Building 6021.

LESSONS LEARNED FROM PROJECTS TO DATE

- High return on investment is possible by decentralizing control of project approval, but approvals must be based on clear-cut criteria developed jointly with higher headquarters. These criteria provided that return on investment must be in 2-3 years, equipment would be off-the-shelf, and an audit trail would exist to assure that savings actually materialized.
- For the GOCO capital investment projects, the first year after installation auditable savings were 197 percent of cost on an overall basis, average cost was \$20,000 per project, amortized return on investment averaged 120 days, with one project amortized in 29 days.
- Decentralization of approving authority permits fast response.
- Major training effort is required to overcome past frustrations on approval of projects and to energize management engineers to identify and initiate projects for which savings are possible.
- Top level support and interest are essential.
- Small dollar projects do not need the same detailed review as required for major modernization projects, as long as clearly established criteria exists.

- A post audit capability must exist for recording before and after costs, but auditing itself should be on a sample basis. Audit below \$100,000 should be by Army Audit Agency or specially designed auditors, not left to plant representatives.
- Work load projections must be reviewed to be certain that they are realistic and that the savings are possible on the claimed work load potential.
- The length of time for reporting savings on a project should be established. Limit should probably be six months to one year after amortization. Concern exists in field on administrative cost of such reporting.
- Once Army Industrial Fund authorization for equipment purchase of fast amortizing projects extended to \$25,000 at local level and from \$25,000 to \$100,000 requiring OSO Comptroller approval, reporting on an after-the-fact periodic basis to indicate cost and savings, highlighting status and progress of this financial approach is required.
- Limited use of GOCO program by some GOCO's. Some GOCO's have identified potential projects and have a record of significant savings. Other GOCO's, such as Long Horn, with only two small projects in FY 1975, have made very limited use of program.
- Omnibus Design Fund beneficial to cover projects in which off-the-shelf items need some design funding to modify or adapt equipment to proposal use. This applied especially to the construction of a machine to automatically assemble the components of the low-cost inertial impact switch used in nine Army fuzes. The project would increase production rate from 50 switches per hour per employee to 1,200 switches per hour per employee, with quality increasing by eliminating handling of the hairline switch. Savings, based on work load projections would be about \$265,000 annually, with a one-time capital investment cost of \$243,000 and a manufacturing methods and technique requirement of \$90,000. This is not RTO&E. Guidance is not clear as to use of PECIP for design. With conservative savings of \$265,000, project will amortize itself in 1.2 years, work load is present, thus the PECIP fast amortizing capital investment funding for productivity enhancement appears as a logical source of funding and a broadening of criteria to include design appears in order.
- Considerable opportunities exist in the base operations area, which will result in personnel savings. Technological improvements have not been directed into this

area, nor has a strong program for diffusion of proven technology been directed to installations. One installation commander indicated that he was an isolated island performing base engineering with no diffusion of technology advances provided him and with personnel reductions of one-third to perform same level of support on a quality basis. The introduction of more capital investment projects would be greatly welcomed by him to offset the personnel reductions already made. As a result of personnel reductions, he has contracted out some of his base operations and engineering functions such as waste collection, but even with this contracting out effort, savings are possible. For example, a compactor would reduce the number of pickups per week in buildings by 40-60 percent, with a resultant reduction in the waste collection contract.

FINANCING

Army in FY 1976 proposes to finance productivity enhancing capital investments at a level of over \$4.7 million annually. The objective is to provide rapid financing for programs with a high rate of return on investment. There are several approaches.

- Set Aside Funding

- GOCO Ammunition Program—This has been a successful effort in the GOCO ammo program, operating on a decentralized basis, with a specific allocated amount—now a separate line item—in the Ammunition Procurement, Army Appropriation. The GOCO plants place their requests on ARMCCM and funds are released.
- PECIP Program—A set aside administered by Troop Support Command for all Army installations, arsenals, and depots. Funds are separately identified in the Other Procurement, Army Appropriation. In FY 1975, this was open ended, with additional funding provided when the original allocation was used up from within the Procurement, Army Appropriation. West Point, AMC, and CONUS Commands have used this fund. Overseas application is increasing.
- OMA
 - Arsenal—For procurement of arsenal base operations type equipment items. Funding provided from a set aside amount in the OMA Program, and administered by ARMCOM on a decentralized basis. (See Table 9 for examples.)
 - Supply—O&M funds have been used in the Army to procure depot modernization equipment and labor saving devices that were justified by an economic

TABLE 9
OMA SELF AMORTIZING PROJECTS

Item	Cost	Description
Fog generator— cold aerosol	\$ 2,450	Sprayer which allows use of insecticide and water instead of diesel fuel with insecticides
Programmable printer, desk model	2,735	Desk model programmable electronic printer, Monroe 1860
Hewlett Packard calculator	17,331	Hewlett Packard calculator with plotter and appropriate options (Model 9830-A)
Wang calculator	3,957	Wang electronic calculator Model 600-14-11
Modern key disk equipment	42,690	Controller, 32K, disc with appropriate options
Tektronix calculator	3,502	Tektronix calculator with paper printer and mathematical and statistical libraries
Itek platemaster	2,793	Platemaster, 12-18 Mark III ROHT, duplicating equipment
MTST W/2 mag tap	4,842	Typewriter, magnetic tape, with two-tape station console, IBM Model IV
Tracer reaction mechanism	25,000	Nicolette 1083 Spectrum Analyzer with accessories— used to retrieve tracing data
Calculator, electronic	5,312	Monroe electronic display calculator s used to speed up data assessment
Industrial lift for material handling equipment	3,500	Industrial lift used for maintenance and inspection operations
Vehicle lift for wash rack	4,000	Wash rack to lift an entire vehicle in one operation during steam cleaning and washing
Leaf loader	5,200	Leaf loader to facilitate the manual leaf raking operation

analysis with amortization periods up to five years. Funds are programmed for this purpose to increase productivity and offset large draw-downs of personnel. This is a continuing program to take advantage of the technological advances in the state-of-the-art in materials handling, packaging, storage and retrieval systems, sortation systems and control devices. Examples are shown in Table 10.

- Weapons- An amount is set aside for the Armament Command arsenals for capital investments for weapons component overhaul, modification, and manufacturing. This is administered by the Armaments Command, based on criteria from AMC, and funded from the Weapons Procurement Appropriations Army. Examples of the projects approved are shown on Table 11.

- Industrial Fund

- With the recent change in authority by the Deputy Secretary of Defense to procure equipment from the industrial fund up to \$100,000 per project- up to \$25,000 by industrial fund commander and from \$25,000 to \$100,000 with OSO Comptroller approval, a new source of funding exists. This can in fact be in two approaches:

- Overhead Charges- Equipment that can be amortized within two years can be procured and charged to the Industrial Fund overhead with no increased cost to customer, as long as cash position is not impaired.
- Job Order- Equipment purchased can be charged to a job with no increased cost to customer if the equipment can be amortized within the period of the job order on that specific project.

Another aspect of the Industrial Fund should be considered and that relates to depreciation charges which could be charged on equipment, held in the Industrial Fund, and used for replacement of equipment as needed. If the Industrial Fund is to be a viable operating program following industrial practices, the depreciation approach should be authorized. Although memorandum entries exist for foreign sales and other non-government sales, this is not a paper account only. Thus, the Industrial Fund is not being used to its full potential as a business tool. Depreciation is not being charged on all sales. The program

TABLE 10
 OMA DEPOT MODERNIZATION AND LABOR SAVING DEVICES

Item	Cost	Description
Sortation system and conveyer net work	\$1,037,000	Sorts and conveys to central point for containerization and consolidation
Bin retrieval system	705,000	Computerized storing and retrieval system
Integrated handling system	1,434,000	Handles and palletizes supply loads—receiving, shipping and packing
Painting booth	125,000	Used for painting vehicles
Drying oven	70,000	Used for drying painted vehicles
Shrink machine	24,000	Packing material for shipment

TABLE 11
WEAPONS SELF AMORTIZING PROJECTS

Item	Cost	Description
Automatic oxygen analyzer	\$14,950	Analyze oxygen content of powdered metals
Heat treating furnace	8,690	Heat treating furnace for powdered metallurgy parts
Computerized tape preparation system	18,000	Computerized system to make tapes for numerical control machines
AC/DC calibrator	6,000	Solid state all transistorized AC/DC calibrator to calibrate all types of meters
Gage block comparator	4,600	Gage block comparator with twin contact gaging and electronic stepping to improve productivity
Dual-trace oscilloscope	2,000	Dual-trace oscilloscope highly portable with high rise time; eliminates two pieces of equipment

manager should be authorized to charge depreciation, place funds from the charge in a depreciation account which could be used by the program manager for procurement of production equipment for modernization and replacement. For foreign military sales and other non-government sales, GAO has required recovering depreciation on capital investment and thus the accounting procedures are present.

- **Additional Approaches**—Several other approaches could be applied to provide funding for capital investment improvements with fast amortization potential:
 - Permit borrowing from the Industrial Fund for capital investment.
 - Establish a Productivity Bank, which would operate in a manner similar to a commercial bank, operating under a Congressional approved capital fund and charter. The bank would lend funds for capital investment, with a repayment scheduled tailored to the projected savings. Funds would not be taken away from DoD for capital improvements, nor would the competition between operating costs and investment funding occur. The Bank would be repaid from savings, possibly with interest. The Bank would have a first lien on the Service appropriations for repayment, if the scheduled savings did not materialize. The necessity for repayment would in fact reduce the effort for "brochuresman" in the original request.
 - Establish a capital budget for the government. In the Federal Government, capital outlays in operating appropriations are budgeted and accounted for as current expenses and financed from current revenues. The charging of capital outlays to current expense and their financing out of current revenues reduces the level available for internal operating programs. The alternative is to establish a capital budget. Investment designed to increase the capacity and/or productivity would be financed from borrowing, as in industry. Interest and depreciation would be charged as a current expense under the capital budget concept.
 - Establish a separate centrally managed DoD revolving working capital fund for procurement of modern production equipment. This fund would finance the procurement of fast amortizing capital investments at nonindustrially funded installations. Repayments can be made to the working capital fund on an annual basis until the cost is recovered from the benefitting appropriation on the basis of budgeted savings.

AMMUNITION MODERNIZATION PROGRAM

In 1970, Army initiated a modernization and expansion program of the Army's ammunition production base. The objective of the program was to improve the mobilization readiness capability of the ammunition production base. The base in 1970 was comprised of World War II and Korean War vintage facilities. Many were obsolete, worn out and often required cannibalization of parts for other vintage equipment to maintain production schedules. In determining the scope of the modernization program, trade-offs were made between investment in inventory and an investment in facilities to achieve the desired readiness. Generally facilities provided the lower cost alternative. The modernization program recognized the changing skills and shifts of skills in the work force, changing product mix of ammunition, technological advances in products and production techniques, and new problems in energy conservation and pollution control. The highest priority was given to expand the base to meet current production and secondly to modernize existing facilities to meet current production. The total cost in FY 1975 dollars is as follows:

Manufacturing, methods and technology	\$ 310.0
Modernization and expansion projects	5,963.9
Production equipment package modernization projects	<u>1,000.0</u>
Total	\$7,273.9

Over \$1 billion dollars has been appropriated. Three hundred eighty-seven projects are underway or under design totalling \$2.3 billion. By FY 1979, annual program requirement will be in excess of \$400 million.

The GOCO quick amortization capital investment program has funded a number of projects which can be applied to the Ammunition Modernization Program in the small arms, loading, assembly, and pack, propellants and explosive and demilitarization of small arms areas. These are shown in Table 12. Thus major savings (personnel and other resources) for current production are obtained from the GOCO Quick Amortization Capital Investment Productivity Enhancing Program, which are applicable to the long-range Ammunition Modernization Program.

The current Ammunition Modernization Program includes brick and mortar as well as equipment. Both are funded from the Other Procurement, Army Appropriation account, compared to Army installations, at which brick and mortar construction must be funded from Military Construction, Army Appropriation. The language in the FY 1976 Appropriation Bill may require that no brick and mortar construction financed by the Procurement Appropriation may be initiated without specific Congressional approval.

PERSONNEL SAVINGS

Capital investment programs to date have had significant personnel savings, which can readily be assumed for future programs. The three years of the GOCO program has resulted in reductions as follows.

TABLE 12
 PROJECTS FUNDED BY THE GOCO QUICK AMORTIZATION CAPITAL
 INVESTMENT PROGRAM

Project	Description	Investment	Gross Annual Savings
<u>Small Arms</u>			
73-02	Ultrasonic test equipment inspection of 5.56 mm cartridge cases for flaws	\$ 26,970	\$ 116,640
73-31	Brass turning compactor to compress brass scrap into 15 inch cubes	30,500	111,127
73-41	Automation of jungle blkrep to automatically wax-dip 81 mm filler containers for jungle protection	9,000	43,824
<u>Load, Assemble and Pack</u>			
74-01	Automatic conveyor for CBU-convey or transfers loaded CBU from loading cubicle to area for two hour waiting period	107,127	519,586
75-25	Adhesive applicator for BLU-63 and BLU-86	5,271	18,793
75-44	Assembly and closing equipment for 105 mm warebound box	199,579	2,632,410

TABLE 12 (CONT)

Project	Description	Investment	Gross Annual Savings
<u>Propellants and Explosives</u> 73-43	Install acid storage tank for storage of start-up acid	\$ 15,000	\$ 107,000

	Total Cost	Personnel Savings		Total Annual Savings
		Number	Dollars	
FY 1973	\$ 467,510	40	\$ 420,000	\$ 918,940
FY 1974	1,173,737	60	720,000	1,890,349
FY 1975	<u>1,574,132</u>	<u>92</u>	<u>1,242,000</u>	<u>4,908,336</u>
Total	\$2,795,379	192	\$2,382,000	\$7,715,675

Thus for every dollar of capital investment, personnel savings totalled 85 cents.

The TRADOC program under the PECIP program indicates the following return on investment:

Total Cost	Personnel Savings		Total Annual Savings
	Number	Dollars	
\$570,557	50	\$438,000 ^{1/}	\$493,451

Thus in this case, for every dollar of capital investment, personnel savings totalled 77 cents.

An estimate of 75 cents saved in personnel costs for every dollar of capital investment provided for PECIP type projects can thus be applied to future projects on a conservative basis.

MANUFACTURING TECHNOLOGY

Over \$100 million annually is devoted Defense-wide for improvement of manufacturing techniques (MT). The emphasis is on weapon systems and funding is provided to contractors. The effort is to provide greater incentive for contractor capital investments in modern, more efficient manufacturing facilities to improve manufacturing productivity. Fall outs for in-house use at the Army installation level has limited benefit. Of the \$65 million provided Army, about 60 percent is directed to the ammunition modernization program. In view of the large funding for base operations, supply and depot maintenance, transportation, and other in-house operating areas, manufacturing technology funding directed at the support areas could have significant impact in reducing personnel and costs, and providing significant productivity gains. This could include some research effort to improve the equipment used at DoD installations for housekeeping functions.

^{1/} Based on estimated personnel costs effected by capital investment action, not by an average.

At the arsenals, manufacturing technology is applied. The Tank Automotive Commander, for example, pointed out a successful MT project on the M60 line—a GOCO operation operated by Chrysler—but indicated that he was asking Chrysler to implement the improvement from corporate funding. Since this is a GOCO plant, there is a question as to why a program similar to the GOCO ammunition program had not been applied to provide the necessary financing. An improved bridge between MT and implementation is required.

INCENTIVES AND BARRIERS

There is a general resistance to change. Why go from a comfortable "known" to an uncertain "unknown" whatever the potential benefits. Change involves risk. Know-how exists but does not reach the manager so he knows the benefits of the trade-offs for change. There is a low rate of transfer of the knowledge of new methods.

The reluctance to change must be overcome. The willingness to change requires aggressive leadership and positive capital investment program direction. The commander must provide the drive to improve and to become cost competitive. Reductions in personnel ceilings have forced managers to look for better ways of performing. This is especially true in the civil engineering area, where actual strength is considerably below the manning standards. This provides a pressure for substituting capital investment for labor or contracting out. Funds do not appear to be as short as personnel ceiling authorizations.

In the GOCO area, the application of contractual value engineering sharing arrangement with the contractors has been successful as an incentive for some plants. This, as well as the potential of future closings, has created a productivity consciousness.

Specifically there are a number of barriers which are self-inflicted which need to be overcome, including:

- The application of the PECIP program to only non-controlled items (listed in the accounting codes as Program 5300). Broader application has potentials.
- Interpretation by Commands that projects which serve military personnel should not be considered eligible for PECIP funding.
- Interpretation of OMB Circular A-76 (Policies for Acquiring Commercial or Industrial Products and Services for Government Use). The Army interpretation of A-76 has stated that an item is not a new start if it is a:
 - Replacement of an individual machine damaged or worn out beyond economic repair with a similar machine designed to perform the same

or like task, if productive capacity of the replacement machine does not exceed that of the replaced machines.

Thus, if a numerically controlled machine tool replaces a larger number of manually operated machine tools, resulting in a reduction of operators, it is interpreted under Army Regulation 235-5, for example, to be a new start, although from a productivity standpoint, it is a sound capital investment. This interpretation does not permit a rapid response to apply labor saving productivity enhancing capital investment opportunities.

- Reporting of savings. With indefinite reporting of savings from capital investment projects, irrespective of size of the project, there is a reluctance to undertake some projects. A time limit, after amortization, needs to be placed on reporting of savings. This is part of the post audit effort and should be done on a selective basis, depending on size of project and validity of original estimates.

TRAINING

A major training effort is required for industrial engineers to develop a capability for identifying capital investments for increasing productivity. The need becomes apparent after examining a recent Army Management Engineering Training Agency (AMETA) study for the Joint Steering Committee on Measuring and Enhancing Productivity in the Federal Sector. The objective was to determine the in-house capability for identifying capital investments. The Anniston Army Depot was selected for a two week study by AMETA staff. Anniston staff indicated that spot welding, grinding and punching were major problems. The AMETA examination indicated that from a work load standpoint that punching was a major problem. The work load priority was punching, milling, arc welding, turning, forming, spot welding, and grinding. Of the areas studied, the following were the results:

- Punching— analysis justified capital investment
- Milling— analysis justified capital investment
- Grinding— low work load prohibits justification
- Spot welding— supposed high maintenance costs not supported by available records.

Punching equipment could be amortized in 0.65 years and milling equipment in 0.67 years. The depot installation original recommendations on the grinding and spot welding equipment would not have resulted in economic procurement and productivity enhancement. Although staff who made the original recommendations were industrial engineers, additional training was apparent. At the installation level the problem of training is even greater for analysts and management personnel.

AMETA has a good training program, which is used by other Services, and this training effort needs to be expanded to extensive on-site instruction. Further, the intern training program at Red River Army Depot provides an excellent training potential.

Major training effort is required to overcome past frustrations on approval of projects and to energize industrial engineers and related management personnel to identify and initiate projects for which personnel savings are possible.

It should be noted that Anniston Army Depot has organized a Productivity Improvement, Measurement and Evaluation (PRIME) division in the Directorate of Maintenance for making in-depth analysis of equipment for productivity enhancement. For example, a major analysis was recently made on Pneumatic Impact Wrenches to develop a replacement policy. The analysis found that lack of a definitive guideline for replacement of failed units resulted in a continual build-up of unusable units in the current inventory. Purification of the inventory and replacing noneconomic repairable wrenches with new tools reflecting technological advances and productivity increases had not occurred. Better assignment of tools and preventive maintenance also was needed and so recommended.

DISSEMINATION OF TECHNOLOGY

Technology diffusion is a major problem. Successful programs are developed at an installation but dissemination does not occur. Diffusion is spotty. At Picatinny, the Ammunition Modernization Project Manager has an extensive Manufacturing Technology Program. It has for example proven that an acrylic latex paint with silicon polymer can last four times as long as ordinary paint. This has major implications in reducing personnel and costs at all DoD installations. Navy and Air Force personnel indicated a great interest, but were unaware of the program or results. An outstanding effort at dissemination exists in the ammunition modernization program. Contacts and exchange of munitions production techniques on a world-wide basis were made to assure that the modernization program would apply the most up-to-date techniques of production. The Project Manager provides a monthly publication on major developments. Although this is a good medium, dissemination to potential users in base operations support personnel would be limited. It should be noted that there are other ammunition modernization projects which also have applicability to base operations on which a similar dissemination problem exists. These include electronic intrusion detection devices and energy conservation efforts. Picatinny is using electronic intrusion detecting devices, which can have application at other sensitive operations, reducing guard personnel and decrease the risk of loss of sensitive material. There are also major efforts on energy conservation and assessment, utilizing infrared detection devices on profiles of heat loss to determine insulation needs. A major contract with Dupont has been let to analyze the energy requirements at six installations. Also the Holston GOCO facility is utilizing waste for energy production.

The Federal Government has, through HUD, the National Commission on Productivity, the National Science Foundation, and other agencies, financed research at the local government level. This research includes the transfer of technology from NASA, work in solid waste collection, recycling and disposal, road maintenance, fire fighting, equipment maintenance, energy conservation,

and communications to the local government. For example, NASA, through Public Technology, Inc., a nonprofit organization financed by local governments, is applying its technology to such problem areas as powerline fault detection, fireman's life support system, communication systems for firemen, new fire hoses and couplings, automatic fire hose pressure regulator, protective clothing for firemen, underground pipe detection, and pavement stripping materials.

The results of these efforts have application at the DoD installation level. Each installation is in fact a small self-contained city. The house-keeping and civil engineering requirements are similar. Thus, there should be a flow of technology and new products from the local government to the DoD installations. This has not happened. In fact, the DoD installation personnel were unaware of the large scale efforts being undertaken, with Federal support, at the local government level. This is an area of dissemination which has great potential for productivity enhancement.

V. NAVY

Navy is undertaking a series of management improvement actions. These include restructuring a shipyard modernization program which was initiated in FY 1966, examining aircraft maintenance procedures, with contractor support, on a weapon system-by-system basis, consolidating management of aviation maintenance, reducing overhead costs of Military Sealift Command, and reducing ship overhaul costs. Except for shipyard modernization, the Navy has minimum efforts directed toward capital investment substitution for productivity enhancement. In fact, the productivity program of the Navy is fragmented and responsibility within the Navy is difficult to pin-down. Normal equipment replacement programs are in effect, but no significant accelerated fast amortizing production equipment capital investment program similar to the approach used in the Army or Air Force exists. Two efforts exist as follows:

- A set aside of \$200,000 to \$250,000 for each of the eight Navy shipyards for projects costing \$5,000 or less for equipment modernization. The commander of the shipyard has the authority to use these funds for local procurement and does not need Washington approval. Projects over \$5,000 require approval from Naval Sea Systems Command.
- The Navy Comptroller indicated that Navy has made an initial start on a program for self amortizing projects with a set aside in FY 1975 of \$100,000.

Processing time for obtaining approval of capital investment projects with high rate of return on investment is lengthy. Except for the shipyards, projects of small dollar value must be submitted to Washington Navy Headquarters for approval. On the use and value of numerical control machine tools, different guidelines exist within Navy Commands. Civil Service guidelines were found to be barriers by reducing personnel. Considerable opportunity exists for the establishment of a dynamic program for productivity enhancing capital investments.

Since many of the problems of financing, training and diffusion of technology are similar to the points in the Army section, they will not be repeated. Rather the discussion will center on three areas— shipyards, naval air rework facilities (NARF), and the public works centers.

NAVAL SHIPYARDS

Shipyard Modernization

Modernizing of Navy shipyards has been underway for the past 10 years with the initial impetus occurring with the closing of the New York Naval shipyard and Ship Repair Facility, San Diego in the mid 1960's. In 1974 the shipyards were further reduced from 10 to 8, requiring the restructure of the modernization program. The facilities are antiquated and updating is required. The Navy has recently completed a comprehensive on-site engineering survey of each Naval shipyard to determine requirements. Estimates indicate a requirement of over \$1 billion (\$834 million for military construction and \$180 million for product on equipment) in 1977 constant dollars. (\$1.3 billion in current dollars.) A Secretary of the Navy Overview Committee has proposed funding \$100-\$110 million annually for military construction and equipment. This represents a major increase. In the past few years (FY 1972-75) this has averaged only \$25 million annually. The modernization program is directed toward facilities for conversion, alteration and repair (CAR). Facilities and equipment modernization for new construction of ships are not included in the \$1 billion estimate.

The \$25 million annual allocation over the past several years has been used to meet priority pollution, fleet composition changes, home porting needs, and inflation. The \$25 million annual level provided limited funding for productivity enhancing and labor saving capital investments. The trend of financing for shipyards has been down rather than up as noted below:

	<u>FY 1965-69</u>	<u>FY 1970-74</u>
	<u>(In Millions of Dollars)</u>	
Military construction	\$159	\$112
Industrial production equipment	<u>67</u>	<u>56</u>
Total	\$226	\$168

In FY 1975, \$15.8 million was programmed for Military Construction and \$10.6 million for Industrial Production Equipment, a total of \$26.4 million. It should be noted that the shipyard modernization program involves two appropriations— Military Construction, Navy and Other Procurement, Navy, compared to the Army ammunition modernization program, which is funded from a single procurement appropriation. A single appropriation simplifies programming and assures balanced programming more readily than two appropriations.

Manufacturing Technology

The Naval Sea Systems Command has taken an aggressive approach in Manufacturing Technology (MT). It has recognized that the Deputy Secretary of Defense Clements memorandum of 11 April 1975 on cost reduction initiatives

for manufacturing technology can be applied to in-house activities such as shipyards. ^{1/} Consequently the Naval Sea Systems Command has directed the development of methods or unique equipment for special productivity improvement in shipyards under MT to include these areas:

- Dry dock work— rudder, prop and shaft handling, blast cleaning, painting and material handling.
- Shipboard work— hand held portable power tools, test equipment, stress relieving, welding, cleaning, painting, and material handling.
- Shop work— industrial engineering or methods improvement analysis aimed at increasing productivity or quality assurance, and development of unique shop equipment not readily available on the commercial market.
- Miscellaneous— development of first time or unique solutions to problems which directly or indirectly affect productivity, safety, pollution control, worker incentives and support functions in supply, material handling, weight lifting, quality assurance, and administration.

This is a positive statement of the importance of the in-house activities and the urgent need for manufacturing process development and improvement to enhance productivity. A capital investment program can then procure the MT developed equipment. With increased financing of MT, now projected by DoD, and the increased modernization and capital investment productivity funding, this program can result in significant manpower savings.

The Norfolk shipyard had a major MT program in effect. A qualified staff of industrial engineers were involved in identifying areas where improvements would be most effective. Table 13 provides an illustrative list of the efforts in effect, under development, and future programs and the savings which are estimated at one shipyard alone.

From an overall Navy standpoint, the size of the MT program is the lowest of the Services—\$6.8 million annually, but is increasing with FY 1977 POM action (\$20.5 million). The Naval Sea Systems Command recognizes the importance of capital investments and technology to increase productivity and manpower savings.

^{1/} Naval Sea Systems Command, Manufacturing Technology Program, letter from Commander, Naval Sea Systems Command to Commander All U.S. Naval Shipyards, 23 May 1975.

TABLE 13
EFFECTS OF MANUFACTURING TECHNOLOGY EFFORTS ON PRODUCTION--
NORFOLK SHIPYARD

	Estimated Savings
A. <u>Typical Projects in Effect</u>	
Cleaning sanitary tanks on subs	\$ 5,000/Sub
Floor plan installation charges	40,000/CVA
Sub battery exchange	2,500/Sub
Cable inspection standards	15,000/Yr
Chainfall certification	10,000/Yr
Pilgram nut use	50,000/Yr
GRP dome installation	
Rad. waste tank platform	10,000/Yr
Steam test (FINBACK)	70,000/Yr
B. <u>Typical Projects Under Development</u>	
Prop/shaft/rudder handling	\$145,000/CVA
Trident blasting equipment	20,000/ROH
Fire brick removal	60,000/Yr
Underwater shaft seal	3,500/Yr
Nozzle block torque tool	15,000/Yr
Acetylene recovery	17,000/Yr
Modernization of blast hoppers	25,000/Yr
Engineered service package (SSNs)	400,000/Yr
Engineered service package (surface ships)	500,000/Yr
Engineered waterfront service improvement	250,000/Yr
C. <u>Areas Where Improvements Are Needed</u>	
1. Develop a machine(s) to automatic/semi-automatically hydrostatically test valve bodies in the shop at overhaul	\$500,000/Yr
2. Develop a machine to water blast ships/subs hulls for marine growth and loose paint/coating at dry dock between regular schedule overhaul	500,000/Yr
3. Develop a machine to clean and preserve propeller shafts after machining while still in the lathe	
4. Develop a machine to static/dynamic/certify chainfalls after repairs and annual certification; also test wire rope slings and antennas after manufacture	

TABLE 13 (CONT)

	Estimated Savings
C. Areas Where Improvements Are Needed (Cont)	
5. Develop a suit for use in hazardous area (paint, welding, tank blasting, etc.) that will cool the employee for longer "stay time" during working periods	
6. Develop a suitable process to clean sanitary tanks aboard ships/subs for internal inspection and/or repairs without sending personnel inside to clean	
7. Develop a device to seal the water side of propeller shafts, while waterborne, to change/inspect gland packing on the inboard side	
8. Develop a machine/tool to remove and reinstall turbine nozzle block cover nuts to reduce manpower requirements and increase reliability	
9. Develop a process to remove anti-skid material from flat decks and hanger decks rapidly	
10. Develop a process/tools to clean condenser tubs aboard ships rapidly; also develop a means to inspect tube internals to insure they are clean	
11. Develop a deep tank, high volume, high head hydraulic driven pump to remove fuel at pier side	
12. Develop an end connection for aluminum stage planks to provide a continuous flat surface from plank to plank when installed for staging	
13. Develop a machine/tool to deburr, champher, and polish rapidly	
14. Develop a process to clean bilges, tanks, voids etc. that will reduce cost/time/manpower	\$500,000/Yr
15. Develop a process to reuse blasting grit economically	20,000/Yr
16. Develop a process to cast small quantity parts using the powder metallurgy process	
17. Develop a machine/device to blast and paint ships hulls simultaneously using one operator per machine/device	

TABLE 13 (CONT)

	Estimated Savings
C. Areas Where Improvements Are Needed (Cont)	
18. Develop a machine/tools to clean dry dock floors during ROH and prior to flooding rapidly and economically	\$ 50,000/Yr
19. Develop a safety lamp for painting and blasting that is portable, safe, and will withstand excessive abuse	
20. Develop a process to transfill acetylene cylinders from partially filled cylinders prior to returning to vendor for filling	
21. Develop a process to open/clean/inspect/hydro and preserve interior of sub air flask in place	
22. Develop a quick disconnect for shipboard ventilation to facilitate shipboard repairs, maintenance and shipalts	
23. Develop a method to bevel plates for butt welding quickly and economically	
24. Develop a method to cut rubber and fiber parts for gaskets/seals/etc., using high velocity water jet	
25. Removal of metal preservatives (paint, plastic) by blasting with means other than steel shot, sand, dry abrasives, etc., ultrasonics, laser, explosives, liquids, blast heat, cryogenic materials	
26. Develop a process/method to accurately locate weld defects in metals using radiography	
27. Develop a process/method to record direct labor charges and attendance electronically eliminating the time card	
28. Develop a machine/method to machine valve seats in place during repair and/or overhaul	
29. Develop methods to "cut-off" pipe for fabrication using rapid methods vs. present slow sawing methods	

TABLE 13 (CONT)

	Estimated Savings
<u>C. Areas Where Improvements Are Needed (Cont)</u>	
30. Develop a method to spot blast, say 4 ft x 4 ft maximum, with hand held close cycle system as an improvement over present chipping hammer/von gun methods	
31. Catapult cover system	\$ 40,000/CVA
32. Catapult alignment and gaging system	10,000/CVA
33. Propeller/rudder/shaft handling device	
34. Nitrogen charging machine	
35. Chainfall certification machine	
36. Fire brick crusher	
37. Chemical cleaning of submarine air flask in place	
38. Hydrostatic testing of submarine air flask in place and shop	
39. New lift and handling equipment	
40. CV hanger/flight deck cleaning	

Numerical Control Machine Tools

Norfolk Shipyard received its first numerically controlled (NC) machine in 1958, the majority in 1967, and the last of nine in 1968. Between 1973-75, 111 machine tools were planned for acquisition, all conventional and no additional numerical control. Discussions with shipyard staff indicated that possibly two additional might be obtained. The reason given for programming conventional rather than numerical control was the volume of small job orders.

This rationale contrasted with the Naval Air Rework Facility (NARF) at Norfolk which has 14 NC machines and planned additions of eight more, stating that these were essential in view of its large number of small job orders. The NARF pointed out that it had decreased the number of machinists by half as a result of the NC machines and was performing more work than previously.

The Norfolk Shipyard negative attitude on NC equipment may have been due to a lack of training of planners. GAO recently noted that they were told the following:

Shop planners had no formal orientation or written criteria about NC machines and that many jobs were missed. A planning supervisor said that NC machines were usually used if the parts were already programmed, if the work was complex, and if lead time requirements were short. Other jobs might be informally selected when programmers toured the shops and observed conventional machine work. ^{2/}

The view at the Norfolk Shipyard contrasts also with the Long Beach Naval Shipyard, which considers the introduction of NC machine tools one of the most significant improvements of recent years. It estimates that NC tools saved \$600,000 annually over conventional tools. This savings is developed by comparing costs of many parts produced by conventional means and computer produced parts. For example, the repair of boiler superheater headers, a fairly repetitive process consisting of renewing the holes into which the superheater tubes are fitted, requires 92 man-hours by conventional means and 32 by NC machine tools. Rework is eliminated due to errors or mistakes, a faster return of completed work to the ship occurs reducing overall time required for repairs to the vessels.

This rationale also contrasts with Puget Sound and Mare Island shipyards which are using and requesting more numerical control machine tools for job order work and manufacturing.

There is an apparent need for an overall policy position on the procurement of numerical control machines within Navy. Some Services have taken the position— if not NC equipment, prove why not. When work load warrants, NC tools result in manpower savings.

^{2/} General Accounting Office, Numerically Controlled Industrial Equipment: Progress and Problems, GAO Report to the Congress, 24 September 1974, p. 32.

Shipyard Efficiency

The emphasis at Norfolk Shipyard is on methods and process review. Performance standards have been downgraded and staff reduced from 35 to about four individuals who are concerned with developing standards. The emphasis is on planning. Based on experience of past ship overhauls, the necessary skills, parts, software and equipment, are available when the ship arrives for its overhaul. All planning and paperwork have already been completed. New approaches to material handling and control have been established. The yard knows the type of problems to be expected from a class of ships and determines what will be done. A fixed price is established. Schedules are met. The approach has resulted in cutting overhaul costs by 25 percent through improved management. An aggressive program for reducing costs thus exists at this shipyard, augmented by a strong manufacturing technology program, which in turn needs a quick amortization capital investment program to bridge the MT effort and its implementation. The capital investment program needs to be established.

Civil Engineering

Emphasis at Norfolk Shipyard is on the overhaul mission. Personnel ceiling allowances are used to meet that mission and the housekeeping function is thus contracted out for the most part. Attention to these costs is still necessary and means of cutting costs through capital investment identified and explored. Although the Public Works Center is in Norfolk, it has no responsibility for the shipyard civil engineering functions.

NAVAL AIR REWDK FACILITY (NARF)

As noted previously, the NARF has a high concentration of NC equipment and is planning more. The NARF is well organized with an effective Production Engineering Department and is alert to opportunities for improved utilization of NC equipment to increase productivity and reduce manpower.

Exhibit 1 displays the details of the justification used for requesting a machine tool. In this case it is a Heavy Duty Engine Lathe to replace two similar machines which are beyond economical repair and cannot provide tolerances. Operating cost savings are \$16,795 once installed and operating, compared to a net investment of \$25,300. The item was requested in January 1974 and has not been funded at the time of visiting the NARF.

The NARF will produce component parts for the inventory control center, when these parts cannot be obtained on a responsive basis from industry, are not available on the open market, or are required for depot maintenance.

Table 14 indicates a list of projects planned for procurement in FY 1977. Many of these could result in savings now if funding were made available, since the FY 1977 list is based on present levels of work load. Definitive economic analysis, of course, would be developed highlighting manpower and other savings. These lists provide an indication of the opportunities that exist for capital investment.

EXHIBIT 1
MACHINE TOOL REPLACEMENT ANALYSIS WORK SHEET

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K-1

MACHING TOOL REPLACEMENT ANALYSIS WORK SHEET				CLASS NUMBER UCB-1		Form Approved Budget Bureau No. 33-0370	
				DATE 11 JANUARY 1974			
1. ACTIVITY NAVAIREWORKFAC		2. LOCATION NORVA		3. SHOP 96213		4. BUILDING NO. LP-20	
3. PRESENT EQUIPMENT				4. PROPOSED EQUIPMENT			
a. DESCRIPTION LATHE, ENGINE, HEAVY DUTY, 16" SWING, 78" CC, 15 HP				a. DESCRIPTION LATHE, ENGINE, HEAVY DUTY, 16" SWING, 78" CC, PRE-SELECT SHIFT, SPINDLE SPEED 21-1740 RPM, INITIALLY WIRED FOR 480 VOLTS, 20 HP. PWR CODE 54			
b. MANUFACTURER AXELSON MANUFACTURING CO.		c. MODEL NO. B		b. MANUFACTURER LODGE & SHIPLEY CO.		c. MODEL NO. POWERSHIFT 1610	
d. PRODUCTION EQUIPMENT CODE 3416-3122-1001(05016)				d. PRODUCTION EQUIPMENT CODE 3416-3122-5003(80315)			
e. DEPARTMENTAL IDEN- 188/107150 188/107151		f. YEAR BUILT 1957	g. TOTAL ACQUISITION COST \$30,787	h. QUANTITY 2	i. QUANTITY 1	j. PRODUCTIVITY INCREASE RATIO 2:1	
7. OPERATING COST ANALYSIS FOR EQUIVALENT OUTPUT (Next Year)							
FACTOR				PRESENT EQUIPMENT a.		PROPOSED EQUIPMENT b.	
a. MACHINING LOAD (Hours next year)				2,860		1,403	
b. DIRECT LABOR				19,190		9,415	
c. INDIRECT LABOR				4,575			
d. PRIME BENEFITS							
e. MAIN POWER				4,530			
f. FUEL				430		280	
g. SCRAP/REWORK							
h. TOOLING							
i. SAVINGS/OTHER OPERATIONS, ASSEMBLY							
j. OTHER COSTS							
k. TOTAL OPERATING COSTS				28,725		11,930	
l. NET OPERATING COSTS FAVORING PROPOSED EQUIPMENT (f. col. a. minus g. col. b.)				16,795			
8. CAPITAL COST ANALYSIS OF PROPOSED EQUIPMENT (Next Year)							
a. ACQUISITION COST				27,500			
b. INSTALLATION, TRANSPORTATION AND MISCELLANEOUS COSTS				800			
c. TOTAL INSTALLED COSTS (a. plus b.)				28,300			
d. PRESENT DISPOSAL VALUE OF PRESENT EQUIPMENT				3,000			
e. NET REQUIRED INVESTMENT (c. minus d.)				25,300			
f. SERVICE LIFE				15 Years			
g. CHART PERCENT				14.7 %			
h. TOTAL CAPITAL COST (e. x g.)				3,719			
i. NET YEARLY SAVINGS FROM REPLACEMENT (l. minus h.)				13,076			

DD FORM 1106

CLASS 4 OSO 7 R/V - 882 868-1

NOT FOR

K-1

OLD MACHINE TOOL DATA

ITEM	MAKE / MODEL	COST	YEAR BUILT
2 LATHE, ENGINE, HEAVY DUTY, 16" SWING, 78" C. 15 HP	188/107150	\$16,050	1957
	188/107151	14,737	1957

COMMENTS AND RECOMMENDATIONS

JUSTIFICATION: THE PROPOSED MACHINE IS REQUIRED IN THE ENGINE OVERHAUL MACHINE SHOP TO REPLACE TWO SIMILAR MACHINES THAT HAVE EXCEEDED THEIR SERVICE LIFE BY 4 YEARS. THESE MACHINES OPERATED ON MULTIPLE SHIFTS BETWEEN 1962 - 1968 IN ORDER TO MAINTAIN THE WORKLOAD SCHEDULE. NOW, BOTH MACHINES ARE WORN BEYOND ECONOMICAL REPAIR AND ARE ONLY USED WHEN CLOSE TOLERANCES ARE NOT REQUIRED. ALL THE FEEDSCREWS HAVE EXCESSIVE BACKLASH. FINE THREADING CAN ONLY BE ACCOMPLISHED BY A HIGHLY SKILLED MACHINIST. THIS PRESENT EQUIPMENT IS PRIMARILY USED FOR MANUFACTURING JIGS AND FIXTURES REQUIRED FOR REWORKING JET ENGINE PARTS ON SUCH EQUIPMENT AS: GRINDERS, EDM, MILLING MACHINES, AND N/C MACHINES. SINCE THE ELIMINATION OF RECIPROCATING ENGINES, THERE HAS BEEN LESS REQUIREMENT FOR THIS TYPE OF EQUIPMENT. THEREFORE, THE EXTRA SPACE CAN BE UTILIZED FOR A GRINDER OR ELECTRICAL DISCHARGE MACHINE (EDM) WHICH IS REQUIRED FOR REWORKING JET ENGINE COMPONENTS. BESIDES MANUFACTURING JIGS AND FIXTURE, THE FOLLOWING EXAMPLES REPRESENT THE WORKLOAD FOR THIS EQUIPMENT AND THE SAVINGS OCCUR BY ACQUISITION OF THE PROPOSED MACHINE:

1. REAR COMPRESSOR, FRONT HUB - P/N SB9412, TF30-P40B

PRESENT EQUIPMENT

4 HRS/UNIT X 200 UNITS/YR X \$8.31 TOT. LABOR COST/HR = \$6648 TOT. LABOR COST/YR

PROPOSED EQUIPMENT

4 HRS/UNIT

2 PROP. INC. RATIO X 200 UNITS/YR X \$8.31 TOT. LABOR COST/HR = \$3324 TOT. LABOR COST/YR

SAVINGS PER YEAR = \$3324

2. TURBINE STATOR SHROUD, P/N S67293, TF30-P8

PRESENT EQUIPMENT

3 HRS/UNIT X 200 UNITS/YR X \$8.31 TOT. LABOR COST/HR = \$4986 TOT. LABOR COST/YR

PROPOSED EQUIPMENT

3 HRS/UNIT

2 PROP. INC. RATIO X 200 UNITS/YR X \$8.31 TOT. LABOR COST/HR = \$2493 TOT. LABOR COST/YR

SAVINGS PER YEAR = \$2493

ANALYSIS BY	TITLE	DATE
E. A. BJORKEN	EQUIPMENT SPECIALIST	11 JAN 1974
APPROVED BY	TITLE	DATE
J. L. BROWN	PLANT ENGINEER	11 JAN 1974

THE FOLLOWING LIST IS A PARTIAL WORKLOAD REQUIRING THE UTILIZATION OF THIS EQUIPMENT:

<u>NOMENCLATURE</u>	<u>PART NO.</u>	<u>PROGRAM</u>	<u>QTY/YR</u>
TURBINE STATOR SHROUD	494273	TF30-P6	150
TURBINE STATOR SHROUD	494274	TF30-P6	150
TURBINE STATOR SHROUD	567293	TF30-PB	200
TURBINE STATOR SHROUD	567294	TF30-PB	200
A/B NOZZLE ACTUATING CYL.	565206	J57	500
PROP DOME	52477	C-47, C-54 C-117	100
REAR COMPRESSOR, FRONT HUB	589412	TF30-P40#	200
REAR COMPRESSOR, REAR HUB	568316	TF30-P40#	200
PITCH LOCK REGULATOR HOUSING	558280	P-3 A/C	25
PROP PISTON	554870	P-3 A/C	100

WORKLOAD: THE PROPOSED WORKLOAD FOR THE NEXT 3 FISCAL YEARS IS:

<u>ENGINES</u>	<u>FY 76</u>	<u>FY 77</u>	<u>FY 78</u>
J52	38	36	35
J57	121	95	82
TF30	440	507	503
J56	37	36	36

ADDITIONAL WORKLOADS WILL BE GENERATED BY F/J MATERIAL (SUPPLY) AND THROUGH CUSTOMER SERVICE.

BREAKDOWN OF ANALYSIS WORKSHEET. 00 1106

ITEMS 1 THROUGH 6e. THESE ITEMS ARE SELF-EXPLANATORY.

ITEM 6f. PRODUCTIVITY INCREASE RATIO. ACQUISITION OF THE PROPOSED EQUIPMENT COULD DOUBLE PRODUCTION (2:1). THIS IS DUE TO SEVERAL REASONS:

1. ELIMINATION OF CONSTANTLY STOPPING THE PRESENT MACHINE FOR SIZE AND TAPER CHECKS CAUSED BY THE WORN CONDITION OF FEED SCREWS.

2. PRE-SELECTION OF NEXT SPINDLE SPEED THEREBY ELIMINATING THE NEED TO STOP THE EQUIPMENT AND THEN MAKING THE NEXT SPINDLE SPEED SELECTION.

ITEM 7a. MACHINE LOAD. LATHE, NID 188/107150, DUE TO ITS WORN CONDITION, ONLY AVERAGES 3 HOURS PER DAY OPERATION, WHILE LATHE, NIO 188/107157, WHICH IS IN A BETTER CONDITION, AVERAGES A FULL SHIFT PER DAY.

PRESENT EQUIPMENT

MACH. 1 - 3 HRS/DAY X 5 DAYS/WK X 52 WKS/YR = 780 HRS/YR

MACH. 2 - 8 HRS/DAY X 5 DAYS/WK X 52 WKS/YR = 2080 HRS/YR

TOTAL MACHINE LOAD PER YEAR = 2860 HOURS.

PROPOSED EQUIPMENT

2806 HRS/YR ÷ 2 PROD. INC. RATIO = 1403 HRS/YR

ITEM 7b. DIRECT LABOR. DIRECT LABOR CHARGE FOR COST CENTER 96 (ENGINE OVERHAUL) IS \$6.71 PER HOUR.

PRESENT EQUIPMENT

2860 HRS/YR X \$6.71 DIR. LABOR COST/HR = \$19,191 DIR. LABOR COST/YR

PROPOSED EQUIPMENT

1403 HRS/YR X \$6.71 DIR. LABOR COST/HR = \$9,414 DIR. LABOR COST/YR.

ITEM 7c. INDIRECT LABOR. INDIRECT LABOR CHARGE FOR COST CENTER 96 IS \$1.60 PER HOUR.

PRESENT EQUIPMENT

2860 HRS/YR X \$1.60 IND. LABOR COST/HR = \$4,576 IND. LABOR COST/YR

PROPOSED EQUIPMENT

1403 HRS/YR X \$1.60 IND. LABOR COST/HR = \$2,245 IND. LABOR COST/YR

ITEM 7e. MAINTENANCE. INFORMATION INDICATES THAT MACHINE, NIO 18B-107150, AVERAGED APPROXIMATELY 70 HOURS PER MONTH DOWNTIME PLUS \$300 IN PARTS REPLACEMENT. MACHINE, NIO 18B/107151, AVERAGED APPROXIMATELY 8 HOURS PER MONTH DOWNTIME PLUS \$200 IN PARTS REPLACEMENT. IT TAKES 2 MECHANICS TO WORK ON A MACHINE OF THIS TYPE. TOTAL LABOR CHARGE (DIRECT AND INDIRECT) FOR COST CENTER 60 (MAINTENANCE) IS \$9.33 PER HOUR.

PRESENT EQUIPMENT

MACH. 1 = 10 HRS/MO X 12 MOS/YR X 2 MECH X \$9.33 TOT. LABOR COST/HR + \$300 PARTS = \$2,539 MAINT COST/YR

MACH. 2 = 8 HRS/MO X 12 MOS/YR X 2 MECH. X \$9.33 TOT. LABOR COST/HR + \$200 PARTS = \$1,991 MAINT. COST/YR

TOTAL MAINTENANCE COST PER YEAR = \$4,530

ITEM 7f. POWER. POWER IS BY ELECTRICITY. IN THIS AREA, THE RATE IS SLIGHTLY MORE THAN \$.01 PER KILOWATT.

PRESENT EQUIPMENT

2860 HRS/YR X 15 HP X 1 KW/HP X \$.01 COST/KWHR = \$429 POWER COST/YR

PROPOSED EQUIPMENT

1403 HRS/YR X 20 HP X 1 KW/HP X \$.01 COST/KWHR = \$281 POWER COST/YR

CAPITAL RECOVERY = $\frac{\text{NET INVESTMENT}}{\text{NEXT YEARS SAVING}} = \frac{\$25,300}{13,076} = 1.93 \text{ YEARS}$

TABLE 14
SUMMARY OF MARF ILLUSTRATIVE GENERAL PLANT EQUIPMENT REQUIREMENTS FOR FY 1977

Item Designation	Item Description	Justification	Quantity	Total Cost
B7C-2	Portable gas analyzer Wilks Scientific Mod 5633	Required for testing breathing oxygen and inert gas mixtures	1	\$ 4,250
B7C-3	High capacity equal arm analytical balance Mod HC1006 Volland	Required to calibrate gas monitoring devices	1	12,000
B7C-4	Cylinder square Brown and Sharp Olympic Tool and Machine Company	Required for inspection steps on NC controlled machines	1	4,000
B7C-6	Ultrasonic cleaner, Blackstone	Labor savings and increased production requirements	1	10,000
B7C-B	F-401 PW400 jet engine adapter	Required for testing F401 jet engines	3	€4,500
B7N-1	Forming machine Pexto 3418	Replacement for N10 188/107453 EFR 3249	1	2,200
B7N-2	Cutoff machine stone M-750	Required for manufacturing small metal aircraft components for all aircraft programs	1	2,000
B7N-4	Saw tilting arbor 14 inch diameter	Replacement for £1N 188/105344 manufactured in 1953 used in all metal manufacturing	1	1,800
B7N-7	Multimeter Oana 4324	Inertial guidance testing for weapons systems on all AGs	2	3,600
B7N-17	Welder gas, G-400	Required to replace 50M-28527 and 1B-10N-2362, 25 years old	2	4,160

TABLE 14 (CONT)

Item Designation	Item Description	Justification	Quantity	Total Cost
878-2	Lathe engine, Mnd 1610	Replacement 188/107150 manufactured in 1957, Shop 96213, 188/107151	1	\$31,000
878-3	Lapping machine, 24 inch diameter plate	To replace 188/106912, Shop manufactured in 1956, Shop 96210, LP-20	1	15,000
878-4	Forming machine, Mod 3H shrinking and stretching Marchant Machine Corp	To replace 188/106608, manufactured in 1956, Shop 97210, V-28	1	10,000
878-5	Bending machine rotary head DI-ACRD Model: 8	To replace 188/107817, Shop manufactured in 1953, Shop 97214, V-28	1	6,000
878-6	NC flame cutting machine with thermal arc cutting machine, Thermal Dynamics Corporation, Model PAK-40	Replacement (188/107728), manufactured in 1962, Shop 97213, V-28, CRO Engineering Co., Inc.	1	95,000
878-7	Press 081, 22 ton Niagara Model A22	Replacement (91708/007288), manufactured in 1957, Shop 97212, V-28	1	8,300
878-9	Milling machine, 315 S-16	Replaces 93080/001152, manufactured in 1954, Shop 66111, V-41	1	32,000
878-10	Saw, file and polish Model 2313-1	Replaces 188/106608, manufactured in 1957, Shop 97232, V-28	1	12,000

TABLE 14 (CONT)

Item Designation	Item Description	Justification	Quantity	Total Cost
B7B-16	Bending roll machine #2	Replaces #2907/003143, manufactured in 1952, Shop 65132, V-65	1	\$10,000
B7B-17	Saw and file machine	Replaces 188/100233, manufactured in 1943, Shop 92212, V-28, PROTO	1	9,000
B7B-19	Forming machine - end finishing and 3 inch O.D. x .051 in W.T.	Replaces MID 188/107187, manufactured in 1958, Shop 97213, 15 years old	1	32,000
B7B-21	Milling machine - plain universal ram head 59-1/2 inch table 28 in travel 310 S-15	Replaces MID 188/107106, manufactured in 1958, Shop 97233, 15 years old, V-28	1	45,000

Civil Service Guidance

Civil Service emphasis on relating grade structure to the number of employees creates a disincentive. For the production superintendent in charge of the metals machine shop, the following guidance is provided:

<u>Number of Employees</u>	<u>Grade Structures for Nature of Organization Managed</u>	
	<u>Level B</u>	<u>Level A</u>
100-600	GS-12	GS-13
800-1,300	GS-13	GS-14
1,500 and above	GS-14	GS-15

Thus if the machine shop operation has 700 employees and through management actions, the majority of the conventional machine tools are replaced by numerically controlled machine tools and a personnel decrease occurs, the superintendent would be downgraded. The organization could reduce to 300 employees, double the production output it had with 700 employees, and yet a reduction in the grade structure to a GS-12 could occur for the superintendent. The management problems would, in fact, increase due to the complexity of the new manufacturing technique.

This problem arose and the superintendent was scheduled for a reduction in grade after installation of the numerical control equipment and a decrease in employees. The number of machinists, for example, have decreased from 115 to 52. The introduction of the NC equipment was largely due to the strong personality of the superintendent and yet the system would have penalized him for his innovations. His grade structure was preserved by moving new functions and trades into his shop area to hold the level of employees over 800.

A similar situation arose at the NARF with a WS-10 being reduced to a WS-9 due to a reduction in employees supervised, which decreased from 12 to 8. The reduction was due to an innovative change in the manufacturing process, which resulted in increased productivity and the resultant manpower reduction. The unit was, in fact, doing a better job according to Metal Shop Staff. On July 14, 1975, the job was raised to a WS-10 again due to the influx of work from the new F-14 mission, which raised employment to 14 employees.

PUBLIC WORKS CENTER

The Public Works Center (PWC) performs the housekeeping civil engineering functions at the Navy installations. At Norfolk, PWC undertook the work of maintaining the Naval air station and Naval port operations. PWC Norfolk operated on a specific personnel ceiling allocation level and undertook work within that level, with funding provided by the customers into an

industrial fund. PWC Norfolk had no idea of the anticipated work load programmed by customer for FY 1975, at least as July 1975. PWC Norfolk does not perform work at the Naval Air Station or the NAS Oceana, both nearby, and which have their own civil engineering staffs.

There are numerous opportunities for capital investment productivity enhancement and labor savings as will be noted below.

There are no industrial engineers nor anyone else trained to identify capital investment opportunities. PWC Norfolk has under discussion a plan to hire an industrial engineer, who would devote part of his time to this function. Interchange of data on innovations at other installations is limited. Naval Facilities Engineering Command (Nav Fac) in Washington must approve small dollar equipment items, consuming time. Procedures for approving projects up to \$25,000 under the Deputy Secretary of Defense memorandum of 5 June 1975 had not been developed, but staff assumed that even these would require Nav Fac approval. This, of course, is time consuming and frustrating. Under current procedures, PWC Norfolk staff had not been given an indication of which equipment items submitted on 31 March 1975 for FY 1976 would be approved. Performance standards exist in 80 percent of the personnel employed, including maintenance, utilities and transportation activities.

There are a number of capital investment projects with manpower savings, which should be provided, including the following:

- Pile Driving Rig— Present rigs are jerry-rigged. Replacement by a modern rig would reduce the number of rigs from three to two, with a personnel reduction from 24 to 16 civilians.
- Scissors High Lift Platform— Value of scissors platform proven. Time required to obtain a commercial type vehicle with scissors capability in past took over three years.
- Airless spray machine to eliminate overspray.
- Modern snorkel type equipment for manhole operations, replacing present equipment which is down two-thirds of the time due to maintenance.
- Vehicle painting booth for baking and drying paint. There is no drying booth, resulting in vehicle staying in paint area while nature dries paint. Consequently there are long waits until vehicle dries and can be moved and paint areas are consequently underutilized.
- Technology study for increasing life of large hoses used on piers should be undertaken. Life of hose is short, with result that costly replacements are required. Steam hose has only a six month life. With "Cold Iron" concept of shutting down ship boilers in port and hooking up to utilities and sewage on shore, hose replacement equipment will increase. Technology improvement in hose life are needed according to PWC Norfolk.

Other potential equipment projects include:

	Cost
Upright telescoping scaffold	\$ 1,400
Brake shoe riveting machine	2,500
Rotex hole punch	9,000
Embossograph machine (Model 3669-14x) with letters and numerals	2,400
Portable chlorinator with water circulating pump and mobile trailer	12,000
Punching machine vertical "C" frame, power driven	5,400
Engine lathe 17 in swing geared drive, light duty 72 in	13,000

On these latter projects, which are illustrative of the PWC Norfolk submission made on 31 March 1975 to Naval Facilities Engineering Command, the problem of economic supporting data is highlighted. Nav Fac must make decisions without backup justification in the savings (dollars and personnel) and the priority of requirements. The sparcity of justification data is most apparent.

Naval shore activities are faced with reductions in the civilian work force and inflation, but with budgets which remain nearly level. The backlog of essential maintenance and repair is increasing. To offset this, capital investment productivity enhancement equipment is needed. There are many industrial applications which can be applied to the PWC. These have already demonstrated considerable savings in operating costs, operational effectiveness and a high rate of return on investment. The potential applications of computerization and mechanization at Naval shore activities is quite broad. Navy, however, has not provided guidelines for implementation of these changes, as noted in a recent Advanced Systems Concept Paper of the Naval Facilities Engineering Command. Navy is thus proposing conceptual system design to encompass such functions as the following at lead installations:

- Regulation of electrical power utilization
- Dispatching of maintenance personnel to problem areas
- Equipment failure or impending failure detection
- Monitoring of station security
- Control/dispatch of transportation vehicles
- Regulation of equipment utilization

- Scheduling/control of ongoing projects
- Automation of machines and processes
- Automation of maintenance equipment.

NAVY PUBLICATIONS AND PRINTING SERVICE (NPPS)

This office has recognized the importance of procuring more productive items of equipment. Rapid advances in the state-of-the-art, have made available a variety of equipments which offer many increased productivity benefits. Recently, NPPS Office in Norfolk acquired several automatic microfiche duplicating machines to eliminate the manual microfiche duplicating procedure. The standard for manual duplicating was 100 fiche per hour while the automatic equipment could produce 500 fiche per hour—an appreciable increase. Along with this increased productivity came a secondary benefit—the price per fiche could be reduced from \$.15 to \$.075.

For the past several years, the NPPS Office in Norfolk has provided computer forms printing services to customers in the Fifth Naval District. This work was accomplished on a Xerox Computer Forms Printer—rated speed on this equipment is 2,400 copies per hour. In an effort to reduce costs and increase efficiency, an analysis was performed considering the possibility of converting a Xerox 7000 to handle computer forms input material. Upon conversion, it was found that the machine could handle the job at 3,600 copies per hour or 50 percent faster than the Computer Forms Printer. A description of the old and new method follows:

<u>Old Method</u>		<u>New Method</u>	
First 39,000 copies @ \$.02309	\$ 900.51	All 51,180 copies @ \$.006	\$307.08
12,180 copies @ \$.007	85.25	30 hours labor @ \$4.94	148.20
43 hours labor @ \$4.94	<u>212.42</u>	Monthly machine conversion fee	<u>45.00</u>
Total	\$1,198.19	Total	\$500.28

Monthly savings \$697.91, annual savings \$8,374.92.

During FY 1974, the NPPS Office Norfolk installed a new folder that is capable of folding sheets up to 45 inches. Prior to this equipment installation, all sheets over 38½ inches, that required folding, had to be folded partially by hand. This additional hand folding took approximately 30 minutes per 100 charts. In this regard, this facility folds approximately 10,000 charts per month that exceed 38½ inches. By folding these charts automatically, the NPPS Office Norfolk saves approximately 50 man-hours per month; 600 man-hours annually. The pay rate for this job is \$4.87 per hour—thus an annual savings of approximately \$3,000.00.

These are again illustrative of the savings which can be obtained by capital investments—small as well as large investments and the manpower savings.

VI. AIR FORCE

Air Force has made major efforts to improve its manpower utilization and productivity. The efforts are directed to methods and process improvement, a limited fast amortization capital investment program and an extensive supply and depot maintenance modernization program. Use of numerical control equipment is extensive, with innovative initiatives in Computer Aided Manufacturing. The Materials Laboratory of Air Force Systems Command at Wright Patterson in conjunction with the Air Logistics Command (ALC), is directing its efforts in manufacturing technology to the ALC depot maintenance and supply areas. Extensive opportunities still exist for increased capital investment to reduce manpower. Approval time must be decreased in providing authorization approval for equipment procurement.

Typical of the Air Force efforts to enhance productivity and to save manpower are the following programs in the maintenance process. These include:

- Work load has been realigned into a Technology Repair Center posture. The number of repair points reduced from 52 to 23.
- The Depot Plant Modernization Program (DPMP) designed to correct deficiencies in the AFLC industrial plant.
- The Quick Amortizing Equipment Investment Program resulted from publicity given by the federal productivity program to a similar effort initiated by the Army Materiel Command. It provides funding and an accelerated approval cycle for off-the-shelf equipment which can be amortized within one year.
- The Maintenance Methods Improvement Program integrates both supervisory and working level personnel into a comprehensive program of methods and process improvements, involving goal setting, and formal reporting of results achieved.

- Methods Laboratories involve dedicated technicians working directly with shop personnel to test and implement immediately solutions to worker-identified production problems.
- Pilot Projects in Work Force Motivation have been established at all maintenance activities to test and evaluate the effects on the maintenance work force of a variety of behavioral management concepts.

MANAGEMENT ENGINEERING

A number of programs exist to identify opportunities for capital investments. These include the work methods improvement program in depot maintenance, the manning standards engineering programs, labor performance productivity programs, the materials laboratory efforts to improve manufacturing, and the maintenance evaluation program for functional areas such as civil engineering. Each of these programs have a capability for pinpointing areas in which capital investments for productivity enhancement may exist and has been done successfully.

At Warner Robins, for example, the depot maintenance work methods improvement program has been successful in reducing man-hours required to accomplish programmed depot maintenance on the C-130 and C-141 aircraft. A joint maintenance material management review team analyzed the work package content of the two aircraft and made reductions in work methods and level of maintenance required with significant man-hour reductions as a result. The reduction on the C-130 resulted from methods improvements in removing corrosion, depainting, and fuel cell repair. The C-141 reductions were in the bilge area through improved methods of cleaning and depainting. The package was then service tested and adopted, resulting in the following savings with no degradation in quality. (See Table 15.) The almost \$9 million saved equates to 24 C-141 and 38 C-130 programmed depot maintenance overhauls.

A methods improvement laboratory at Warner Robins was established in February 1973, consisting of three employees, who were assigned the task of devising ways and means to repair items previously thought nonreparable or coded for throw away and to resolve production bottleneck situations. In conjunction with shop employees, opportunities are identified by dedicated technicians, and program is tested within the shop and implemented immediately if successful. The lab personnel also identified areas in which equipment could be procured with resultant productivity gains and manpower savings. The efforts of the lab have resulted in \$2.2 million in savings.

Management engineering staff at Warner Robins recommended C-141 wrap-around-stands, a capital investment. The stands provide ready access to all parts of the aircraft, alleviating the need to move portable equipment around from place to place. They are equipped with air and power connections, and permit heavier man-loading than would be possible with portable stands. The cost of the two stands was \$603,000, amortized in seven months.

TABLE 15
SAVINGS IN PROGRAMMED DEPOT MAINTENANCE ON THE C-130 AND C-141 AIRCRAFT

Aircraft	Hour Per Aircraft Overhaul	Revised—After Work Methods Improvement	Dollar Savings Per Aircraft	FY 1975 Quantity	Total Savings (in Thousands of Dollars)
C-141	12,224	9,541	\$48,946	86	\$4,209
C-130	9,627	6,642	56,818	84	<u>4,772</u>
Total Savings					\$8,981

The in-depth analysis undertaken in Methods Improvement Project is shown in Exhibit 2.

FACILITIES AND EQUIPMENT MODERNIZATION

Air Force initiated a major effort to modernize its supply and maintenance facilities. This followed the reduction of depots from eight to five. Top Air Force management supported this program. The modernization program will result in major manpower savings. The modernization program will require about \$419 million (current dollars) of Military Construction/Procurement funding. (See Table 16.) Air Force claims that this modernization will save over 3,000 personnel. The effort has been directed toward the maintenance and supply missions, not base operations.

At Warner Robins, major progress has already been made. The depot maintenance complex has been reduced from 68 buildings dispersed all over the base to 40 highly centralized. Two independent complexes were established. The airborne electronics maintenance function is located next to the supply facility. A pneumatic tube system operating from the supply area to the avionics work areas will connect the two buildings. The aircraft repair, industrial and life support products, gyro repair, and precision measuring equipment in the second complex.

The gyro repair complex cost \$955,000, reduced the number of buildings from four dispersed facilities to one, permitting fixed processing stations so that gyros flow across the various stations in a sequential process, rather than the old job shop process. Amortization is estimated at 0.94 years (11 months).

The supply facilities modernization program represents a major improvement. The current technological improvements have been incorporated, including automated warehousing systems, automatic packaging equipment/systems, automated labeling, and microfilm storage and retrieval systems. These improvements applied the following:

- Receiving/shipping functions
 - Automatic control of conveyor systems
 - In-process visibility and data system interface
 - Computerized planning of shipments
 - Computerized microfilm files
- Preservation/packaging/packing
 - Standardization of container sizes/methods of pack
 - Automated packaging equipment
 - Automatic weighing and dimensioning equipment

EXHIBIT 2
METHOOS IMPROVEMENT PROJECT SUMMARY

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METHODS IMPROVEMENT PROJECT SUMMARY

1. TITLE Order AMC	2. W. CODE 1100	3. PROJECT NUMBER 6000770	4. THE IDENTIFICATION OF CONTROL UNIT, PARTS, TO AFFECT STRUCTURAL Details
5. IMPLEMENTATION DATE 1 Dec 1974	6. APPLICABLE DIRECTIVES, AFFECTED T.O. 114()-3-2		7. CAP STATUS <input checked="" type="checkbox"/> SUBMITTED <input type="checkbox"/> WITHHELD

8. DESCRIPTION OF CHANGE

BEFORE: Technical order 1F-4()-3-2 Series required that the center wing be removed and set up in overhaul repair fixture NR-DKF2-53-11002-1TD-2TD1 to make structural repair and maintain wing alignment, tolerance, and structural integrity. When the (1) main landing gear intermediate rib (R/H PN 32-11416-301 and L/H PN 32-11416-302) or (2) the main landing gear actuator rib (R/H PN 53-11045-301 and L/H PN 53-11045-302) or (3) the inboard rear spar (R/H PN 32-11038-21 and L/H PN 32-11038-22) or (4) outboard rear spar (R/H PN 32-11149-77 and L/H PN 32-11149-76) requires replacement due to structural failure, the wing is removed and routed to the support shop for repair in accordance with the above technical order. This process dictates that the wing be placed in a special shop overhaul fixture to maintain close alignment and tolerances necessary to achieve inter-changeability

(See attached)

ECONOMIC ANALYSIS

9. PRESENT FY COST See attached sheets for computations.	10. PROPOSED FY COST
11. PREPARED BY (Name and Organization) <i>David M. Bell</i>	14. GROSS FY SAVINGS
12. PREPARED BY (Signature and Date) <i>David M. Bell</i> 1-27-75	15. IMPLEMENTATION COST & ENGINEERING COST \$1,572,463.84
13. AFFECTED ORGANIZATION SIGNATURE <i>Gregory A. ...</i>	16. NET FY SAVINGS \$1,720.00

K-1

Then the center wing section is placed in a demating jig and the two wing halves are separated from the center rib which acts as a splice point. Then, by placing one or both wing halves in the wing fixture, the actual structural repairs are made. The wing halves are then joined to each other by the mating jig and the wing is routed back to the aircraft for reinstallation. The labor standard to remove and reinstall the wing at the aircraft is 3,204 hours. Also, added to this is the support shop set up time of 150 hours to mount/demount the wings in the fixtures.

MANAGEMENT ACTION: On 14 November 1974, direction was given to conduct a Value Engineering study to consider alternate ways to reduce costs of making wing repairs. The result of this study was the development of a process order to revise and supplement T.O. 1F4()-3-2. Process Order Number B13241 was drawn up as a team action between aircraft engineering personnel and production line mechanics. This process order authorized the procedure to deviate from the T.O. and make structural repairs on ribs and spars without removing the wing. Thus far, prototyping these procedures by MRB actions has proven highly successful. As of this date, no Quality Deficiency Reports have been documented by the using activities. On 2 January 1975, the process order was approved by Service Engineering for incorporation into the Technical Order 1F4()-3-2 for world wide distribution.

AFTER: Structural repairs on the center wing are authorized to be accomplished on the aircraft without resorting to the costly procedure of wing removal. The T.O. will be revised to incorporate the approved process order and the detailed repair procedures will be sent out for fleet application on all F-4 aircraft.

DATE OF ACTION: The effective date for process orders is 1 December 1974, with subsequent revision of technical T.O. 1F-4()-3-2 to be published at a future date.

Computations of Savings

MMIP Action
FY-75

1. Cost of making structural repairs in accordance with T.O. 1F-4()-3-2 for one aircraft.

a. Hours to remove/reinstall wing
and related operational checks.....3,204

b. Hours in make structural changes
in support shop. (1) Set up time 150
(2) Structural repair 180

c. Extensions 3,204 hours at \$19,469	\$62,378.68
Extensions 330 hours at \$15,700	5,207.40
Total	\$67,586.08

2. Cost of making structural repairs on the aircraft in accordance with Process Order Number 533241 on one aircraft.

a. Hours to make structural repairs on the aircraft equals.....160 hours.

b. Extension 160 hours at \$19.469 is \$3,115.04.

3. Number of A/C to be repaired from effective date of process order 1 December 1974 to 1 December 1975.

a. Failure data for calculations of occurrences forecasted (1 July 1974 thru 1 January 1975).

	<u>F4C</u>	<u>F4D</u>	<u>F4E</u>	<u>RF4C</u>
Inputs	23	23	44	23
(MRB) Failures	12	6	3	8
Occurrences Percentage	52	26	7	35

b. Projected aircraft schedule from 1 December 1974 thru 1 December 1975.

<u>F4C</u>	<u>F4D</u>	<u>F4E</u>	<u>RF4C</u>
63	45	86	57

c. Number of aircraft to receive structural repair 1 December 1974 thru 1 December 1975.

<u>F4C</u>	<u>F4D</u>	<u>F4E</u>	<u>RF4C</u>
52% (63)	26% (45)	7% (86)	35% (57)
33	12	6	20

Total A/C equals 71

4. BEFORE COSTS: (WING REMOVALS)

71 A/C at \$67,586.08/A/C (See paragraph 1) equals \$4,798,611.68

5. AFTER COSTS: (NO WING REMOVAL)

71 A/C at \$3,115.04/A/C (See paragraph 2) equals \$ 221,167.84

6. IMPLEMENTATION COSTS:

Engineering Cost (160 hours X \$7.00 P/H equals) \$ 1,120.00

1F-4()-3-2 Revision
 (4 pages X \$150.00 P/Page equals) \$ 600.00
 Total \$1,720.00

7. NET SAVINGS ON RHP ACTION:

<u>BEFORE COST:</u>	\$4,795,611.68
<u>LESS AFTER COST:</u>	<u>221,167.84</u>
<u>GROSS SAVINGS:</u>	\$4,577,443.84
<u>LESS IMPLEMENTATION COST:</u>	<u>1,720.00</u>
<u>NET SAVINGS:</u>	\$4,575,723.84

8. The following personnel were responsible for formulating and implementing these technical procedures on the aircraft:

Oral J. Prece	Industrial Engineer	'ABED	
Vern A. Hanley	Industrial Engineer	Technician	MADEB
Kenneth H. Adams	Industrial Engineer	Technician	MAFEB
Earl P. Mackenzie	Industrial Engineer	Technician	MADEB
Lex Ewing	Sheetmetal Foreman	MAIPSS	
Richard Hansen	Structural Engineer	'MEAS	
Richard Cordon	Sheetmetal Foreman	'ABPBS	

TABLE 16

AIR FORCE DEPOT PLANT MODERNIZATION PROGRAM

	Funded FY 1972-75 (In Millions of Current Dollars)	Proposed FY 1976-78	Total
Construction	\$161.6	\$ 89.4	\$251.0
Equipment (procurement)	<u>122.0</u>	<u>45.5</u>	<u>167.5</u>
Total	\$283.6	\$134.9	\$418.5

- Storage
 - Automated warehousing system
 - In-process control and data system interface
- Management information systems
 - Computerized computation of manpower requirements
 - Automated production count/work load scheduling.

PRODUCTIVITY ENHANCING EQUIPMENT INVESTMENT PROGRAM

This program was developed in FY 1974 for the depot maintenance area and patterned after the Army GOCO program. It is aimed specifically at quick amortizing equipment purchases. Air Logistics Command programmed a total of \$2.3 million in FY 1974 and FY 1975 with savings estimated at \$3.7 million annually at level-off. In FY 1976 \$2 million is programmed but not released. The program is limited to ALC depot maintenance, and applied principally to maintenance area, and not to civil engineering, or other base operations where opportunities exist for quick amortization equipment projects. Originally a one year amortization was required, but this has now been extended to a two year amortization. The criteria is more stringent than that applied to the Depot Plant Modernization Program.

Illustrative of the projects financed are three at Warner Robins:

- Random Wander Test Set, using advanced state technology, pretest and final test gyros. Cost was \$156,474 with a 1.4 year amortization period.
- Solid State Power Converter replaces six MD-3 motor generators which have experienced extensive downtime in the gyro complex. Up to 50 production people are idle when a generator goes down. Cost was \$60,000 with a 2.0 year amortization period.
- Flexible automatic circuit tester for expanding capability in avionics area to accurately test wiring assemblies, main frames, cable harnesses, and other electronic systems. Cost was \$110,000, with a 1.0 year amortization period.

The program has shown its potential and expansion to other areas of logistics and support is possible and in fact needed.

PRODUCTIVITY MEASURES

Extensive use is made of labor performance factors. An innovative approach for measuring productivity—called "Market Basket"—has been applied to depot maintenance. "Market Basket" reflects changes in man-hour requirements for selected items of equipment as standards change due to work improvement methods or new problems requiring maintenance not previously programmed in the work package, rather than having a more or less inflexible standard related to a period in time, i.e., 1972.

Labor performance is carefully monitored. At Warner Robins, for example, the cost of labor increased by 78 percent from 1969-1975. The cost per standard labor hour, passed on to customers, increased by only 71 percent, with the savings achieved by overhead reductions and productivity increases. Over 234 persons were reduced in the overhead accounts alone.

Manning standards are used for determining base personnel needs. While 100 percent manning is provided for activities such as base maintenance, the civil engineering authorization is reduced significantly. For example at the Military Airlift Command, the following allocations were made for the base civil engineering functions:

		<u>Percent</u>
Manning standard	6,590	100
Authorized	4,878	74
Assigned	4,692	71

The base civil engineering function can hire up to the 100 percent manning standard by using contractors, but the contract equivalent personnel and the assigned cannot exceed the 100 percent manning standard. Also, holding the civil engineering function to 74 percent provides a major incentive for labor saving capital investment projects.

NUMERICAL CONTROL (NC) EQUIPMENT

Extensive use is made of NC equipment, although utilization can be increased. Air Logistics Command objectives are to increase application of NC, insure continuing utilization of NC equipment, insure work load/economic justification to acquire new equipment, and two shift utilization.

Warner Robins had six NC machines, with 65 percent utilization. Management emphasis and interest was high in obtaining full utilization and savings. Examples of the savings during FY 1975 are the following.

●	ALE-20 flare dispenser guide		
	- Conventional hours	8.25	
	- NC hours	3.08	
	- Savings		\$ 37,071
●	C-130 wing fitting		
	- Conventional hours	13.36	
	- NC hours	2.05	
	- Savings		120,143
●	C-130 ramp latch actuator fitting		
	- Conventional hours	8.00	
	- NC hours	5.07	
	- Savings		1,432
●	Total savings		\$158,646

Air Force is also engaged in examining potential uses of Computer Aided Manufacturing (CAM), an area requiring major new initiatives. The United States developed the numerically controlled tool with Air Force leadership. The U.S. is the leader, but other countries have recognized, adopted, adapted and innovated this technology so that their level of Computer Assisted Design (CAD)/CAM is moving rapidly to equal ours. The need for DoD/government-wide initiatives to diffuse established technology throughout the industrial base or to advance the state of manufacturing technology in the private sector is thus most important. The 11 April 1975 Deputy Secretary of Defense memorandum provides a vehicle for enhancing our manufacturing technology in CAO/CAM for productivity enhancement and future facilities modernization.

BARRIERS TO CAPITAL INVESTMENT

Before an item of equipment can be purchased, it must be placed on authorization list, in the table of allowances. Thus even if funding is available, authorization process can be a barrier. The period of testing before adopted for Air Force use can take as long as three years. The following represents several items recently added to the Table of Allowance for civil engineering and the length of the authorization process.

<u>Item</u>	<u>Starting Date of Request</u>	<u>Authorization Date</u>
<p><u>High Pressure Washer</u>— for cleaning heavy duty equipment. Present authorized washers are not adequate for cleaning dirt and debris from track laying equipment, towing tractors, and refuse handling equipment. This item is a commercial portable high pressure washer and effective in cleaning vehicles. Cleaning can be accomplished in less than half the time required for authorized washers.</p>	22 March 1972	1 May 1975
<p><u>Water Leak Detector</u>— the detector permits the conducting of leak surveys under a wide range of climatic and operating conditions. It is a commercial item. The leak detection system could save thousands of dollars in manpower by eliminating unnecessary digging to locate leaks and also prevent unnecessary loss of valuable resources. It is very successful in locating leaks in underground water lines. At one base, during the test, 34 leaks were discovered.</p>	4 April 1973	1 February 1975

OPPORTUNITIES

The following are illustrative opportunities noted at Scott Air Force Base:

- Aircraft wash rack for C-9 aircraft. At present five to seven people are engaged on a permanent basis washing C-9s daily. An automatic wash rack would save two to four spaces and be quickly amortized. Aircraft wash racks exist and are used extensively by the Navy.
- Runway sensors to determine temperature of concrete runways. Chemical spray is applied to prevent icing. Each pass costs \$300.00. If the temperature of the runway was known, passes would not be required in many cases, thus saving resources. Civil engineers believe sensors would be amortized quickly.
- Hydrohammer—used for breaking up concrete. This can be done in one-fourth the time it now takes. Equipment has been rented for three months at a cost greater than procurement of a new item.

- Central Supervisory Control Systems for controlling and monitoring central chilled water plants. The central console for each system monitors and controls the water chillers and air handling units. Twenty-five buildings at Charleston AFB and 40 buildings at McGuire AFB are connected to the Central Supervisory Control System. Heating, refrigeration, lighting, and cathodic protection systems, as well as remote pumping stations, will be monitored in the future. On energy savings alone, the system will amortize itself in five years. Other benefits derived from the system include improved manpower productivity by reducing the frequency of inspection trips, longer equipment life through shorter hours of operation and earlier identification of problems, and reduced vehicle mileage.

OTHER

- Deferred procurement by MAC Civil Engineering and Services Organization, with fast amortization and labor saving potential:
 - Pots and pans washing machine— six at \$5,065 \$30,390
 - Commercial style car wash 7,000
 - Rotary mower— three at \$1,170 3,510
 - Tractor mower— three at \$6,000 18,000
 - Lube and servicing unit 11,240
 - Dishwasher 12,876
 - Scooters (three-wheel) for family housing mechanic troubleshooter, two at \$2,207. 4,414
- Base maintenance
 - Diagnostic equipment for aircraft maintenance.
- Base civil engineer
 - Trash shredder
 - Water leak detector
 - Sewer reveal and seal mobile unit and TV inspection and repair unit for use in man-holes. Wright Patterson borrowed unit from city of Columbus. Unit proved most successful.

- Capital investment unfunded projects reported to GSA in 1975 survey:

- Air Training Command, San Antonio- 72 inch rotary mowers

- . Cost \$51,000
- . Labor savings 70,201
- . Amortization 8.7 months

- USAF Academy- Conveyor dishwashing system

- . Cost \$55,500
- . Labor savings 90,200
- . Amortization 8.7 months

Reduction of 20 manpower spaces in Sanitation Division, Cadet Dining Hall, would occur. Fort Carson has recently installed six smaller units in six dining halls and realized a savings of 12 manpower spaces and are satisfied with results.

Work processing has been successfully applied in two areas in the Military Airlift Command. Production has increased significantly. Standard typewriter production is 200-300 lines per day, while the production from the work processing centers is 500-800 lines per day. Reviews indicate that the average document is rewritten two to four times before being released and signed. The automatic typewriter can retype document at a rate of 180 words per minute. Savings in manpower are thus significant. The test areas reduced their staff by 11 employees, with an average salary of \$8,578, totalling \$94,400. MAC believes a reduction of at least 67 initially of the 426 secretarial staff in MAC Headquarters could be made (15 percent) with a potential of a 25 percent manpower reduction. Investment cost would include either procurement or leasing of 100 automatic typewriters.

The success of the program at MAC Headquarters was such that the Scott Air Force Base Civil Engineering Office was requesting the application of word processing to offset its reduced personnel levels.

Word processing offers significant potentials throughout DoD for reducing personnel costs.

VII. MARINE CORPS

Marine Corps Supply Centers, with a mission to repair, store, and distribute all items, except aeronautical, have applied capital investments to enhance productivity. The Albany, Georgia Supply Center has moved effectively to reduce personnel costs by use of capital equipment. Performance standards are extensively used with 1,985 of the 2,380 civilian and military personnel covered. The standards are used in estimating manpower requirements, determining organizational labor effectiveness, and identifying areas for capital investment. A modern supply facility has been established, with one man controlling the flow of requisitions being filled in the 160,000 item warehouse complex.

The examples of the use of capital investment equipment to decrease personnel cost are numerous at Albany, Georgia. So are the examples of deferred projects, which if funds were available, could result in earlier savings. Examples of projects which have been implemented to save personnel include the following:

- In the Comptroller Division, the Transportation Voucher Certification Branch has been collecting transportation data by manually coding information onto code sheets to be keypunched. This operation requires eight Coding Clerks. Approval has been obtained from the Commandant of the Marine Corps to procure key-to-disc input devices which will eliminate the coding of information onto code sheets. This operation will result in a savings of about five man-years within the Transportation Voucher Certification Branch and is planned to be operational during November/December 1975.

- Some other labor saving devices and procedures that have been implemented at this Command and have enhanced productivity are:
 - Power floor cleaners
 - Pneumatic/hydraulic ram tire breaker for tires greater than 1100 x 20
 - Microfilm Information System for research on design specifications
 - Telescoping work platform for high ceiling replacement of lights in warehouses and administrative spaces
 - Reworked dynamometer facilities to accommodate a greater scope of vehicles
 - Establishing Assembly Line Process for rebuilding M35, M113 and M577 vehicles because of quantities involved.
- Examples of potential labor saving devices not yet funded are:
 - Paint measurement standards test equipment
 - Master control panel to monitor multifacility meters and gauges
 - Land fill machine
 - Automatic pricing of commissary stocks.

In addition, there are over \$170,000 of items projected for FY 1977 procurement at Albany which could result in quick amortizing projects. These are mostly for replacement of equipment which is worn out, requiring excessive maintenance and for which parts are no longer available due to the age of the equipment.

Examples of the proposed FY 1977 procurement which if funding were available could be funded now are shown in Table 17.

Albany, Georgia performs overhaul on Marine Corps equipment. Workmanship is high, but need for separate facility to overhaul Army-type items, such as tanks and vehicles, with proximity to the Anniston Army Depot and the capability of Anniston to overhaul these items bears review. It will be an item under review in the forthcoming GAO Study of DoD depot maintenance facilities. GAO will examine consolidating maintenance efforts, redundancies in facilities and equipment, as well as opportunities for fostering improved manufacturing technology and production.

TABLE 17
PROPOSED FY 1977 PROCUREMENT

Item	Cost	Justification
Electric hoist, two-ton	\$10,800	Replacement in Depot Maintenance Shop. Item due for retirement in 1971. Parts no longer available to repair hoist.
Vapor degreaser- Baron Blakeslee Model	22,000	Replacement. Item is approximately 20 years old. The distillation unit is missing, thus causing excessive use of new solvents which are costly.
Marquette engine analyzer	1,950	Parts are unavailable for repair of present machine. Machine is obsolete since it does not have capability of testing newer model equipment with transistorized circuits.
SSB-50-1 spectrum analyzer	7,017	Replacement. Item is worn, unreliable and unstable and will not allow proper checkout of communications equipment.
Monarch lathe Model EE, 10 inch turret, electric speedmatic	14,400	Replacement of like item worn out in service. Used for production runs such as sleeves, and a large quantity fabrication of production parts.

VIII. INDUSTRY

Growth in capital per man-hour has been an important factor in productivity growth. More and better equipment allow a worker to perform his job more effectively. Since growth in output per man-hour is closely related to the amount of capital supporting each worker, the ratio of capital investment to output is a precursor of potential growth in productivity. ^{1/} Productivity is more likely to increase rapidly in countries where this ratio is high. During the 1960's the United States had the lowest average capital investment ratio in manufacturing of the major Free World industrial nations, as well as the lowest average increase in manufacturing productivity. Japan on the other hand, had the highest investment ratio and the highest rate of productivity gain. The rate of increase in productivity in the United States since World War II has been about three percent per year. Except for the United Kingdom, this is the lowest rate of increase of any of the Western Nations and Japan.

The Deputy Secretary of Defense as previously noted, on April 11, 1975 directed that a major effort be directed to reduce weapon system acquisition costs and improve the productivity of the DoD contractors. A copy of this directive is shown as Exhibit 3. Mr. Clements was convinced that significant cost savings in the production of Defense material could be obtained by increasing the application of state-of-the-art manufacturing techniques and by the development of new and improved manufacturing technology. Manufacturing technology cost reduction opportunities should be identified and aggressively exploited. Effective use should be made of numerically controlled

^{1/} National Commission on Productivity, Productivity and the Economy, Bulletin 1779, 1973, pp. 48-51. This data was developed by the Bureau of Labor Statistics in conjunction with the National Commission on Productivity.

EXHIBIT 3

MEMORANDUM FOR THE SECRETARIES OF THE MILITARY DEPARTMENTS

SUBJECT: COST REDUCTION INITIATIVES



THE DEPUTY SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

APR 11 1975

MEMORANDUM FOR The Secretaries of the Military Departments

SUBJECT: Cost Reduction Initiatives

Each of you is fully aware of the critical cost problems we have faced and will continue to face in weapons systems acquisition. We have addressed them from almost every conceivable aspect. However, many remain today and it is my intention to make a renewed attack on these problems.

During the past several months, I have asked my staff to prepare a list of potential DoD initiatives which, if implemented, would reduce the cost of material acquisition and improve the productivity of our contractors. They have developed a number of separate but closely related tasks we will be considering in the near future. These include such things as: adjustment of weighted guidelines to provide greater incentive for contractor capital investments in modern, more efficient manufacturing facilities; establishing a revolving capital fund for DoD procurement of modern production equipment; Production Support Engineering (PSE) funding - "seed money" aimed at manufacturing productivity improvement (similar to IR&D); evaluating ASPR provisions to insure that cost effective contractor capital equipment investments are encouraged; re-evaluating the feasibility of multi-year contracting, etc. There may be others that you may suggest which we should also consider.

You will recognize that several of these present many complex problems and could require action outside the DoD environment before we could implement them. However, there is one area where I believe we can start immediately with definitive action.

I am convinced there are numerous opportunities to obtain significant cost savings in the production of Defense materiel by increasing the application of state-of-the-art manufacturing techniques and by the development of new or improved manufacturing technology. For example, not only should we be making more effective use of

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numerically controlled machine tools and other new, highly productive manufacturing processes but we should also be exploiting emerging technologies such as computer aided manufacturing, laser welding, diffusion bonding, use of composites, etc.

I am informed that we are spending approximately \$60 billion each year in this country to remove metal from parts where it is not needed. We should therefore develop and apply manufacturing processes that permit fabrication of parts closer to required net shape. This would not only reduce metal removal costs, but would also conserve many critically short, expensive strategic materials.

While I am aware that many of these opportunities are presently being pursued to some degree, I am convinced we must increase our efforts manyfold if we are to get the payoff that is needed to bring DoD systems and equipment costs down significantly.

The recently published guidance in the PPGM on the DoD Manufacturing Technology Program directed significant increases in emphasis and funding levels to realize our productivity goals. To assure that we are directing our efforts to the areas of greatest need and greatest payoff, to prevent duplication of effort and to promote widest possible application of new manufacturing technology advances across the board to all systems, this guidance further stated the program should be centrally managed within each Service.

I am therefore directing the organization be structured in each Service to provide for central management and control of this program and that it be adequately staffed with highly qualified personnel that have sufficient authority to promote the objectives of this effort.

As a next step to permit realization of the savings and benefits that I believe exist, I am directing that a new "initiative" be established. Under this new "initiative", I want to identify and then aggressively exploit application of manufacturing technology cost reduction opportunities. Each Military Department is asked to identify a number of new manufacturing technology efforts, and a number of major weapon system programs where the application of existing or new manufacturing technology promises a high return on investment. You should plan to fund the opportunities identified on a demonstration basis. Special funding may be required. If the payoff appears to be significant, and if it is necessary, I am prepared to take this program to Congress.

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Please be prepared to brief me within 120 days of the initial actions and plans that you have taken to pursue this initiative. The briefing should include: A description of the organizational structure that will provide for centralized management and control of the manufacturing technology program in your Service; an identification of the weapon systems that have been selected for the cost reduction efforts, to include a description of proposed manufacturing improvement actions with associated costs; an analysis of potential benefits to be realized; a time-phased plan for implementation; a listing of other major manufacturing technology projects, and a projection of funds identified by program element, that will support the total Manufacturing Technology Program through FY 81. In addition, I would also appreciate any additional ideas that offer the potential for increasing manufacturing productivity and reducing costs.

I believe we cannot delay in taking affirmative action to exploit the cost saving opportunities offered in this area. As a result, I have appointed Jacques S. Gansler, Deputy Assistant Secretary of Defense (Materiel Acquisition), OASD(I&L), to direct this program during the initial stages, and he can furnish any additional information you require. Some initial dialogue has already taken place between OASD(I&L) and representatives of your staff.

In view of the potential for a large return on these investments and the resulting opportunities to demonstrate to Congress that we are making a concerted effort to reduce materiel acquisition costs, I solicit your personal assistance and involvement in carrying out this program.

Signed
W. P. CLEMENTS JR.

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machine tools, other new highly productive manufacturing processes, and emerging technologies such as computer aided manufacturing, laser welding, diffusion bonding, use of composites, and new methods permitting fabrication of parts closer to required net shape.

GAO has recently completed a survey of government use of numerically controlled (NC) machine tools. The survey revealed that:

1. Some advancements in the field of NC may be limited because users are confronted with so many NC systems and different standards.
2. Generally no formal systems to identify where NC could be economically used, nor adequate staffs to search out opportunities.
3. Work mix studies not undertaken.
4. NC equipment purchased only when conventional equipment deteriorated or when a new work load was anticipated. Large numbers of machine tools were planned, but very little NC.

GAO believes DoD should take the lead in working with industry to bring about greater standardization in the field by closely coordinating with industry and perhaps sponsor R&D in the NC field. In addition, improved systems for identifying opportunities for NC are needed and management and use of NC improved.

Greater emphasis must be given to Computer Aided Manufacturing (CAM) and its counterpart, Computer Aided Design (CAD). CAM can yield upwards of 400 percent productivity improvement over today's practice, according to GAO. Foreign nations are treating CAM as a national goal. Japan is spending approximately \$100 million to reach the goal of a totally automated plant. Germany, Great Britain, Norway, Sweden, and the Iron Curtain Countries are devoting significant financial support and government emphasis to CAM. The United States is the only major industrialized nation that has no formal program, goals, or significant support to development of CAM or the diffusion of CAM technology throughout the industrial base. GAO based on their extensive study believes that there is more CAM/CAD in place in the United States than elsewhere, but that it is primarily clustered in a relatively few high technology capital intensive firms. It has been estimated that over 75 percent of American industry is comprised of small firms employing less than 500 persons. These firms have neither the capital or the know-how to reap the advantages available through CAM/CAD. Many firms apparently are still accomplishing their metal cutting functions much as they did 25 or 30 years ago. The dissemination of CAM/CAD technology is a major challenge.

The need for CAM in the future is clear. It has tremendous manpower implications and application in DoD as well as industry.

Productivity problems exist in industry. A 1973 study by the Air Force (Acquisition Cost Evaluation) highlighted these productivity problems, mostly from previous study efforts.

- Forty-five percent of typical aircraft assembly production labor man-hours are nonproductive, even at plane #1000 (AFML-Sagamore Study).
- Thirty-two percent of manufacturing labor was idle (Hughes Phoenix Should Cost Study).
- Average direct labor productivity was 61 percent in 11 departments analyzed (F-4 Manufacturing Operations Survey).
- Overall efficiency of the plant during 1971 was 68.6 percent (General Electric Albuquerque Manufacturing Plant GAO Report).
- Improvement in labor standards program and a methods improvement program could reduce cost at the plants reviewed (Aircraft Engine GAO Report).
- Of the total direct costs on a typical production contract, 42 percent is traceable to manufacturing labor. About half of this labor cost is nonproductive because of inefficiencies of one kind or another. If it were possible to achieve only a 20 percent improvement in labor productivity, approximately one billion dollars could be saved on 11 of the major Air Force contracts. ^{2/}

A recent survey of 12 well-managed companies, representing a cross-section of industrial groups and functional areas (insurance, airlines, manufacturing—steel, automotive, apparel, electronics, and facilities), was undertaken, examining, among other areas, the impact of capital investment on productivity. ^{3/} A summary of the survey is as follows:

- Feasibility of proposed capital investment
 - Each company undertook some type of economic analysis. Techniques included discounted cash flow (present value) before and after tax, pay-back method, and rate of return.

^{2/} Air Force Systems Command, Project ACE Executive Summary, June 1973, p. 41.

^{3/} Army Management Engineering Training Agency, Survey of Productivity Measurement Systems in Non-Government Organizations, May 1972.

- Economic justification required on the acquisition of assets whose primary objective is to: produce new products; increase capacity to produce current products; replace capital facilities being retired from service; or reduce costs.
- Capital investment decisions are tied directly to the planning and control system. In one case this involved prioritized decision packages, with a cut-off line or budget limit established for each organizational element. Ranking in some cases is based on return on investment, keeping pace with competition, and government regulations—especially environmental.
- All companies with documented procedures had dollar thresholds criteria to determine the organizational level responsible for the final decision.
- Three of the companies indicated advantages of leasing over buying to 1) avoid risk of obsolescence, 2) provide additional source of financing, 3) provide facilities that are only needed temporarily, 4) relieve the user of maintenance, servicing and administrative problems, and 5) give lessee flexibility in areas of equipment choice and where short-term capacity is a consideration.
- Post audit of implemented capital investments
 - Seven of the 10 companies performing economic analysis have a formal follow-up audit after the capital expenditure has been completed. The follow-up program is originated between 6-18 months after the project has been in operation. The purpose of the audits are to:
 - Determine whether the actual accomplishment equaled the planning estimate. How has the capital investment affected standard unit costs and sales. This is used in some cases to assess the quality of the decision made by managers.
 - Gain knowledge to improve the economic analysis and decision making process in the future.
 - Thresholds were set on projects to be audited on a 100 percent basis, which ranged from \$100,000-\$250,000 capital investment projects. A sample approach was used on those below the threshold. Projects with overruns, irrespective of amount, were given post audits in several of the companies.

- Examples of capital investment projects

- One firm increased productivity through computerization in one of the most labor intensive operations in its integrated circuit manufacturing cycle. With this computer controlled bonding system, the operator can improve productivity 500 percent, save 50 percent of the gold wire previously required, and produce a more reliable product.
- In this same firm, an ADP system called "Dynamic Line Balancing" is being used on more than 40 semiconductor manufacturing and printed board assembly lines. This system calculates optimum manpower requirements under any requested set of conditions. Work and process inventories and manufacturing time have been reduced with the use of the system, and significant productivity gains achieved—up to 20 percent on an average.

IX. OTHER FEDERAL AGENCIES

The Joint Financial Management Improvement Program's Annual Report to the President and the Congress on Productivity Programs in the Federal Government FY 1974, issued June 1975, highlighted a number of capital investment and technological improvements, which Federal agencies other than DoD undertook in FY 1974. Many of these have application in DoD. They point up the necessity for data interchange. Again, they indicate capital investment opportunities for manpower savings and productivity enhancement. The list includes the following:

- Facility maintenance
 - Procure dehumidifier to slow oxidation process for ships being preserved.
 - Develop improved paint which lasts 50 percent longer.
 - Use electronic sensors to monitor electric power equipment.
 - New sensory devices which give immediate information on locations of breakdowns.
 - New floor cleaning techniques.
 - Automated preventive maintenance scheduling program.
 - Replacement of overage and uneconomical repair refuse handling equipment.

- Printing
 - Installation of a folding machine which folds large sheets automatically and results in annual labor savings of \$30,000.
 - Installation of a total copy system.
 - Installation of an automatic filer processor in the copy preparation process.
 - Use of mechanical collating machines.
 - Purchase of new and more sophisticated presses.
 - Acquisition of more efficient varitypers and headliners.
 - Optical scanning system.
 - Installation of jet speed collation which takes only half the time of the old machine.
- Records Administration
 - Expanded use of computer terminals (F&A).
 - Acquisition of automatic typewriters and power files.
 - Technological improvements through replacement of punch card entry by key-to-tape entry.
 - Automation of laboratory analyses.
 - Capital investment in microfilm equipment, optical character readers and computerized data banks.
 - Automation of data input at source and transmission of computer readable data up the line.
- Reference services
 - Increased use of word processing and microfilm.
 - Installation of a mail opening machine.
 - From batch processing techniques to an on-line interactive search procedure which represented manpower savings.

- Inspection and enforcement
 - Automated darkroom equipment.
 - Added sophistication in laboratory equipment.
- Health care
 - Automated test equipment in chemical laboratories.
 - Automated film processing in radiology.
 - Automated recording of medication orders and inventory controls in pharmacies.
 - Automated kitchen equipment (food factory and optimum utilization of innovative food production and distribution techniques.
 - Automated laundry equipment.
 - Mechanical pill counters and container labelers.
 - Construction planning to reflect new emphasis on outpatient care.
- Supply
 - Use of a polyethylene shrink film method for unitizing and protecting export shipments.
- Financing and accounting
 - Computer based accounting system automated for invoice payment, service billing, payroll and personnel systems.
 - Use of optical character reader equipment.
 - Acquisition of new endorsing machines to expedite check processing.

X. MAJOR FINDINGS AND CONCLUSIONS

GENERAL

- Personnel reductions and productivity increases through capital investment and technology are possible— in fact essential— to stem the tide of increased personnel costs. For each one percent increase in productivity, \$200 million and 7,000-10,000 military and civilian employees are saved.
- Based on Army experience to date, for each dollar of capital investment, a 75 cent saving in cost of labor and over 25 cents saving in other resources, can be attained in the first full year of operation.
- Extensive opportunities for fast payback capital investment exists in each service. These opportunities related to logistics, manufacturing, and base operations (housekeeping) support functions, involving over 935,000 military and civilian employees.
- Timely identification, evaluation and funding of fast payback capital investment opportunities is a key for successful productivity improvement. Capital investments and technological improvements are responsible for over 60 percent of the productivity increases in industry. The same is possible in DoD. Decentralization of approving authority permits fast response. Prompt action on all opportunities/ideas identified is an essential element of the fast payback program.

- Defense has established a target objective (MBO) for increased productivity of 1.7 percent in FY 1976 and at least 1.5 percent in the outyears. To attain this, an active aggressive program with strong leadership at the GSD and Service levels must be established to identify, evaluate, and finance innovative capital investment programs in labor intensive areas for personnel and other resource savings.
- The criteria for these capital investment projects should include the following: amortization within two years, be an off-the-shelf item, be authorized limited design and modification effort, and be subject to a post audit review.
- Modernization in many cases involves both military construction and equipment capital investment with significant personnel savings. With the exception of the Army Ammunition Modernization Program, the funding is through separate appropriations. Improved integration of military construction and procurement funding is required.
- An aggressive Manufacturing Technology (MT) program has been initiated with significant fund increases. The emphasis of this program is generally considered to be directed at contractors and weapon systems acquisition costs. Air Logistics Command and Navy Sea Systems Command have shifted the MT emphasis to in-house efforts as well. The potential savings of expanding MT within DoD to incorporate all in-house activities in manufacturing, logistics, and base operations is great, since MT complements the capital investment productivity enhancement program.
- Rapid approval on a decentralized basis for fast pay-back capital investment projects is essential. Army and Air Force have programs for such rapid approval. Navy, in the Sea Systems Command, has a program but it is limited to \$5,000 for each project at a shipyard. Army will be expending \$4.7 million in FY 1976, Air Force \$2 million, and Navy \$2 million. Coverage in the Army extends to all installations, but has not been fully utilized by the installations and commands. Air Force to the depot maintenance area only, and Navy to the shipyard area only. Thus much broader coverage and utilization is needed with higher levels of funding. Beginning in FY 1977, DoD has programmed \$35 million per year through the FYDP. This represents a major increase in capital investment funds, requiring a major boost in program direction as well.

- This \$35 million program for capital investment in productivity enhancement can result in personnel savings, if past accomplishments continue, of 1,750 military and civilian employees per year or approximately 8,750 employees over a five year period. ^{I/}

ORGANIZATION

The Productivity Enhancement Program, to be effective, must have a well-defined, structured, and balanced organization at every level of command. It should:

- Be delegated specific authority and responsibilities to exercise centralized management authority over the planning, direction, control, and execution of the programs.
- Be the focal point for all productivity enhancement actions.
- Be adequately staffed to use all available means, disciplines and techniques to:
 - Identify investment opportunities
 - Evaluate investment opportunities
 - Obtain necessary funding
 - Verify that savings materialized as planned
 - Render reports as required.
- Be responsible to obtain capital investment data from other commands and services for possible use in own command/service.
- Be responsible to provide capital investment data to other commands and services for their possible use.
- Have a program of idea interchange with other commands/services.

OPPORTUNITIES FOR FAST PAYBACK CAPITAL INVESTMENT PROJECTS

The benefits of decentralized authority for fast payback capital investment projects has been proven. The success to date of the Army and Navy projects are most convincing as noted below.

^{I/} The method used in computing these personnel savings are shown in Appendix A.

<u>Service and Time Period</u>	<u>Cost</u>	<u>Annual Level-Off Savings</u>
	(In Millions of Dollars)	
Army- FY 1973-75	\$6.0	\$10.6
Air Force- FY 1974-75	2.3	3.7

Each Service has many investment opportunities for small and large projects. These are over and above the \$8.7 billion in ammunition, depot, and shipyard modernization programs underway or programmed. The opportunities include a portion of the \$106 million of deferred projects reported to the General Service Administration, projects deferred until after FY 1975 due to funding restraints, but with a high rate of return, projects related to manufacturing technology which will develop into fast payback capital investment projects, and projects identified at one installation that can be applied by DoD in other installations. There are almost 100 of these type of projects. In addition, there are potential capital investment areas which have been proven at the local government level—many funded with Federal funds—that can be applied to the base operations civil engineering housekeeping functions at the installation level. An installation is, in fact, a city and the local government developments and improvement in garbage pickup, sewage disposal, fire fighting, building and road maintenance and other services can be applied to the military installation. Word processing is another opportunity with major personnel reduction potentials—25 percent in secretarial reductions estimated by one command.

FINANCING—ALTERNATIVE APPROACHES

There are many approaches to financing of fast payback capital investments. These include the set aside, the Industrial Fund, and additional innovative approaches.

- Set Aside—This has been used by the three Services with varying levels of application. Funds are specifically earmarked for fast payback capital investments. Criteria are established and projects are approved at a decentralized command or shipyard. DoD is proposing a set aside of \$35 million annually starting in FY 1977. Generally funding is on a first-come first-serve basis.
- Industrial Fund—Several approaches exist for providing equipment, now that the \$1,000 limitation has been raised to \$100,000 by the Deputy Secretary of Defense, including the following:
 - Equipment that can be amortized within two year can be procured and charged to the Industrial Fund overhead, as long as cash position is not impaired.

- Job Order— Equipment can be purchased against a specific job order as long as the equipment can be amortized during the life of that specific job order.
- Not authorized, but a potential approach
 - Permit borrowing from the Industrial Fund
 - Charge depreciation, establishing a depreciation account for equipment replacement.
- Other innovative approaches not yet approved
 - Establish a Productivity Bank outside of DoD, which would operate in a manner similar to a commercial bank, operating under a Congressional approved corpus and charter. Repayments would be required in line with the projected savings. The bank would charge interest and have first lien on Service appropriations for repayment.
 - Establish a capital budget for the Government. Today capital outlays are budgeted as though they were current expenses. Interest and depreciation would be charged as a current expense.
 - Establish a working capital fund under DoD for the procurement of productivity enhancing equipment which would operate similar to the Industrial Fund.
- Traditional— This is the approach generally used today for equipment funded either from procurement or operation and maintenance appropriations. This review and approach process is lengthy and whether the equipment requirements are small or large, the process is almost the same. The lead time is too long to acquire capital investment funds through normal budgeting channels. This is why there is the effort to provide a capital investment program that gives the managers a quick method for acquiring productivity enhancing capital equipment.

Reprogramming requires reordering of priorities, but if the capital investment has sufficient priority, it can result in earlier funding. Congress authorizes reprogramming of funds within specified constraints in its appropriations.

INCENTIVES FOR CAPITAL INVESTMENT

Although there is normal reluctance to change, there are a number of incentives which provide the drive for the commander to improve and become cost competitive. These include:

- The reduced response time of the fast payback capital investment program, and reducing the long lead time that formerly existed to obtain funding.
- Tight personnel ceilings, in many cases below the manning standards, are forcing managers to find improved ways of doing business. Productivity enhancing capital investments provide the necessary vehicle to assist the manager in meeting his needs.
- Use of positive motivational devices, such as productivity improvement goals, employee suggestion systems, and cost or personnel sharing of the savings. Service command personnel desire to use these savings for other high priority projects.
- In case of government-owned contractor-operated (GOCO) ammunition facilities, cost sharing approach similar to value engineering contractual sharing provisions, has been most successful in motivating contractors. Some contractors saw it as an opportunity to obtain small fast payback capital investments to make their facilities cost competitive.
- Psychic benefits are also of value when the policy of the Commander of the installation or contractor, in the case of GOCO's, is to give recognition to the person(s) who identifies a capital investment opportunity. Publicity is given also to show that the fast payback capital investment program yields successful results. This communication aspect is as important within the installation as the diffusion of the project's success is to other DoD and governmental organizations.

BARRIERS TO INITIATING CAPITAL INVESTMENT PROJECTS

There are a number of disincentives which can inhibit the fast payback capital investment program and must be resolved. These include:

- Authorization Process to procure equipment. Even if funds are available, the equipment to be procured, which will generate the personnel savings, must be on an authorized table of allowance list for the organization. This process may take as long as three years, as evidenced by some of the Air Force civil engineering items. Expedited processing of authorization documents is required.

- Civil Service Guidance for grade structure of supervisors is based on the number of employees supervised. Thus, if an innovative application of equipment reduces the number of employees, the grade structure of the supervisor may be reduced, although his action results in personnel savings but retains the same or higher levels of work output and quality. This becomes evident at the Navy Air Rework Facility. This disincentive to improvement needs to be removed. The supervisor who applies labor saving approaches should be given an award, not a demotion.
- OMB Circular A-76 (Policies for Acquiring Commercial or Industrial Products and Services for Government Use) has been interpreted by some to apply to new equipment that exceeds the productive capacity of the replaced equipment. Thus, if a numerically controlled machine tool replaces several conventional tools, it will be considered a new start requiring an involved justification process. Under this self-inflicted interpretation, the application of productivity enhancement capital investments could be delayed. This restrictive interpretation needs to be eliminated to permit a rapid response to labor saving capital investment opportunities.
- The administrative cost of indefinite reporting of savings after installation can offset the actual savings. A reasonable limit needs to be established for reporting savings which for some programs may be 6-12 months after payback.
- Economic analysis is necessary for justifying capital investments. The level of detail required should be tailored to the size of the investment. Some organizations require the same level of detail for a small project as for one of over \$100,000. This has created a reluctance on the part of some managers to submit labor saving productivity enhancing projects.
- Limitation in Scope—The application of the fast payback capital investment program has been limited to specific accounting codes. This restricts its application and eliminates many potential areas. Broader application is required.

TRAINING— IDENTIFICATION

Trained management personnel and industrial engineers are essential for the management, planning, direction, control and execution of the productivity enhancement program. A training effort is required for industrial engineers and related management personnel for identifying opportunities for capital investment to increase productivity and to overcome past frustrations on the length of time for obtaining approval of capital investment projects.

Training programs are in being which can be utilized. These include the excellent Army Management Engineering Training Agency, which has developed service-wide training programs in productivity and capital investment interface, and the Red River Army Depot Intern Training Program.

The extensive management engineering programs of the Air Force provide an approach toward developing disciplines and a capability for identifying opportunities for fast payback capital investment. These include the work methods improvement program, the methods laboratory, the materials laboratory, the manning standards engineering program, and the maintenance evaluation program for functional areas.

Management indicators covering performance, schedule conditions and equipment age, downtime, and utilization assist in pinpointing areas of capital investment opportunity.

DISSEMINATION

Diffusion of technology and opportunities for capital investment are spotty. Capital investment opportunities are identified which have DoD-wide applications, but communication of their benefits to others is limited.

Since base operations—civil engineering and housekeeping—is a highly labor intensive area, the results of the research at the local government level should be diffused to the DoD installation level for possible application. These are largely funded from Federal sources, in solid waste, road and building maintenance, fire fighting, equipment maintenance, energy conservation, communications and related fields. Generally DoD at the installation level were unaware of these developments. One civil engineer at one of the installations visited considered himself an isolated island with respect to diffusion of current technology in his field.

POST AUDIT

Audits of the actual cost savings needs to be made to avoid "brochure-manship" in selling the project. A post audit capability, with records available on a before-and-after condition, is necessary. The audit for investments under \$100,000 should be conducted using sample techniques to assure credibility while avoiding large administrative costs. The audit should be made when the capital investment reaches the point of self amortization. On projects, with an investment cost of \$100,000 or more, or with a cost overrun or major deviation from the original estimate, a 100 percent audit should be performed. The survey of industrial establishments follows this approach on post audits. Generally this prevailed in the review of DoD objectives, although the threshold for audit appeared too high, leaving too many projects below \$100,000 to be audited by interested parties.

NUMERICAL CONTROL MACHINE TOOLS (NC)

Use of numerical tools (NC) has demonstrated significant savings. In some areas, there are still questions as to their use on certain job orders, although proven in others. Large numbers of machine tools were planned but very little NC. Utilization can and should be increased. Too many NC systems

and standards exist. DoD, which has been the leader in NC and one of the large users, should take leadership to bring about greater standardization in the industry. Greater emphasis must be given to Computer Aided Manufacturing (CAM) and to its counterpart CAD. CAM can yield upwards of 400 percent productivity improvement over current practices. Foreign countries are devoting significant financial support and government interest and emphasis on CAM. The need for CAM is strengthened because of its large manpower implications.

CLARIFICATION

There are several areas which need additional clarification of definitions.

- Military Personnel—The economic analysis determining whether a project or alternative approach are cost-effective for undertaking should include both military and civilian personnel in its computation of savings. One command did not consider military personnel savings as a basis for undertaking fast payback capital investment projects. There should be no differentiation between military and civilian personnel in determining savings, especially since in a number of operations—maintenance for example, they are interchangeable.
- Resource Savings—In a number of cases resources could be saved by applying fast payback capital investments to procure rather than lease. Equipment is leased at a higher cost than the procurement cost, i.e., a street sweeper. No increase in productivity occurs, but dollar savings do. Present guidance for some programs state that savings must be related to productivity increases, not to changes in ownership. This guidance should be liberalized.
- Reporting of Savings—Savings are reported in a number of different ways including gross and net. A standard approach is necessary. One suggested approach, used in this Study, is to consider the gross savings, which will occur once the equipment is installed and operating. This is at level-off and permits a comparison between present operating cost and level-off cost for the same work load level. The difference is the gross savings. Another approach is to offset gross savings with the cost of the equipment and installation. These are one-time costs. The net savings do not show the continuing actual annual savings expected over the years.

XI. RECOMMENDATIONS AND ACTION PROGRAM FOR DoD QUICK
PAYBACK CAPITAL INVESTMENT

Annual manpower savings of 1,750 and 8,750 over the FYDP time period are possible as a result of quick payback capital investment projects. This requires an action program complementing actions already taken by DoD to:

- Provide \$35 million annually through the FYDP for quick payback capital investments, and increase authorization level for equipment procurement from the Industrial Fund.
- Undertake an accelerated Manufacturing Technology Program.
- Establish the MBO objective of an annual increase in productivity of 1.7 percent in FY 1976 and at least 1.5 percent in the outyears.

The Recommended Program for Productivity Enhancement through Capital Investments will:

- Concentrate on the logistics, manufacturing and base support operations in which over 935,000 military and civilian employees are employed.
- Expand the coverage of the DoD manufacturing technology program to cover the in-house functions of logistics (supply and maintenance), manufacturing (arsenals and shipyards), and the base support civil engineering housekeeping functions.

- Initiate the development of an active DoD productivity program involving 1) the increased use by management and budget of productivity measurement at all levels of DoD, 2) the establishment of Functional Conferences in DoD for each major area of productivity measurement to determine the basis for increasing or decreasing performance levels and interchange of information on different management techniques or approaches, and 3) increased coverage.
- Specifically with respect to the Quick Payback Capital Investment Program:
 - Establish an organization at each level of Command that will be responsible for energizing a capital investment program.
 - Establish firm manpower and cost saving goals at each major command to meet the MBO 1.7 percent Productivity increase, with specific identification of the capital investment program.
 - Establish a DoD Capital Investment Productivity Council or Task Force responsible for implementing and executing the goals and performance objectives. This Council or Task Force will also develop means for the dissemination of the results of the manufacturing technology efforts and accomplishments and idea interchange and to translate these efforts into areas of possible capital investment opportunities.
 - Energize the Capital Investment Program by
 - Decentralizing approval authority for fast payback items
 - Extending the fast payback capital investment program to all procurement and operating appropriations
 - Expand the training programs for management personnel and industrial engineers to improve the capability to identify opportunities and manage the program
 - Remove the disincentives and negative approaches to capital investment by clarifying and simplifying directives and making them less restrictive in interpretation
 - Undertake leadership in the exploitation of the potentials of Computer Aided Manufacturing and Design.

APPENDIX A

METHOD USED IN COMPUTING PROJECTED AVERAGE PERSONNEL
SAVINGS RESULTING FROM QUICK AMORTIZING
PRODUCTIVITY ENHANCING CAPITAL
INVESTMENT

A. PROGRAM LEVEL OF CAPITAL INVESTMENT FOR QUICK AMORTIZING PROJECTS

The Secretary of Defense in his FY 1977 programming process has added \$35 million to FY 1977 program and a total of \$165 million through the Five Year Defense Program (FYDP) for quick payback capital investments. This is a reasonable level through the FYDP, considering the many opportunities for capital investment that exist, the low level of financing today—less than \$9 million, and the requirement for OSD and the Services to develop a dynamic capital investment program and provide the leadership and training. The \$35 million requirement per year for five years has thus been assumed.

B. PERSONNEL SAVINGS

Based on three years Army experience and over one year's Air Force experience, the capital investments on an average can be amortized within one year after startup. Army experience indicates that on an average at least 75 percent of the savings will be personnel savings and the remainder other resource savings.

The 75 percent is a conservative estimate. The government-owned contractor-operated capital investment program resulted in savings of 85 percent in personnel and the Army Training and Doctrine Command quick amortizing capital investment program directed at the installation level resulted in personnel savings of 77 percent.

C. COST PER AVERAGE EMPLOYEE

The Assistant Secretary of Defense (Manpower and Reserve Affairs) before the Senate Armed Services Committee recently testified that the average cost per U.S. serviceman on active duty in FY 1976 is estimated to be \$12,750

and the average direct civilian personnel cost per capita averaged \$15,548.^{1/} The military personnel costs include basic pay, allowances, other military personnel expenses and family housing.

These figures do not include the economic "life cycle" costs, such as retirement and other costs and would be far greater than the current year cost factors. They are an average, covering current basic personnel costs. Examining a specific program area will result in different costs since the mix of grade structures may well be different. For example, the Air Logistics Command on 23 July 1975 completed a cost estimate of its Directorate of Maintenance assigned military personnel, using a standard annual rate for each grade. The average military cost was \$15,335 for each serviceman in the directorate. At TRA00C, an installation study, again due to the mix, had an average civilian personnel cost that was considerably below the \$15,548 average cost, since personnel saved represented lower paying positions in laundry and base engineering services.

Staff of the Defense Manpower Commission recommended utilizing the OSO provided averages for personnel cost for FY 1976: \$12,750 for military and \$15,548 for civilian personnel. This has been done. Utilizing an 80 percent civilian/20 percent military distribution for the area of logistics, manufacturing, and base operations, average personnel costs equated to \$15,000.

D. NUMBER OF PERSONNEL SAVED

The average cost of \$15,000 per employee was then divided into the \$26.250 million costs related to the area of logistics, manufacturing and base operations. This resulted in an annual saving of 1,750 employees—military and civilian—on a round up basis. On a five year basis, this would be equivalent to approximately 8,750 employees.

E. SUMMARY

- \$35 million in capital investments per year for quick amortizing capital investment productivity enhancing projects and \$165 million provided over a five year period.
- Personnel savings equated to at least 75 percent for each dollar of capital investment applied.
- Average salary per military and civilian employee equates to \$15,000 per OSO testimony before Senate Armed Services Committee.
- Average personnel savings for \$35 million capital investment equates to 1,750 annually and 8,750 military and civilian employees over five years with a \$165 million capital investment through the FYDP.

^{1/} Report of the Senate Armed Services Committee on S. 920 (Defense Appropriations Authorization Bill, FY 1976), Part 3, Manpower, pp. 1974-1075 and 1108.