OFFICE OF THE ASSISTANT TO THE SECRETARY OF DEFENSE
1400 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-1400

PUBLIC AFFAIRS

12 APR 1994

Ref: 93-F-1295

Mr. Richard K. Thompson
Service Engineering Industries, Inc.
1745 Jefferson Davis Highway
Suite 610
Arlington, VA 22202

Dear Mr. Thompson:

This responds to your June 3, 1993, Freedom of Information Act (FOIA) request pertaining to the Depot Maintenance Consolidation Study. Our June 9, 1993, interim response refers.

The Joint Staff has provided the enclosed records as responsive to your request.

The administrative cost of processing this request was $44.10. The chargeable cost of processing consists of 1/4 hour search, and 1/4 hour review, at the professional level rate of $25.00 per hour ($12.50), and 334 pages of printed reports at $0.02 per page ($6.68).

Please indicate our reference number, **93-F-1295**, on a check or money order payable to the U.S. Treasurer in the amount of **$19.18**. To avoid interest charges, payment must be received in this Directorate within 30 calendar days of this letter's date.

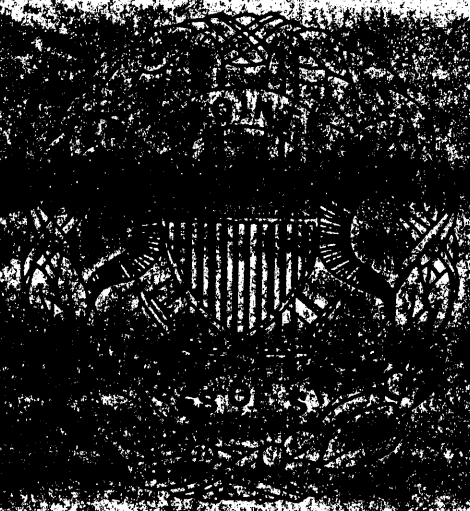
Sincerely,

W. M. McDonald
Director
Freedom of Information
and Security Review

Enclosures

#591
93-F-1295

# Depot Maintenance Consolidation Study



January 1993

THE JOINT STAFF
WASHINGTON, D.C.

26 JAN 1993

General Colin L. Powell, USA
Chairman of the Joint Chiefs of Staff
The Pentagon
Washington, DC 20318-0001

Dear General Powell,

Attached is our report on Depot Maintenance Consolidation. On 26 January 1993, in a public meeting, the Executive Working Group met for the final time. The meeting was attended by thirty-seven members of government and private industry. A roster of those who attended is included in the study report as Appendix N. Of specific concern to a number of those attendees was that the study's scope was too narrow because it did not consider the total industrial base, public and private. This concern is understood, but it was beyond the scope of this study. It is worthy of further consideration by the Department of Defense.

Respectfully yours,

J. J. WENT
General, USMC (Ret)
Director, Depot Maintenance
Consolidation Study

GEN LOUIS J. WAGNER,
USA (Ret), Member

GEN BRYCE POE,
USAF (Ret), Member

VADM EUGENE A. GRINSTEAD
USN, (Ret), Member

JOHN J. McCARTHY, Industry Member

THE JOINT STAFF
WASHINGTON, DC

02 DEC 1992

General Colin L. Powell, USA
Chairman of the Joint Chiefs of Staff
The Pentagon
Washington, DC 20318-0001

Dear General Powell,

Attached is our report on Depot Maintenance Consolidation. The information and views contained in the Executive Summary and the chapters on conclusions and recommendations are strictly the independent views of the Executive Working Group. The discussions and analysis contained throughout the remainder of this report reflect the efforts of the support staff, which was made-up predominantly of uniformed personnel from the Joint Staff. The Service Working Group, comprising of representatives from the individual Services, served as the principal source of information contained in this report. No attempt has been made to seek Joint Staff or Service concurrence.

We believe that this report reflects the most rigorous analysis of depot maintenance to date. Nevertheless, we would caution that this total effort was accomplished in approximately eight weeks. That is hardly enough time to thoroughly examine an enterprise that would rank in the top 30 companies of the Fortune 500, if it were a commercial business. Thus, we do not believe this report should be used to make detailed organizational decisions or resource allocations, but we do believe it will be valuable in helping to set a conceptual direction for the future, with implementing details to be developed through additional analysis and negotiation between the principals concerned.

Respectfully yours,

J. J. WENT
General, USMC (Ret)
Director, Depot Maintenance
Consolidation Study

GEN LOUIS J. WAGNER,
USA (Ret), Member

GEN BRYCE POE,
USAF (Ret), Member

VADM EUGENE A. GRINSTEAD,
USN, (Ret), Member

JOHN J. McCARTHY, Industry Member

## Executive Summary

Background. Over the course of many years, with constant change in the way we equip our fighting forces, the Services have developed maintenance systems which have provided those fighting forces with the right kind of equipment, in first class condition, when and where needed. As a result of a changing world and changing requirements, the Department of Defense now finds itself with more depot maintenance capacity than needed. The purpose of this study is to help identify the best way to scale down that excess capacity and reduce costs without degrading current or future capability to meet our peacetime and wartime needs. Further, this study examines whether we are organized in a way that will enable us to act quickly and decisively and, if not, recommend a better organizational arrangement.

Our study group visited a sampling of Service maintenance depots, talked with the Services' leadership, talked with customers of the depots, and examined a great deal of historical material that has been written about depot maintenance. We examined seven management alternatives that were developed by the Joint Staff. The alternatives were examined against a set of criteria that included cost savings, capacity reduction, unnecessary duplication and military responsiveness. We viewed the seven alternatives not as precise, organizational blueprints, but simply as frameworks upon which to do comparative analysis. Such analysis led us to a variation of one of the seven alternatives which ultimately resulted in our recommendation.

In all cases, this study only examines depot level maintenance and does not suggest in any way changing individual Service responsibility for integrated weapon system management. Before we discuss any conclusions or recommendations we want to make clear that we have a great deal of empathy with Service Chiefs, who are legitimately concerned about their continuing ability and accountability to provide for ready fighting forces. We understand that they would be particularly concerned if they were to lose close control over the maintenance of their equipment.

Currently, when an operational unit is not served well by the maintenance system, a Service Chief has authority to make changes, reorder priorities and resources, and redirect efforts to correct problems or inequities. Similarly, operating units have established good working relationships with their individual maintenance activities. They are in continuous negotiations to accommodate each other's problems which usually involve money, time, quantity, and priorities. Because of these very real and legitimate Service concerns, we have strived to identify a maintenance system that preserves and strengthens the close ties between warfighters and "maintainers."

Most of the alternatives examined do not produce substantial savings or significant reductions in excess capacity and unnecessary duplication. Therefore, while each of these alternatives

are discussed in the body of the study, we believe that there are basically only three options which are serious challengers to the way we currently perform depot maintenance. They are:

-- Executive Service, or sometimes called Single Service, management of depot level maintenance by major weapon systems categories.

-- Consolidation of all depot maintenance activities under a single Defense Maintenance Agency.

-- Consolidation of all depot maintenance activities under a Joint Depot Maintenance Command.

We recognize that full contracting out of depot maintenance functions to commercial industry is also a long-term possibility. Since more or full commercial maintenance of Service equipment could evolve from any of the preceding approaches, it is not discussed in great detail herein. Because it involves the larger question of preserving the industrial base and more flexibility in work force levels, the whole issue of contracting out deserves further study in the future.

Conclusions and Recommendations. The current depot management structure in DOD and the Services has not resulted in substantial competition, interservicing, reduction of capacity or duplication of effort. There is nothing to indicate that continuation of the current way of doing business will result in any significant departure from past performance.

We believe that the DOD currently has 25 to 50 percent more depot capacity than the Department will need in the future and unnecessary duplication exists throughout the individual Service depots, especially when viewed across Service boundaries. Closure of a significant number of depots will be necessary if we are to reduce excess capacity. We believe the only effective way to close depots is through the Base Realignment and Closure (BRAC) process. The BRAC process should be a coordinated effort across Service lines that integrates requirements and accurately reflects unneeded facilities. This action must start immediately because of the necessity to provide recommendations to the 1993 BRAC Commission in the next few months.

Elimination of unnecessary capacity and duplication has the potential for substantially reducing long-term costs. We emphasize long-term because savings from depot closures, for example, will not begin for three to seven years and will take several years to produce maximum savings. The precise value of savings that may be achieved cannot be determined because of all of the variables and dynamics involved. A rough estimate ranges from a low of two to a high of nine billion dollars over the next ten years. We are confident, however, that savings will be optimized only if consolidations are maximized and begin as soon as possible with associated workload shifts occurring over the shortest possible period of time. The total savings will depend upon the alacrity with which decisions are made and willingness

to make up front investments. No attempt has been made to allocate potential savings to the individual Services.

We believe that any change in organizational structure and management of depot activities must consider and accommodate the legitimate concerns of the customers. Of the three final alternatives examined, only one results in substantial cost savings, excess capacity reduction and elimination of unnecessary duplication while fully satisfying the need for close ties between the warfighters and the "maintainers."

We recommend the establishment of a unified command for depot maintenance with full authority to organize current Service depots as determined by the new command and as approved by the Joint Chiefs of Staff. We believe that a Joint Depot Maintenance Command will produce the greatest opportunities for responsiveness, efficiency and matching capacity with future requirements. Since it would be a unified command with Service components it does not appear that any change to Title 10, U.S. Code responsibilities is required. Changes may be required to the responsibilities specified in DOD directives that prescribe Service functions.

A full discussion and listing of over a dozen conclusions and our recommendations can be found in Chapters V and VI of this report.

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### APPENDIXES
**(Published Separately)**

# CHAPTER I - INTRODUCTION

1. Roles and Missions. Department of Defense (DOD) Directive 5100.1, *Functions of the Department of Defense and Its Major Components*, assigns the Army, Navy, Air Force, and Marine Corps, under their respective Secretaries, the responsibility for, "Providing logistic support for Service forces, including procurement, distribution, supply, equipment, and maintenance, unless otherwise directed by the Secretary of Defense." To meet the responsibility to maintain its equipment, each Service operates a depot maintenance system.

2. Setting the Stage. Depot maintenance is a key part of the total DOD maintenance effort and is a vast undertaking supporting over 700,000 pieces of equipment: 36,000 combat vehicles, 660,000 wheeled vehicles, 500 ships, and 20,200 aircraft of over 100 different models. Depot maintenance requires extensive shop facilities, specialized equipment, and highly skilled technical and engineering personnel to perform major overhaul of parts or completely rebuild parts; assemblies, subassemblies, and end-items. This includes reverse engineering and manufacturing/remanufacturing of parts, modifications, testing, and reclamation. Depot maintenance also requires the flexibility to accommodate readiness changes and problems relating to safety of flight maintenance or inspection, scheduling maintenance to maintain alert capabilities, and particularly, the ability to surge to meet contingency requirements.

a. The depot maintenance business environment within DOD is complex and, by necessity, not a monolithic entity. The Services not only have multiple, diverse products, but they also have independently developed different depot maintenance management approaches to meet their unique requirements. The work done is not limited to the basic depot facilities but is carried out by teams dispatched to, or resident at, stations and ships worldwide. Additional work is performed under contract in the Continental US (CONUS) and overseas. It is important to recognize that depot maintenance is not only big business and complex but that it is not discrete and separate from the material management function. Depot maintenance is an integral part of cradle-to-grave, integrated weapons system management. Among other things, this involves design, test and evaluation, reliability centered maintenance, and in-service engineering.

b. The DOD depot maintenance system employs about 130,000 DOD civilian personnel and nearly 2,000 military personnel. There are 29 major DOD depot maintenance facilities consisting of Army depots, Air Force air logistics centers (ALC), Naval aviation depots (NADEP), Naval shipyards (NSY), Naval electronic systems engineering centers, and Marine Corps logistics bases (MCLB) that perform depot maintenance (Figure I-1). There are also sixteen Army and nine Navy facilities in CONUS for weapons and munitions depot maintenance. They are listed in Appendix M.

c. Annually, DOD spends about 13 billion dollars for depot maintenance operations with about 70 percent of this expenditure accomplished in DOD facilities and the balance by contractors. Data for FY89-FY97 are shown in Table I-1. Figures I-2, I-3, and I-4 depict

the FY86-FY90 average Service cost share of depot maintenance, costs by major commodity, and the FY90 distribution by cost elements.

**Figure I-1 Defense Depot Maintenance Facilities**

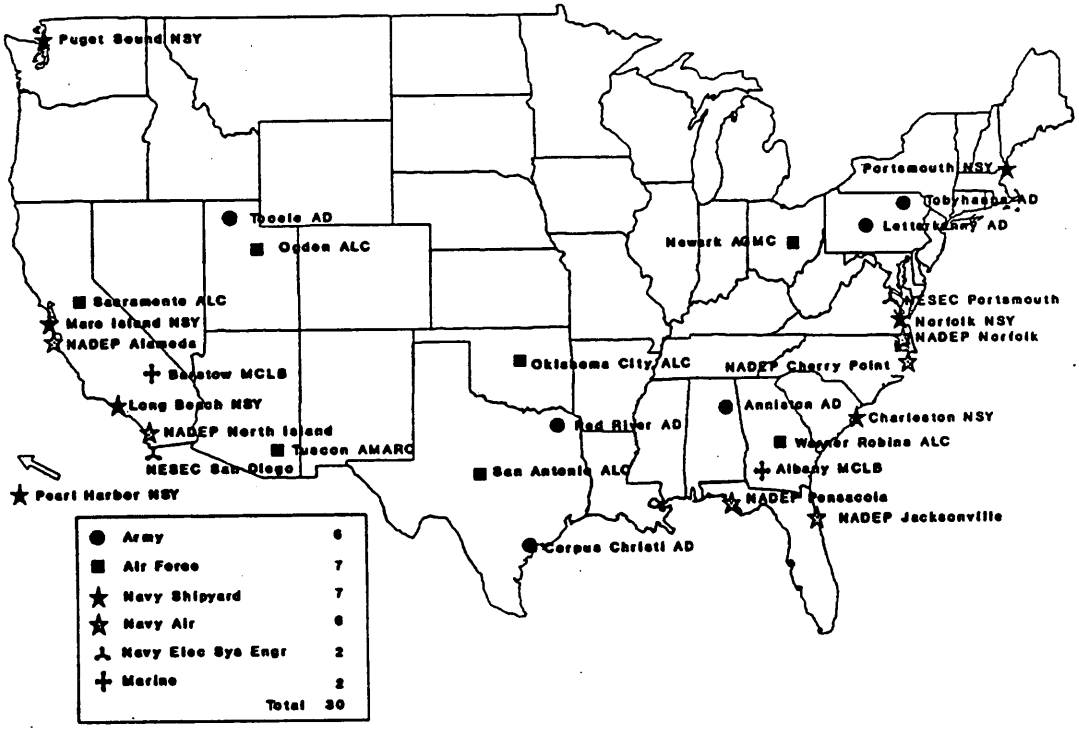
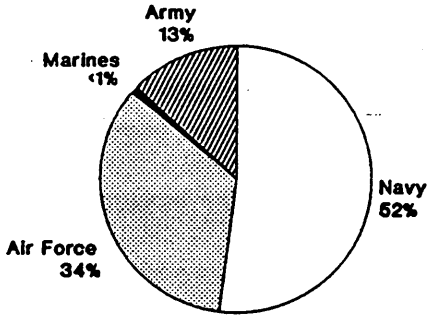



**Table I-1 Current Estimate of Depot Maintenance Budget**

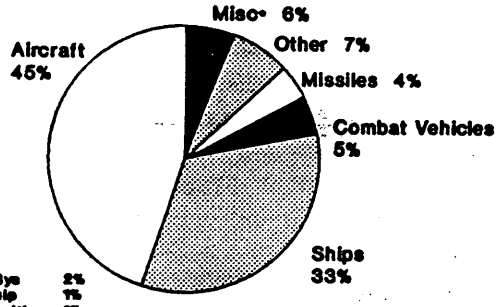
| (Then Year $Millions) | | FY89 | FY90 | FY91 | FY92 | FY93 | FY94 | FY95 | FY96 | FY97 |
|---|---|---|---|---|---|---|---|---|---|---|
| Army | Organic | 1,016.8 | 1,121.7 | 1,301.0 | 1,316.1 | 1,111.6 | 1,053.2 | 1,014.6 | 1,028.3 | 954.4 |
| | Contract | 541.2 | 528.2 | 946.0 | 852.7 | 738.2 | 617.5 | 711.1 | 591.5 | 546.8 |
| | Total | 1,558.0 | 1,649.9 | 2,247.0 | 2,168.8 | 1,849.8 | 1,670.7 | 1,725.7 | 1,619.8 | 1,501.2 |
| Navy | Organic | 4,468.6 | 4,918.0 | 4,615.6 | 4,839.6 | 4,788.4 | 4,857.9 | 5,340.1 | 5,388.1 | 5,411.0 |
| | Contract | 1,921.7 | 2,155.1 | 2,531.8 | 2,743.9 | 2,303.5 | 2,046.7 | 2,187.4 | 2,241.1 | 2,256.3 |
| | Total | 6,390.3 | 7,073.1 | 7,147.4 | 7,583.5 | 7,091.9 | 6,904.6 | 7,527.5 | 7,629.2 | 7,667.3 |
| Air Force | Organic | 2,618.6 | 2,442.1 | 2,568.7 | 2,682.4 | 2,791.3 | 2,801.4 | 2,820.5 | 2,732.4 | 2,751.6 |
| | Contract | 1,850.6 | 1,687.2 | 1,286.4 | 1,144.5 | 1,134.1 | 1,017.7 | 909.1 | 970.5 | 986.3 |
| | Total | 4,469.2 | 4,129.3 | 3,855.1 | 3,826.9 | 3,925.4 | 3,819.1 | 3,729.6 | 3,702.9 | 3,737.9 |
| Marines | Organic | 84.0 | 72.3 | 135.0 | 232.8 | 56.2 | 94.5 | 99.9 | 116.0 | 166.3 |
| | Contract | 4.4 | 3.1 | 4.2 | 5.1 | 6.8 | 5.7 | 5.4 | 5.4 | 5.4 |
| | Total | 88.4 | 75.4 | 139.2 | 237.9 | 63.0 | 100.2 | 105.3 | 121.4 | 171.7 |
| TOTAL | Organic | 8,188.0 | 8,554.1 | 8,620.3 | 9,070.9 | 8,747.5 | 8,807.0 | 9,275.1 | 9,264.8 | 9,283.3 |
| | Contract | 4,317.9 | 4,373.6 | 4,768.4 | 4,746.2 | 4,182.6 | 3,687.6 | 3,813.0 | 3,808.5 | 3,794.8 |
| | Total | 12,505.9 | 12,927.7 | 13,388.7 | 13,817.1 | 12,930.1 | 12,494.6 | 13,088.1 | 13,073.3 | 13,078.1 |
| Source: | FY89/90 | FY90/FY91 Program Objective Summary, JDMAG | | | | | | | | |
| | FY91-97 | Table 1-2, DDMC Corporate Business Plan (FY92-97), Oct 92 (Draft) | | | | | | | | |

## Figure I-2 Depot Maintenance Service Cost Share




Average FY86-FY90
Source: Defense Manpower Data Center

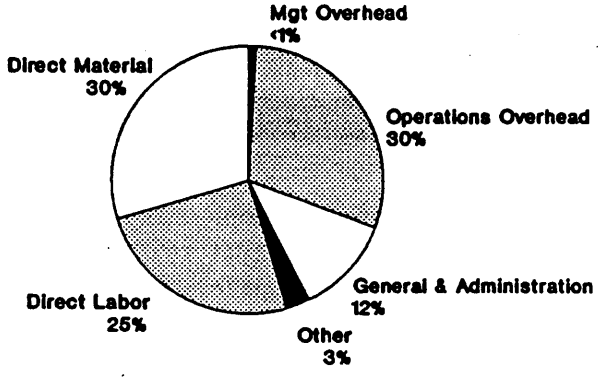
## Figure I-3 Depot Maintenance Commodity Cost Share




Misc* Elec & Comm Sys 2%
Automotive Equip 1%
Ordnance & Munitions 1%
General Purpose Equip 1%
Construction Equip <1%

Average FY86-FY90
Source: Defense Manpower Data Center

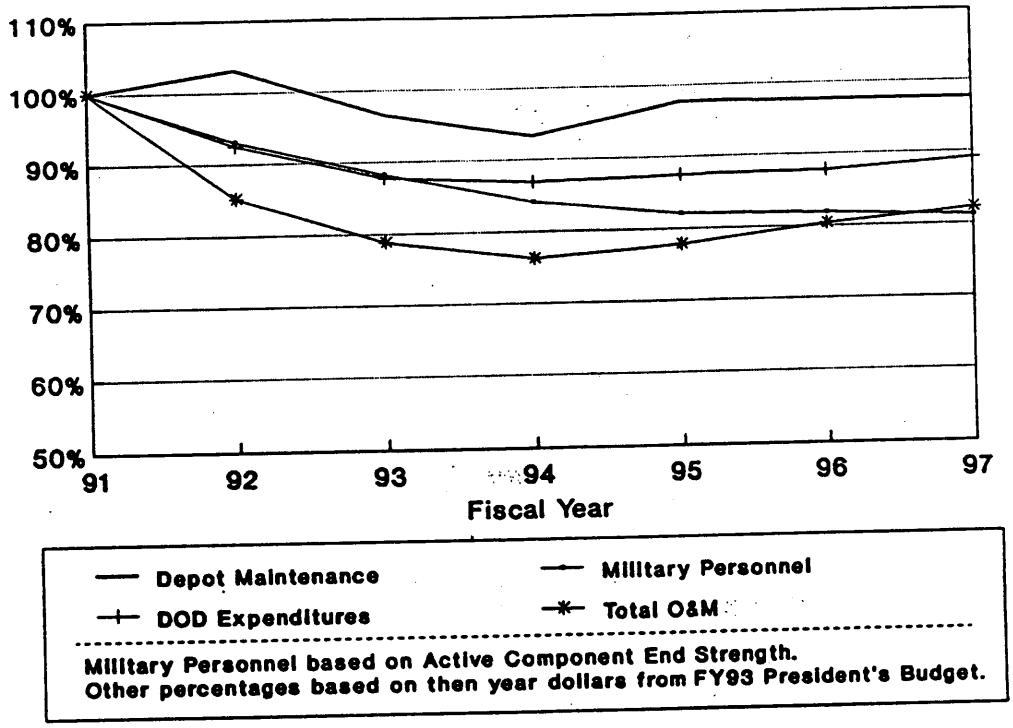
## Figure I-4 Distribution of Depot Maintenance Costs




FY90
Source: Defense Manpower Data Center

d. With the easing of geopolitical tensions and reduced defense budgets, the force structure is downsizing to the Base Force level and operating tempos are being reduced in many cases. Figure I-5 illustrates the percent change from the FY91 to FY97 programmed levels for depot maintenance expenditures, active component military personnel strength levels, DOD total expenditures, and DOD Operation and Maintenance (O&M) expenditures. While depot maintenance expenditures appear to remain relatively stable during this period, the other categories reflect the downsizing of the Department.

**Figure I-5 Defense Programs (Percent Change from FY91)**




3. **Past Efforts To Improve Depot Maintenance Efficiency**. Since the early 1960s, the Services, the Office of the Secretary of Defense (OSD), and external agencies and commissions have undertaken numerous management initiatives, studies, and audits with recommendations for improving depot maintenance effectiveness and economies. These include standardizing cost accounting and reporting systems, increasing interservicing and competition, and varying degrees of depot maintenance modernization and centralization. Although these efforts resulted in some improvements, excess capacity, unnecessary duplication, and inefficiencies still exist.

a. Some of the earlier DOD efforts were:

(1) Calling for comparable and reliable cost accounting, performance measurement reporting, and capacity measurement. Universally accepted, standardized procedures have not yet been developed.

(2) Directing the Services to take advantage of the facilities and capabilities of the other Services through interservicing agreements and having depots and private industry compete for work. Some progress has been made in this regard but in FY91 interservicing was only about 3 percent of the total depot budget and savings attributed to competition were only 0.5 percent of the FY91 depot budget.

(3) Consolidating some engine and avionics maintenance in the Air Force and Navy. The consolidation efforts fell short of the recommendations of the 1970 Blue Ribbon Defense Panel's *Report to the President* for a unified logistics command and a 1973 General Accounting Office (GAO) report recommendation to assign a single manager for maintenance of specific classes of supply.

b. The Joint Logistics Commanders (JLC) have provided senior-level guidance and priorities for joint initiatives and efforts to improve depot maintenance. Current JLC membership is the Commander, US Army Materiel Command; the Commander, Air Force Materiel Command; the Deputy Chief of Naval Operations (Logistics); the Deputy Chief of Staff for Installations and Logistics, Headquarters, US Marine Corps; and the Director, Defense Logistics Agency. In March 1980, the JLC established an organization that evolved into the Joint Depot Maintenance Analysis Group (JDMAG) to expedite cross-service coordination and to assimilate other advantages of a single manager, but have consistently maintained that each of the Services must retain management control of their respective depots.

c. In June 1990, dissatisfied with progress, the Deputy Secretary of Defense (DepSecDef) concluded that substantial opportunities existed to increase the efficiency and reduce the cost of the Department's depot maintenance activities while continuing to effectively conduct their maintenance mission. He directed the Service Secretaries to develop near-term and long-range plans for increased efficiency, including single-siting of workloads in the Air Force and Naval air depots, and a plan for improved maintenance information management. In addition, he established a Defense Depot Maintenance Council (DDMC) to advise the Assistant Secretary of Defense for Production and Logistics on depot maintenance management within DOD. The DDMC serves as a mechanism for coordinated reviews of DOD depot maintenance policies, systems, programs, and activities and provides advice on initiatives for reducing costs. It is the mechanism for jointly planning, monitoring, and evaluating the implementation of management improvement initiatives. The DDMC is composed of the Deputy Assistant Secretary of Defense (Logistics) and the JLC, who, in this case, are the designated representatives of the Service Secretaries. Under the direction and sponsorship of the JLC, the Services began execution of the DDMC strategy to increase depot efficiency and productivity by streamlining, restructuring, and consolidatingfunctions, while preserving the capability needed to ensure equipment and weapon system readiness.

d. The Service Under Secretaries identified near-term streamlining plans that would save 1.7 billion dollars over the period FY91-95. The DDMC formed Joint-Service study

groups to examine 18 specific commodity areas (fixed wing aircraft, ground communications and electronics, small arms, etc.) to identify potential economies and efficiencies that the Services could achieve through both unilateral and coordinated actions. Based on the findings and recommendations of the commodity studies, the Service Secretaries, in their *Joint Services Business Plan*, dated February 1991, jointly agreed to specific actions which would result in savings of 1.15 billion dollars during the period FY91-FY95. The majority of the savings are from unilateral actions and include a total of 0.263 billion dollars resulting from interservicing. Separate joint-service study groups also looked at four general management areas: cost comparability, performance measurement, capacity/utilization measurement, and maintenance information management. As a result of these four general studies, OSD has published a cost comparability handbook, developed a system to measure performance that is consistent with Total Quality Management, published a production shop capacity measurement handbook, and established the Joint Logistics Systems Center as the DOD executive agent for depot maintenance systems.

e. The Service Under Secretaries then prepared a Corporate Business Plan (CBP) that accumulated, in one document, their entire plan for saving 3.9 billion dollars over the period FY91-97. The CBP includes the 1.7 billion dollars near-term savings, the 1.15 billion dollars of savings associated with the commodity studies, and 1.1 billion dollars of other savings.

f. The Defense Management Review process has resulted in two decisions with direct impact on depot maintenance. Defense Management Report Decision (DMRD) 908, dated 17 November 1990, and DMRD 908C, dated 12 January 1991, *Consolidating Depot Maintenance*, formalized the 6.4 billion dollars savings from FY91-FY97 recommended by the Service Under Secretaries to the Assistant Secretary of Defense for Production and Logistics in the CBP. (The 1.15 billion dollars commodity area savings described in the preceding paragraph have been subsumed into the CBP savings.) The annual DDMC CBP describes the joint Service strategy for managing the organic depot maintenance industrial base and achieving these savings. The 1992 CBP is, by far, the most aggressive promulgated to date. Near-term savings will result from downsizing both direct and indirect work forces, closure of facilities, cancellation of facility projects, and internal Service workload consolidations, including single-siting workload in the NADEPs. Projected near-term savings are 3.2 billion dollars. Long-range actions under consideration include increased interservicing, increased competition, and improved capacity utilization. Interservicing savings projected to be 134.7 million dollars accrue from greater economies of scale through consolidations, which reduce recurring cost to the gaining depot. The losing activity will realize savings through reduced overhead associated with reduced workload and facility downsizing. Competition among the depots and between depots and private business is projected to provide savings of 1.73 billion dollars. Capacity utilization savings of 1.28 billion dollars will be achieved through redistribution of workloads within and among the Services. The projected savings by Service are shown in Table I-2. In reality, it is highly unlikely that the Services will be

able to meet these savings without actions that will severely affect readiness and the ability to go to war.

**Table I-2 Projected Joint Service Savings**

| ($ Millions) | FY91* | FY92 | FY93 | FY94 | FY95 | FY96 | FY97 | Total |
|---|---|---|---|---|---|---|---|---|
| Army | 6.2 | 21.1 | 60.0 | 206.9 | 228.4 | 262.8 | 280.4 | 1,065.8 |
| Navy | 274.0 | 392.5 | 513.8 | 614.4 | 755.7 | 543.6 | 462.8 | 3,556.8 |
| Air Force | 58.4 | 149.3 | 235.5 | 299.8 | 367.4 | 292.7 | 305.2 | 1,708.3 |
| Marine Corps | 1.1 | 4.5 | 3.8 | 6.1 | 4.5 | 4.4 | 4.2 | 28.6 |
| Total | 339.7 | 567.4 | 813.1 | 1,127.2 | 1,356.0 | 1,103.5 | 1,052.6 | 6,359.5 |

* FY91 column reflects near-term savings achieved which exceeded the FY91 target of $258.8 million by $80.9 million.

Source: DDMC Corporate Business Plan (FY92-97), Oct 92 (Draft)

4. Study Objective. The Depot Maintenance Consolidation Study was chartered by the Chairman of the Joint Chiefs of Staff (CJCS) in September 1992 and was led by a group composed of one retired senior officer from each Service and a retired representative from industry. The purpose of the study was threefold:

a. To review the existing depot maintenance structure in each DOD Service and the Coast Guard.[1] A summary of this review is presented in Chapter II.

b. To identify and analyze alternatives for reducing costs, duplication, overlap, and overall depot maintenance capacity. Analysis methodology is summarized in Chapter III and the analysis of seven alternatives is presented in Chapter IV.

c. To recommend cost effective alternative(s) to reduce duplication, overlap, and overall depot maintenance capacity. Any recommendation made must ensure that the depots will be able to support peacetime readiness requirements, sustain forces during crisis response and contingency operations, and return equipment to established readiness standards upon redeployment. Conclusions and recommendations are included in Chapters V and VI.

[1] As the study progressed it became apparent that because of the unique mission and relatively small requirement, there is no utility in consolidating Coast Guard depot maintenance activities into the DOD system. The Coast Guard currently does maintenance in-house or contracts out to commercial industry or the DOD, whichever is least costly and most responsive to their needs. Accordingly, no recommendations are made regarding Coast Guard depot maintenance.

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# CHAPTER II - TODAY'S DEPOT MAINTENANCE ENVIRONMENT

1. Introduction. This chapter provides a brief description of the Services' current depot maintenance facilities and discusses the history of Service efforts to reduce the cost of depot maintenance. It also addresses opportunities for further cost efficiency and the potential for increased savings from interservicing, competition, and capacity reduction.

2. Depot Facilities Description. The following data on each Service's depot maintenance command structure and depot facilities were obtained from Service inputs and the JDMAG 1991 Depot Profiles.

a. Army. Army depot maintenance is controlled by the Army Materiel Command (AMC) through the Depot System Command (DESCOM) and Major Subordinate Commands (MSC). DESCOM operates the depots and designates a prime depot for every item requiring maintenance. DESCOM also designates depots as "Centers of Excellence" for specific commodities such as electronics or gas turbine engines. MSCs are responsible for maintenance of specific commodities, and coordinate their requirements for depot support through AMC and DESCOM to ensure maximum benefit from the "Centers of Excellence" concept. During conflicts, Army depot maintenance teams deploy to the scene to repair battle-damaged equipment in order to avoid returning equipment to a depot. Table II-1 presents basic information on each Army depot. As noted in Chapter I, the Army also maintains sixteen munition depots for ammunition storage and maintenance on US territory. Depot maintenance data on these depots was not available. Army munitions depot consolidation recommendations will require in-depth consideration of maintenance requirements, allowable explosive concentrations, and transportation limitations. They are beyond the scope of this study. Sacramento Army Depot is also not listed as it will be closed in FY95.

**Table II-1 Army Maintenance Depots**

| DEPOT CODE | SIZE (SF) | COST ($M) Facility/ Equipment | FY93/FY95 Workload (KDLH) | TYPE OF WORK |
|---|---|---|---|---|
| Anniston, AL--ANAD | 1.5M | 138/117 | 3285/1956 | Tanks, Small Arms, Ammo |
| Corpus Christi, TX--CCAD | 2.2M | 362/93 | 4244/4430 | Helos |
| Letterkenny, PA--LEAD | 1.4M | 600/150 | 2140/2679 | Tac Msls, Ammo |
| Red River, TX--RRAD | 1.4M | 855.2/137 | 2794/2733 | Lt Cmbt Veh, Ammo |
| Tobyhanna, PA--TOAD | 1M | 220/90 | 3268/3606 | Electronics |
| Tooele, UT--TEAD | .95M | 1700/23 | 1356/1068 | Tac Veh, Rail |

b. Navy. The Chief of Naval Operations (CNO) controls Navy depot maintenance through the Naval Air Systems Command (NAVAIR) for aircraft, the Naval Sea Systems Command (NAVSEA) for ships, and the Space and Naval Warfare Systems Command (SPAWAR) for space, surveillance, communications, and computer electronics. Each of

these three commands is responsible for the depot maintenance of its platforms and operates depots to accomplish the work mostly independent of other facilities. Navy aviation depots are being reorganized along commodity lines to reduce redundant facilities. Like the Army, Navy aviation depots and shipyards provide field support to forward-deployed activities during conflicts. Naval aircraft depot maintenance is normally performed ashore but, in the event of a conflict, depot teams can deploy with each aircraft carrier to repair depot-level battle damage aboard ship. Shipyard engineering and repair teams also forward deploy as needed to repair major equipment casualties on scene without requiring that the damaged ship withdraw to a Navy shipyard. Tables II-2, II-3, and II-4 present basic information on each of the depots. As discussed in Chapter I, there are also nine Navy facilities operated by NAVSEA in CONUS that perform weapons maintenance and will be considered for consolidation by this study. Philadelphia Naval Shipyard, which has four usable drydocks, is not listed as it will be closed by FY96.

**Table II-2 NAVAIR Maintenance Depots**

| DEPOT CODE | SIZE (SF) | COST ($M) Facility/ Equipment | FY93/FY95 Workload (KDLH) | TYPE OF WORK |
|---|---|---|---|---|
| Alameda, CA--NADEP-ALMD | 2.3M | 246/183 | 2515/2438 | Acft, Eng, Avionics, Msls, Armament |
| Cherry Pt., NC--NADEP-CHYPT | 1.5M | 274/250 | 2591/2028 | Acft, Helos, Eng, Blades/Vane |
| Jacksonville, FL--NADEP-JX | 1.6M | 394/250 | 2583/2240 | Acft, Eng, E-O, Avionics |
| Norfolk, VA--NADEP-NORVA | 2.3M | 356/297 | 3373/2802 | Acft, CV Support, Hyd Sys |
| North Island, CA--NADEP-NORIS | 2.5M | 287/288 | 2545/2478 | Acft, ATE, Avionics, CV Support, Metrology |
| Pensacola, FL--NADEP-PNCLA | 1.7M | 214/218 | 2871/2817 | Acft, Generators Helos, Avionics |

**Table II-3 NAVSEA Shipyards**

| DEPOT CODE | # DRY-DOCKS | COST ($M) Facility/ Equipment | FY93/FY95 Workload (KDLH) | TYPE OF WORK |
|---|---|---|---|---|
| Charleston, SC--CHNSY | 3 | 1702/220.5 | 7112/6406 | Nuc Ships, Subs |
| Long Beach, CA--LBNSY | 3 | 2236/281.4 | 3990/3636 | Non-Nuc Ships, CV |
| Mare Island, CA--MINSY | 4 | 2253/331.8 | 6778/6764 | Nuc Ships, Subs |
| Norfolk, VA--NNSY | 4 | 2497/216.3 | 10485/9142 | Nuc Ships, Subs, CV |
| Pearl Harbor, HI--PHNSY | 3 | 1196/222.6 | 5161/4346 | Nuc Ships, Subs |
| Portsmouth, NH--PTNSY | 3 | 1123/388.1 | 6176/4070 | Nuc Ships, Subs |
| Puget Sound, WA--PSNSY | 6 | 2011/302.4 | 12753/12050 | Nuc Ships, Subs, CV |

**Table II-4 SPAWAR Depots**

| DEPOT CODE | SIZE (SF) | COST ($M) Facility/ Equipment | FY93/FY95 Workload (KDLH) | TYPE OF WORK |
|---|---|---|---|---|
| Portsmouth, VA--NESECP | .082M | 3.3/6.4 | 522/565 | Electronics |
| San Diego, CA--NESECS | .072M | 36/40 | 620/650 | Electronics |

c. Air Force. The Air Force Materiel Command (AFMC) exercises control of Air Force depot maintenance and facilities. These depots are organized under the Technology Repair Center (TRC) and Integrated Weapon Systems Management (IWSM) concepts. The Air Force implemented the TRC concept in 1973 to consolidate the maintenance of depot-level reparables (DLRs) at specific depots along technology lines. This long standing centralization of capability is used up to, but not including, the highest end item level, i.e., type aircraft and engines. The Air Force maintains dual sources of repair for many commodities. IWSM provides a single point of contact for all weapon system platforms regardless of the number of TRCs providing that support. Table II-5 describes Air Force depots.

**Table II-5 Air Force Maintenance Depots**

| DEPOT CODE | SIZE (SF) | COST ($M) Facility/ Equipment | FY93/FY95 Workload (KDLH) | TYPE OF WORK |
|---|---|---|---|---|
| Ogden, UT--OO-ALC | 3.7M | 351.8/663.6 | 6890/6296 | Strat Msls, Acft, Air Mun, Photo/Recon, Ldg Gear, SIMS |
| Oklahoma City, OK--OC-ALC | 5.3M | 1133.4/526.2 | 7366/6770 | Acft, Eng, Oxygen |
| Sacramento, CA--SM-ALC | 3.5M | 633.6/503.5 | 6387/6032 | Comm-Elec, Acft, Gnd Elec, Hyd |
| San Antonio, TX--SA-ALC | 3.8M | 372.0/648.9 | 7289/7202 | Acft, Eng, Nuc Equip |
| Warner Robins, GA--WR-ALC | 3.4M | 257.7/850.1 | 7151/6605 | Acft, Avionics, Props, Life Supt |
| Newark, OH--AGMC | .47M | 243.5/301.8 | 1128/1106 | Metrology, Nav Sys |

d. Marine Corps. Marine Corps depot maintenance is controlled by the Commander, Marine Corps Logistics Bases, through the Maintenance Directorate. Marine Corps depots maintain virtually identical capabilities to provide support for Marine Corps operational units depending on unit location. The Albany, GA, depot is the primary support facility for the Maritime Pre-positioning Force. Marine Corps depots also perform much "other-than-depot" maintenance to assist organizational and intermediate maintenance organizations. Table II-6 describes both depots.

**Table II-6 Marine Corps Logistics Bases**

| DEPOT CODE | SIZE (SF) | COST ($M) Facility/ Equipment | FY93/FY95 Workload (KDLH) | TYPE OF WORK |
|---|---|---|---|---|
| Albany, GA--MCLBA | .52M | 85/35.9 | 1674/1180 | Amphib Veh, Wpns, Electronics, Tac Veh |
| Barstow, CA--MCLBB | .7M | 47/23 | 1718/1187 | Amphib Veh, Wpns Electronics, Tac Veh |

e. Coast Guard. Coast Guard depots belong to the Department of Transportation, not the DOD. The Office of Engineering, Logistics and Development, through the Aeronautical Engineering Division and the Naval Engineering Division manages the depot maintenance system within the Coast Guard. Most Coast Guard depot level maintenance is performed by commercial contract. The Coast Guard depot at Elizabeth City, NC, performs 31.5 percent of aviation depot maintenance and the Coast Guard shipyard at Curtis Bay, MD, performs 18 percent of ship depot maintenance. Table II-7 describes both depots.

**Table II-7 Coast Guard Maintenance Depots**

| DEPOT CODE | SIZE (SF) | COST ($M) Facility/ Equipment | FY93/FY95 Workload (KDLH) | TYPE OF WORK |
|---|---|---|---|---|
| Elizabeth City, NC | .28M | 87/2 | 500/500 | Acft, Engines, Helos |
| Curtis Bay, MD | 1M | 87/50 | 1000/1000 | Ships |

3. Service Depot Maintenance Cost Reduction Efforts. The Services have worked to reduce the costs of depot maintenance as their force levels have been reduced. These efforts can be summarized into four categories: process improvements; competition between depots and private industry; interservicing of depot work; and reductions in depot capacity. Each of these methods is discussed in the following paragraphs.

a. Process Improvements. Improvements to the processes used to accomplish depot maintenance receive continuous attention by the Services. Process improvements usually are implemented without relying on cooperation from other Services or agencies. High technology processes, such as robotics and computer-assisted design and manufacturing, can yield major cost savings by reducing manpower requirements. Substantial investments may be required to install these technologies but they will be amortized by savings achieved by the system. After the first years of savings pay for the technology, the cost reductions accrued over the rest of the life of the system are pure savings for the depot maintenance budget. Non-technology-based improvements, such as maintenance

conducted under an autonomous, fully capable team concept, improve unit costs without requiring an initial investment for hardware. No savings have been separately identified for process improvement in the CBP.

b. Competition. Competition is projected to save 1,733.4 million dollars from FY91 through FY97, over 27 percent of the total CBP savings. It is a method of depot cost reduction that has been the subject of Congressional interest since at least FY91. It is important to understand some of the legislation that has affected competition in depot maintenance before examining the Services' efforts to expand competition.

(1) Legislative Background. Prior to FY91, DOD Directive 4151.1, *Use of Contractor and DOD Resources for Maintenance of Materiel*, directed the Services to normally plan for not more than 70 percent of their total depot maintenance to be conducted in Service depots in order to maintain a private sector industrial base. Navy and Marine Corps depots could compete with contractors for work offered on a competitive basis. Army and Air Force depots, on the other hand, were not permitted to compete for depot maintenance work with private industry. Since FY91, Congress has authorized all depots to compete with private industry for portions of the total depot workload under varying restrictions described in the following paragraphs.

(a) The Authorization Act of FY91 authorized the Army and Air Force to conduct a competition pilot program with an unspecified portion of the workload at one Army and one Air Force depot.

(b) The FY92 Authorization Act directed that at least 60 percent of the total depot maintenance funds expended by the Army and Air Force be used for maintenance performed at Service depots. This is known as the organic "core requirement" for depot maintenance. The FY92 Authorization Act also extended the competition pilot program through FY92 and FY93, but limited competition-eligible funds to not more than 10 percent of the non-core depot funds, or 4 percent of the total depot funds of these Services. These restrictions severely hampered Service efforts to broaden competition of the depots with private industry.

(c) The FY93 Authorization Act modified and broadened the guidelines on depot maintenance competition. The Navy was directed to maintain a 60 percent core requirement along with the Army and Air Force. For Army aviation depot maintenance only, the core requirement was reduced to 50 percent for FY93 but then increased to 55 percent for FY94, and returned to 60 percent for FY95. Although the 10 percent limitation on the amount of non-core, competition-eligible workload was rescinded, the Services were directed to not draw the competition workload disproportionately from one or several depots. Competition procedures were directed to be used if the Secretary of Defense elected to consolidate tactical missile maintenance at a single DOD location. Any depot engaged in tactical

missile activity when the Authorization Act was enacted was deemed eligible to compete. Lastly, the Services were directed to not move any workload worth more than 3 million dollars from a depot to a private facility unless competition between the depot and other facilities is used in making the selection.

(2) FY90 Service Competition Efforts. The DDMC Corporate Business Plan FY91-95 provided data on the amount of depot work awarded on a competitive basis by the Services in FY90. This data is listed in Table II-8 below. The data shows the percentage and value of depot work awarded on a competitive basis. The Army and Air Force were not authorized to compete with private industry in FY90. Navy depots were allowed to compete with industry in FY90 and the Navy offered 37 percent of its depot work for competitive bid. Other depot work for the Army, Navy and Air Force was awarded through sole-source contracts or other non-competitive means such as vendor maintenance agreements. Marine Corps depots were also authorized to compete with private industry for depot work in FY90, but no Marine Corps work was offered to contractors through competition or any other means.

**Table II-8 FY90 Depot Maintenance Competition**

| Service | Pct of Depot Maint. Awarded by Competition | Value of Depot Work Awarded by Competition |
|---|---|---|
| Army | 20 % | $ 422 M |
| Navy | 37 % | $ 2808 M |
| Air Force | 16 % | $ 734 M |
| Marine Corps | 0 % | $ 0 M |

Source: DDMC CBP for FY91-FY95 and OSD Report 7220.9M for FY90.

c. Interservicing. Interservicing is another major component of projected long-term CBP savings. It is projected to generate 134.7 million dollars in savings, 2 percent of total CBP savings from FY91 to FY97. Interservicing achieves cost savings by transferring work on comparable systems to the depot of another Service to take advantage of economies of scale, and to often avoid the cost of maintaining dual capabilities in a second Service. As seen in Table II-9, FY91 interservicing amounted to less than 3 percent of the overall Service depot maintenance budget with the Air Force providing 66 percent of the total. Some Services appear to do more interservicing than others. The Marine Corps and Air Force spent 9.8 and 6.1 percent respectively of their depot expenditures on work performed by other Services in FY91. The Army and Navy spent 1.4 and 1.3 percent respectively of their total FY91 depot expenditures on interservicing. The Navy total includes expenditures for ships that is a virtually unique commodity to the Navy and is precluded from significant interservicing. When expenditures for ship depot maintenance are subtracted from total Navy depot expenditures, the Navy percentage of interservicing is 5 percent. The Air Force has workloads comparable to the Navy's ships that are exempt from interservicing due to the nature of the work. These are large aircraft

(e.g., B-52s, C-5s, and C-141s) and strategic missiles. No other Service has the required facilities.

**Table II-9 Depot Maintenance Interservicing**

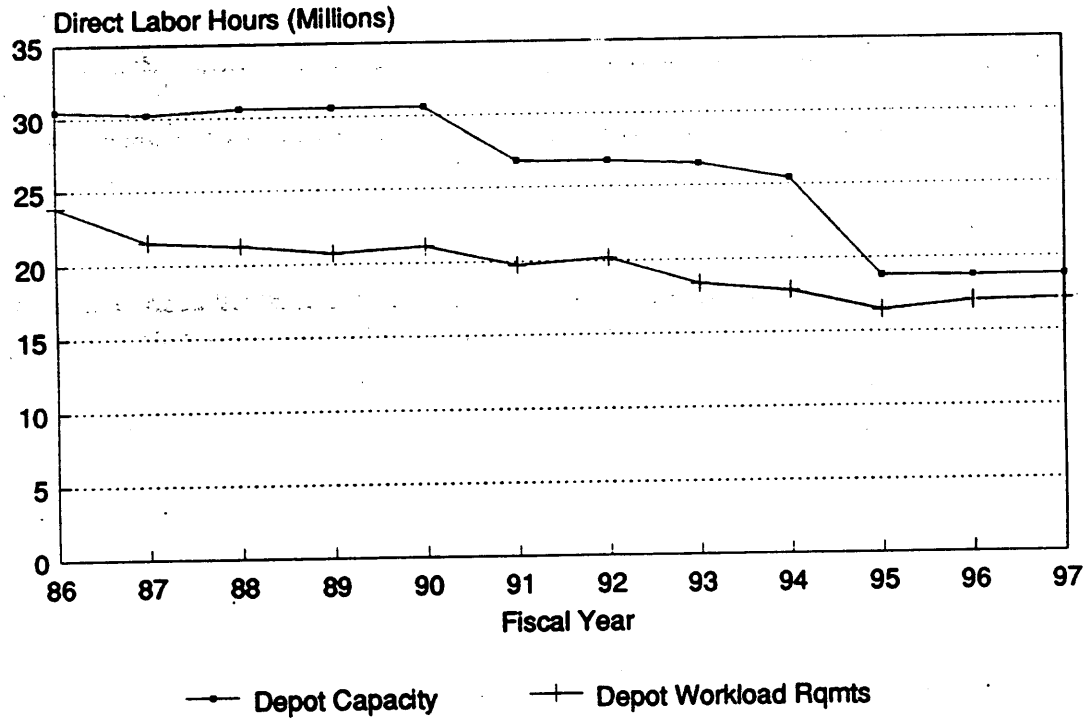
| Fiscal Year | FY88 | FY89 | FY90 | FY91 |
|---|---|---|---|---|
| Depot Maintenance Executed ($DM) (Millions) | 13586.2 | 12753.3 | 14392.9 | 12809.3 |
| Depot Maintenance Interservicing ($DMI) (Millions) | | | | |
| Army | 7.5 | 13.9 | 17.5 | 31.3 |
| Navy | 98.7 | 93.9 | 95.2 | 77.8 |
| Air Force | 249.6 | 192.1 | 106.1 | 235.8 |
| Marine Corps | 5.8 | 9.8 | 8 | 13.6 |
| Total | 361.6 | 309.7 | 226.8 | 358.5 |
| $DMI/$DM (Percent) | 2.70% | 2.40% | 1.60% | 2.80% |

Source: JDMAG data from OSD Report 7220.9M

d. Capacity/Workload Reductions. Since FY88, and particularly since Base Force reductions were approved, depot workload requirements have generally decreased in the Services and are expected to continue through FY95. Figures II-1 through II-5 summarize requirements and capacity trends for each Service.

(1) The Army has embraced the "Centers of Excellence" concept in order to reduce its requirement for depot facilities. It will downsize its infrastructure in FY95 when Sacramento Army Depot closes. As shown in Figure II-1, this will reduce Army excess capacity to less than 10 percent of the downsized capacity of the remaining depots in FY97. The remaining depots still have the capability, however, to build back to higher late-1980s output levels.

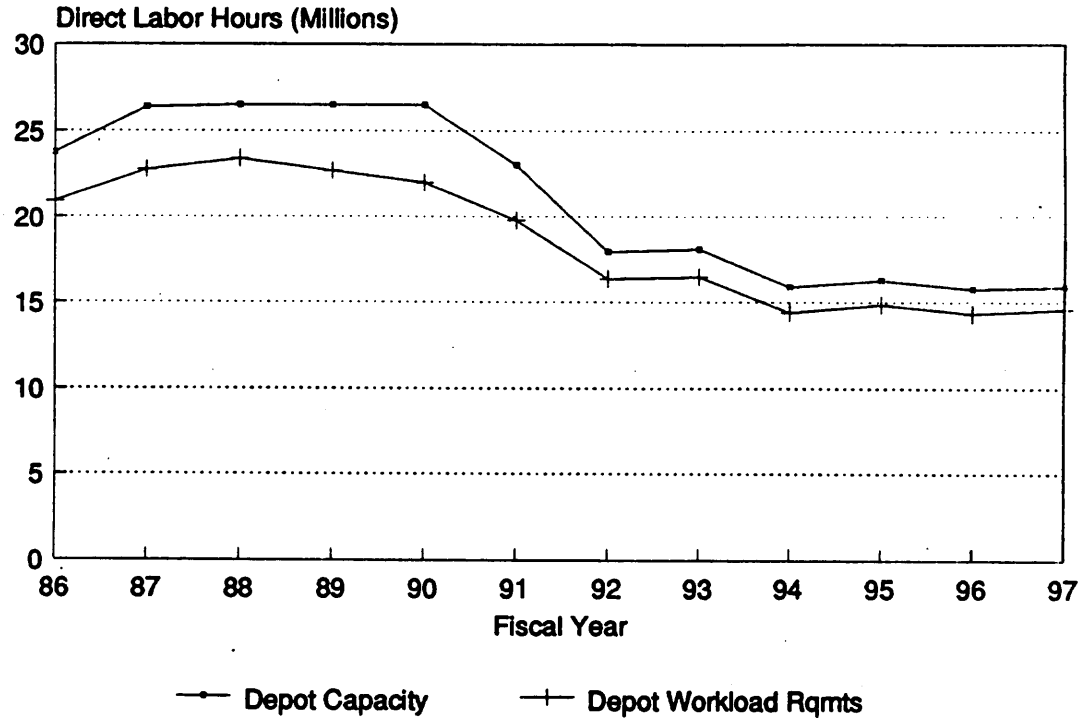
**Figure II-1 Army Capacity and Workload**




Source: JDMAG data from POS-87, POS-89, POS-90, POS-91 and DDMC CBP for FY92-FY97.

(2) NAVAIR has steadily reduced its excess capacity by downsizing without closing any depots. As shown in Figure II-2, NAVAIR capacity decreases are projected to level off in FY94. By FY97, excess capacity is less than 9 percent of the remaining capacity in NAVAIR depots. As with the Army, the potential still remains to restore some of those depots to earlier, higher production levels.

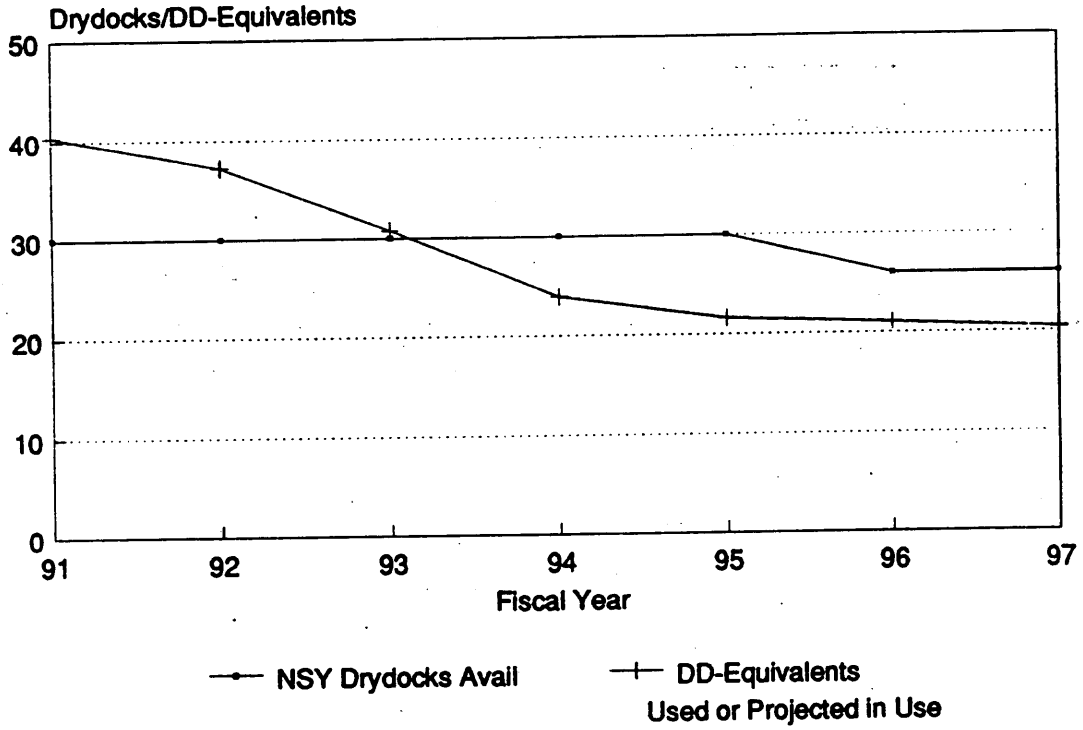
**Figure II-2 NAVAIR Capacity and Workload**




Source: JDMAG data form POS-87, POS-89, POS-90, POS-91 and DDMC CBP for FY92-FY97.

(3) NAVSEA depot capacity and work is presented in terms of their limiting physical factor, drydock utilization. As the Navy downsizes to Base Force levels, drydock requirements also decrease. Some downsizing in the shipyard infrastructure is being accomplished by the closure of the Philadelphia Naval Shipyard in FY96, as shown in Figure II-3. With no further consolidation projected, excess drydock-equivalent capacity will be more than 21 percent of that available in FY97.

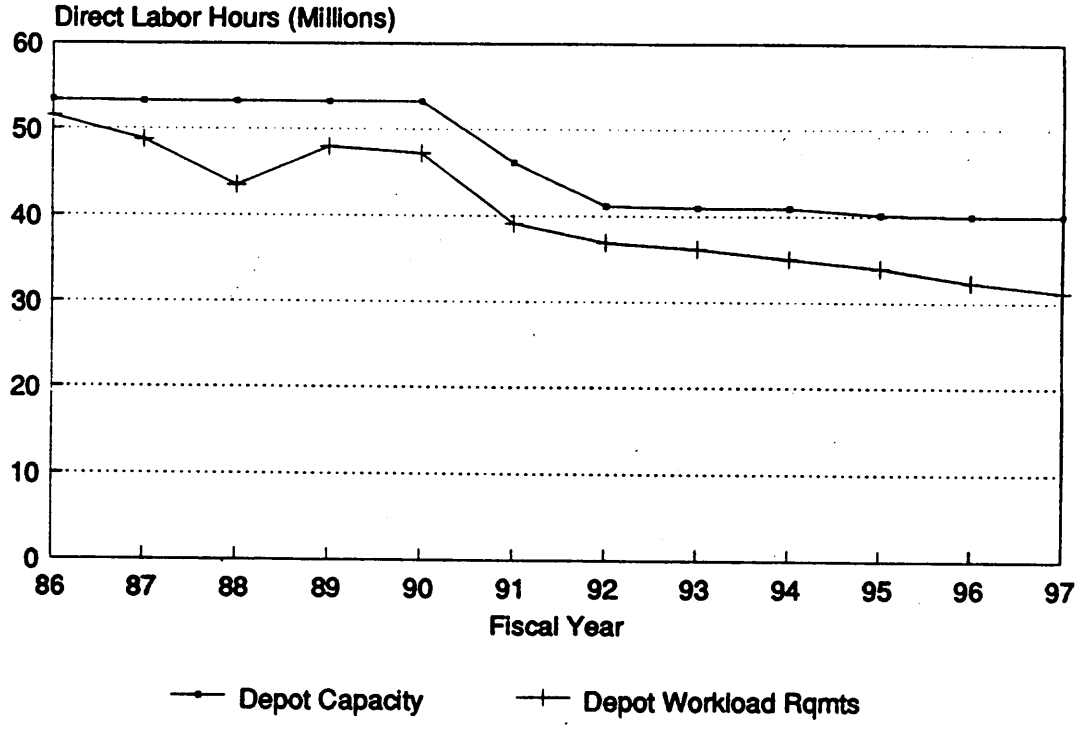
**Figure II-3 NAVSEA Capacity and Workload**




Source: JDMAG and OPNAV N431 data.

(4) The Air Force has downsized without closing depot facilities. Depot maintenance averages only about 30 percent of the logistics activity at any large ALC. Nevertheless, no complete CONUS depot maintenance function has been closed despite significant Service downsizing. The rate of decline of maintenance requirements has exceeded the rate of capacity reduction. As shown in Figure II-4, by FY97 Air Force projections indicate that depot maintenance activities will still retain over 28 percent excess capacity with an increasing trend in the percentage of excess.

**Figure II-4 Air Force Capacity and Workload**

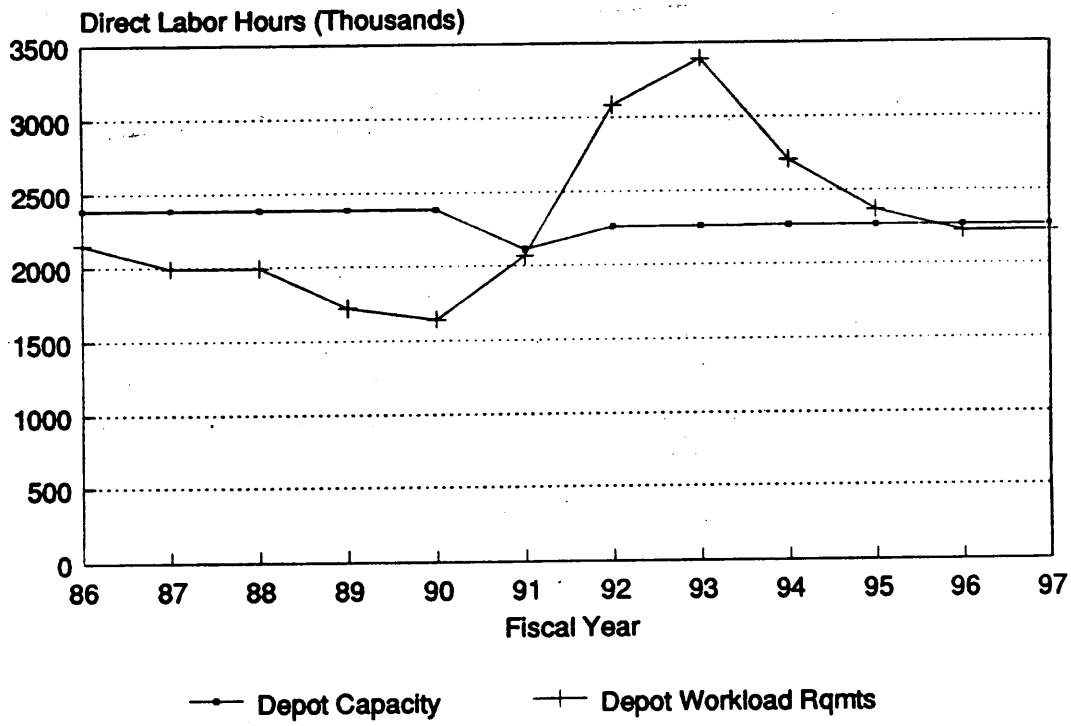



Source: JDMAG data from POS-87, POS-89, POS-90, POS-91 and DDMC CBP for FY-92-FY97.

(5) Marine Corps depot maintenance requirements fell steadily prior to FY91 Operation DESERT STORM support and reconstitution. As shown in Figure II-5, FY91 depot workload requirements increased above the nominal depot capacity to support Operation DESERT STORM. This level of effort is required through FY95 to reconstitute equipment to pre-Operation DESERT STORM readiness. To accomplish this work, the Marine Corps increased depot civilian personnel 25 percent. Workshifts were also lengthened. By FY96, the Marine Corps projects its depot requirements will normalize, although at a level 35 percent above pre-Operation DESERT STORM levels. This requirement

level is inconsistent with pre-Operation DESERT STORM trends but will reduce excess capacity at Marine Corps depots to less than 2 percent as shown in Figure II-5. If FY97 requirements leveled off at the FY90 level, the excess capacity of the Marine Corps depots would be over 35 percent. Marine Corps depot capacity is projected to remain at the same level it has been since FY86. The slight change in capacity shown in FY91 and FY92 is due to a change in the OSD's capacity calculation methodology. Like the depots of other Services, Marine Corps depots conduct many activities other than depot maintenance. This activity is not reflected for the years FY89-FY91, but apparently is for FY92-FY97.

**Figure II-5 Marine Corps Capacity and Workload**




Source: JDMAG data from POS-87, POS-89, POS-90, POS-91 and DDMC CBP for FY92-FY97.

4. Prospects of Current Depot Cost Reduction Methods and Future Opportunities. While some savings have been achieved through competition, interservicing, and capacity reduction, the potential for continued success is limited without substantial new initiatives. The following subparagraphs discuss these limitations and describe potential opportunities for additional savings.

a. Process Improvements. Faced with declining defense budgets for the foreseeable future, depot managers can be expected to take advantage of any process improvements that generate greater cost efficiency. This is true under all of the alternative depot organizations considered by this study. For this reason, process improvement will not be addressed any further in this study or used as a measure of effectiveness for the alternatives to be discussed.

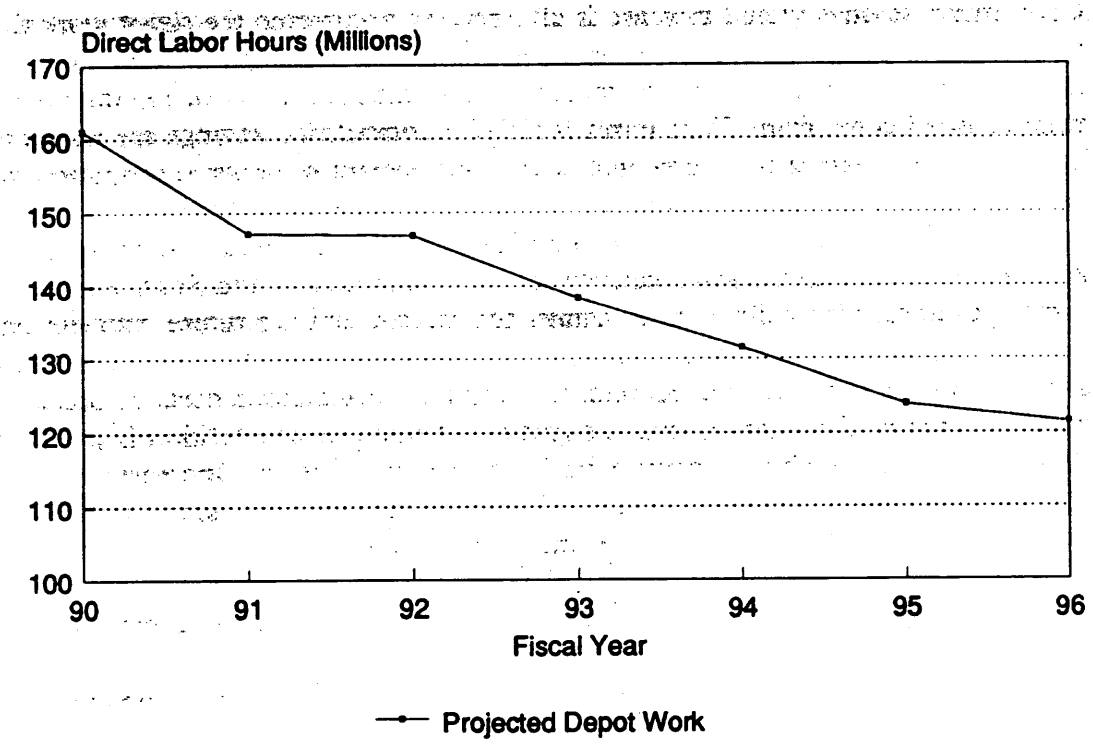
b. Competition. Competition does produce unit cost efficiencies and savings in depots. Competition savings would increase if all Services maximized the depot work they award competitively, vice the limited amounts seen in the FY90 statistics. CBP competition initiatives are projected to achieve savings of less than 2 percent of the total depot maintenance budget from FY91 through FY97. Competition savings are also limited by the core requirement that ensures that at least 60 percent of depot expenditures will be spent in Service depots. One additional aspect of competition that must be carefully managed is its potential to reduce the number of potential bidders. If contracts are awarded repeatedly to the same contractors, other contractors and Service depots may dispose of unused capabilities in a manner that precludes their future competition or activation to support surge requirements. The winning contractor may evolve into the sole source of maintenance for the commodity, resulting in increased costs as opposed to savings. Despite these limitations, a significant benefit of competition is its ability to move work to more efficient private facilities and other depots. Increasing competition could shift the lower volume commodity output of less efficient, small workload depots to other facilities to take advantage of economies of scale.

c. Interservicing. The FY91 interservicing effort described earlier achieved only 100,000 dollars in savings. In FY93, the CBP projection for interservicing savings is 23.1 million dollars rising in FY97 to 29.2 million dollars. This magnitude of savings will only be possible if all Services interservice vastly more depot work than has been previously attempted. Each Service can argue that there is a ceiling on interservicing imposed by their ownership of unique platforms. But a significant amount of similarity and commonality, particularly at the engine and component level, make interservicing potential many times greater than the current 3 percent.

d. Capacity Reductions. Reducing capacity and workload, without reducing the number of depots, decreases expenditures for direct labor and variable overhead costs, but does not significantly decrease the costs of fixed overhead expenses. As will be shown in the following paragraphs, only depot closures will result in substantial savings by eliminating the fixed overhead of depots closed.

(1) Depot fixed overhead includes those indirect costs of depot operations that do not vary with the work output of the depot. This includes general and administrative costs for depot plant operations, planning, and financial management. It also includes some of the operation's overhead costs for equipment management, production planning, engineering, material management, and quality assurance. KPMG Peat Marwick Report, Current Cost Baseline for DOD Depot Maintenance, dated 14 December 1991, estimates that all of the general and administrative costs, plus 50 percent of operations overhead, are attributable to organic maintenance management. This cost approximates total fixed overhead and is estimated to consume 28 percent of FY90 depot maintenance expenditures. Figure II-6 shows the declining trend in depot maintenance workload between FY90 and FY96 within DOD.

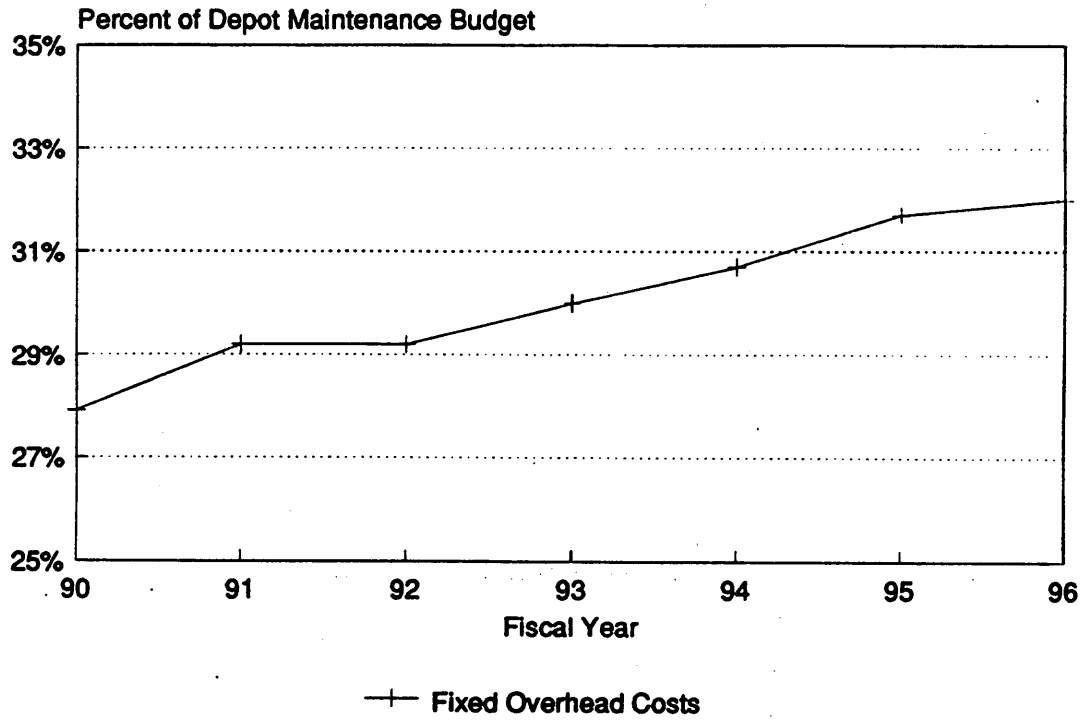
**Figure II-6 Annual Depot Maintenance Workload**




Source: JDMAG data from POS-87, POS-89, POS-90, POS-91 and DDMC CBP for FY92-FY97.

(2) Figure II-7 shows the upward trend in the percent of the depot maintenance budget being expended on the estimated fixed overhead of DOD depots during the same years. There will be a continued increase in the percentage of depot maintenance costs that are due to fixed overhead, if fixed overhead does not decrease with workload.

**Figure II-7 Depot Fixed Overhead Budget Impact**




Source: JDMAG data for POS-87, POS-89, POS-90, POS-91 and DDMC CBP for FY92-FY97.

(3) To accommodate shrinking workloads, Services have planned to reduce the commodity output of each depot, but not to significantly reduce the total number of depots. While competition and interservicing reduce costs per unit, capacity reductions have the potential to decrease the total costs for direct labor hours and variable overhead at the depots. But, like competition and interservicing, capacity reductions do not significantly decrease the substantial fixed overhead burden. Reducing capacity within the depots will push the estimated fixed overhead percentage of depot costs over 32 percent by FY96. The redundancy and excess capacity retained at each depot will have an increasingly negative impact on the funds available for depot commodity output. As future depot maintenance budgets continue to decrease and each Service needs to capture more savings, fixed indirect costs will be the prime area to reduce depot expenditures.

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## CHAPTER III - ANALYSIS METHODOLOGY

1. **Background and Assumptions**. The study analyzed seven alternatives that are summarized in the study Concept Paper, Appendix C. Two of the alternatives provide continued individual Service ownership and control of its depot maintenance organizations. Three provide varying degrees of "Executive Service" management in which the predominant Service is responsible. The two remaining alternatives remove depot maintenance responsibility from direct Service control. The first has two options: a Defense Maintenance Agency (DMA) or a Joint Depot Maintenance Command (JDMC) organization that would report, respectively, to OSD or CJCS. The second alternative provides for contracting out the entire depot maintenance operation. The analysis is based on the following two assumptions.

a. Each Service performs work of similar quality.

b. Changing the agency responsible for work performed in a specific location would not affect cost.

2. **Criteria**. Each alternative was evaluated using the criteria listed below. The first criterion is the only objective measure, the remainder are subjective.

a. Cost Savings: Relative recurring and nonrecurring costs and savings were developed for comparison among Alternatives B through F.

b. Capacity Reduction: The ability to reduce excess capacity under each alternative was compared.

c. Unnecessary Duplication: A comparison of how well each alternative eliminates unnecessary duplicate capability and unnecessary duplicate overhead structure was made.

d. Military Responsiveness: The loss of direct control of a Service's depot maintenance capability could potentially degrade both readiness and a Service's ability to respond to crises. The impact of each alternative with respect to its ability to maintain peacetime readiness standards, sustain forces during crisis response and contingency operations, and reconstitute forces upon redeployment was examined.

3. **Baseline Information**. The baseline information used to analyze the alternatives is contained in the Depot Commodity Matrix (Appendix F) that was constructed with data provided by OSD, the Services, and JDMAG. The Financial and Facility portion of the matrix contains 34 separate data elements to describe each depot facility. The Depot Commodity section identifies the type and quantity of work that is done at each depot. Information presented is for FY91 and has been verified by each Service as of 5 October 1992.

4. Aggregation of Requirements and Capability. The first step in the analysis process was to aggregate both the requirements for each major classification of hardware and the capability to meet these requirements. The Services report capacity and workload requirements by depot within the Work Breakdown Structure (WBS) in accordance with DOD Instruction 4151.15, *Depot Maintenance Program Policies*. This document groups maintenance into nine distinct categories and closely resembles the commodity breakdown identified in the commodity matrix. Table III-1 lists these groups and their subassemblies.

**Table III-1 Work Breakdown Structure (WBS)**

| | | |
|---|---|---|
| **100 Aircraft** | **200 Missiles** | **300 Ships** |
| 101 Airframe | 201 Frame | 301 Hull |
| 102 Engine | 202 Propulsion & comp | 302 Propulsion |
| 103 A/C & Eng acc/comp | 203 Guidance & comp | 303 Electric Plant |
| 104 Comm & Electronics | 204 Payload & comp | 304 Cmd & Surveillance |
| 105 Armament | 205 Access & comp | 305 Aux |
| 106 Supp Equip | 206 Surface comm & cont | 306 Outfit & Furnishing |
| 107 Other | 207 Supp and Launch Equip | 307 Armament |
| | 208 Other | 308 Engineering |
| | | 309 Ship Support Svcs |
| **400 Combat Vehicles** | **500 Automotive** | **600 Construction Equipment** |
| 401 Hull/body/frame | 501 Hull/body/frame | 601 Hull/body/frame |
| 402 Engine | 502 Engine | 602 Engine |
| 403 Veh/Eng comp/acc | 503 Veh/Eng comp/acc | 603 Veh/Eng comp/acc |
| 404 Comm & Electronics | 504 Comm & Electronics | 604 Other |
| 405 Armament | 505 Armament | |
| 406 Support Equip | 506 Support Equip | |
| 407 Other | 507 Other | |
| **700 Electronic & Comm** | **800 Ord/Weaps/Munitions** | **900 Gen Purpose Equip** |
| 701 Radio | 801 Nuclear | 901 Rail |
| 702 Radar | 802 Chem & Bio | 902 Generator Sets |
| 703 Wire & Comm | 803 Artillery & Guns | 903 GP Maint tooling & equip |
| 704 Other | 804 Small Arms | 904 Other |
| | 805 Conv Arms & Explosives | |
| | 806 Other | |

Source: DODI 4151.15, Depot Maintenance Program Policies.

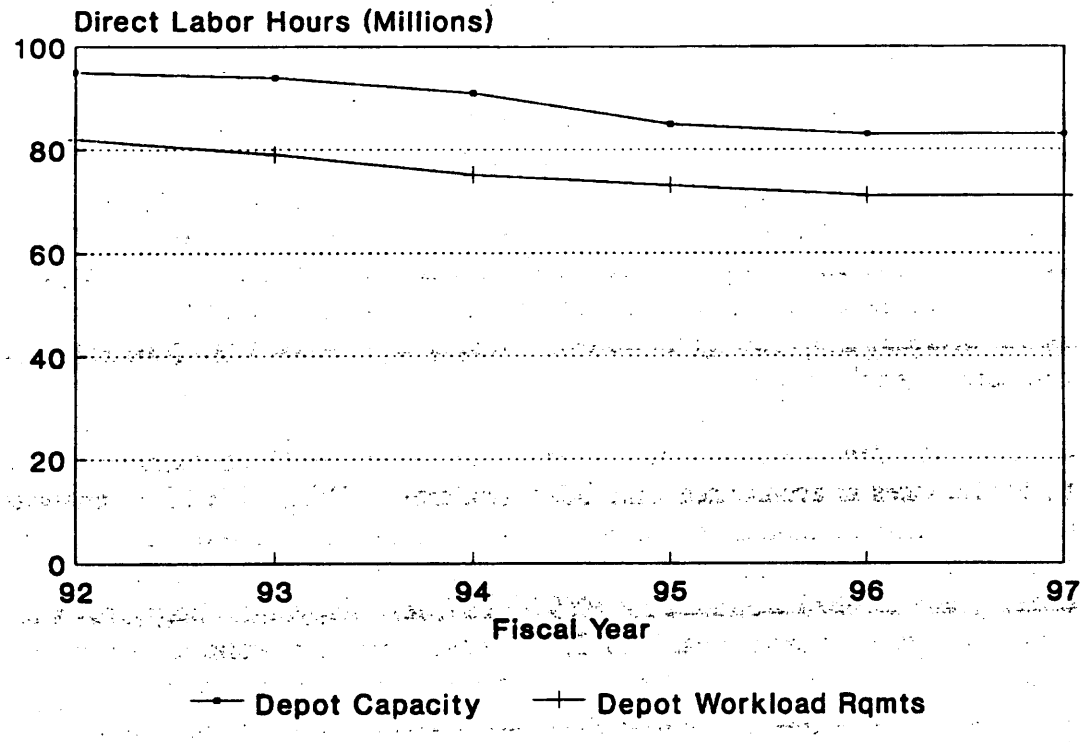
a. Past and present capacity and FY95 workload requirements were then reviewed. Capacity is defined in DOD 4151.15-H, *Depot Maintenance and Utilization Measurement Handbook* as: "The amount of workload, expressed in actual direct labor hours (DLHs), that a facility can effectively produce annually on a single shift, 40-hour week basis while producing the product mix that a facility is designed to accommodate."

b. The formula recommended by the JLC and incorporated in DOD 4151.15-H (draft) for computing capacity is: number of work positions x availability factor (.95) x annual productive hours (1615).

c. Depot capacity is a function of the physical plant and the personnel assigned with the level of employment being the driving factor in the calculation. The only variable in the capacity formula is the number of work positions which, as defined, is not directly affected by personnel vacancies. From the purist's viewpoint, a reduction in personnel levels should only affect a depot's ability to perform up to its capacity. In reality, when faced with a loss of manpower, most depots elect not to use equipment and/or decrease shop configuration which results in reduced work positions and lower computed capacity levels.

d. Using the depot's past reported capacity and FY95 workload requirements, as reported by the Services in accordance with OSD standards in DOD 4151.15-H, analysts reviewed the overall depot maintenance capacity and the maintenance requirements for weapon systems and their sub assemblies for all Services. Figure III-1 is a summary of Service capacity and planned workload for FY92-FY97, less shipyards. Shipyards were not included, because shipyard capacity figures based upon the workload are unavailable from JDMAG. The reduction in workload is attributed to projected decreases in force structure. The reduction in capacity is attributed to the Services' efforts to optimize their depots with the largest single factor being across the board Service reductions in depot maintenance personnel. The present gap between workload and capacity does not decrease over time, based upon Service provided data.

**Figure III-1 DOD Depot Capacity and Workload Requirement (Less NAVSEA)**




Source: JDMAG

e. The capacity figures shown in Figure III-1, are based upon a single shift, eight hour, five day work week. Increasing a depot to multiple shifts would increase depot capacity and further widen the gap between computed capacity and workload requirements. For the purpose of this study, depot maintenance capacity was measured at the single shift level, allowing a multiple shift alternative to meet potential surge requirements.

5. Identification of Excess Capacity and Dominant Service. The second analytical step involved quantifying excess capacity and identifying the dominant Service. Excess capacity was identified by subtracting the planned FY95 workload from the FY87 capacity. This was performed at the weapon system level (e.g. WBS 100, aviation) and, where data was available, at the sub assembly level (e.g. 101, airframes). FY87 capacity figures were used since it was a peak year with larger overall employment and more accurately reflected what work a depot facility could absorb during workload consolidation. Analysts recognize that some existing depots may have been reconfigured since FY87, to reflect a lower capacity. As a result, in order to accept added workload, depots will require reconfiguring to a larger capacity. Capacity of those depots which have closed or will close by FY96 was not included. Any deviation of the above procedure will be explained in the alternatives. Depot capabilities were reviewed to determine which depots perform similar maintenance in order to identify potential consolidations. The Depot Commodity Matrix (Appendix F), DOD

7220.9-M, and the WBS data were the primary inputs used in this process. The dominant Service for each major weapon type and, where possible, their sub-assemblies was then determined by identifying the Service with the majority of documented man-hours.

6. Identification of Costs and Savings. The third step in the analytical process involved quantifying costs and savings. When a significant excess in capacity exists, it is possible to consolidate requirements from a single large activity, several smaller ones, or a combination of different size facilities. **In several cases, depot activities perform non-depot level maintenance functions that would still be required after the consolidation of depot level maintenance. As a result, the consolidation of depot level maintenance workload may not always result in the closure of a site.** For each alternative and for each WBS major group, savings and costs based on actual FY91 workload figures were estimated whenever consolidation occurred. To allow for proper planning and execution, the migration of workload would not commence until FY94 and would occur over a period of two years. Cost and savings were projected from FY94 through FY03. All costs and savings were adjusted, using FY93 constant dollars for comparison.

a. Costs. The following one time and recurring costs were calculated for each alternative:

(1) Personnel

a. The cost of involuntary separations resulting from the transfer of a maintenance function.

b. Personnel relocation costs. The government expense to move those personnel that will transfer with the function.

c. Unemployment claims for personnel who are involuntarily separated.

d. Early-out retirement costs.

(2) Temporary duty costs associated with training individuals at a new facility.

(3) Costs to move equipment to the new location.

(4) Cost of recruiting and training people at the new location.

(5) Costs associated with lower initial productivity at the new facility.

(6) Added military construction and conversion costs.

(7) Costs associated with moving Defense Logistics Agency (DLA) warehousing and Defense Reutilization and Marketing Offices (DRMO) to new locations were not

included.[1]

(8) Environmental clean-up costs. These costs have not been included in this analysis due to the recognition that they must be paid by DOD whether the facility remains open or is closed. However, a Base Realignment and Closure (BRAC) decision to close a facility may drive a large additional unfunded environmental charge in the near term. As a result, other interim options such as "caretaker status" or "mothballing" may be needed in lieu of closing in order to provide time to program and budget for the added environmental charges.

(9) Cost of disruption at the losing depot.

(10) Cost for closing buildings and other production facilities due to closure or relocating workload. For example, some depot maintenance facilities occupy an entire base/post. Calculating closing and transfer costs for these are straightforward. Others are combined with engineering, materiel management, inventory control points, and other Service logistic functions on large bases with other tenant organizations. In these instances cost calculations are less straightforward. When a significant entity other than a depot maintenance facility remains at a base/post, closure of the base/post has not been considered. Additionally, the analysis has not accounted for any differences in transportation recurring costs that result when workload is accomplished at a new location. These are generally a small percent of the total maintenance cost.

b. Savings. The following one time and recurring savings were calculated for each alternative:

(1) Projected and budgeted military construction that will be canceled.

(2) Industrial Plant Equipment (IPE) costs for new/replacement items that are no longer required.

(3) Indirect operational overhead and General and Administrative (G&A) savings. This includes such items as engineering, staff support, base operation and support, and work not identifiable to a single job order.

[1] DLA conducted a macro look at Alternative E and found a potential reduction of 1000 people with no additional facility requirements. Based on an average salary of 30,000 dollars per year, this has the potential to save as much as 30 million dollars per year. These potential savings have not been included in the analysis of any alternative. A more detailed study is required to determine actual costs and savings.

7. Summary. A summary of how each of these costs and savings items were calculated is contained in Appendix E. To the maximum extent possible, estimates of costs and savings have been taken from previous studies and audits. When previous studies' costs and savings recommendations fall into a narrow range, a single estimate has been used. When there is disparity in estimating a particular cost, a savings/cost range is used incorporating the extreme estimates from the studies available. When projected costs are subtracted from projected savings for each alternative, a savings range is then calculated. **It is important to note that the saving ranges apply to all of DOD. No attempt has been made to allocate these potential savings to individual services. Further, the calculated savings ranges are useful only for comparison of Alternatives B through F and are not "budget quality" figures, i.e., they are most useful for the relative ranking of Alternatives B through F in terms of cost savings.** This is due to the lack of data in a variety of areas, e.g., outyear labor rates, accurate workload estimates, and lack of demographics to more precisely estimate personnel costs.

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# CHAPTER IV - EVALUATION OF ALTERNATIVES

1. Background. Seven alternatives are analyzed in this report (Appendix C) using the methodology outlined in Chapter III. **Excess capacity was identified by subtracting the planned FY95 workload from the FY87 capacity. FY87 capacity figures were used since it was a peak year with larger overall employment and more accurately reflects what work a depot could absorb during workload consolidation. Therefore, the capacity utilization percentages shown in this chapter should be only used to compare the alternatives and will not correspond to the projected percentages discussed in Chapter II. The excess capacity percentages in Chapter II are FY97 Service projections as contained in the CBP.** Each alternative will be analyzed separately with cost/savings reflected. The alternatives being considered are grouped into three categories as depicted in Table IV-1.

**Table IV-1 Categories and Alternatives**

| CATEGORIES | ALTERNATIVES |
|---|---|
| Using Service Control | A & B |
| Executive Service Control | C, D, & E |
| Control External to Services | F & G |

2. Evaluations.

a. **Alternative A.** Each Service retains its own separate depot maintenance operations in accordance with DMRD 908 directions to increase interservicing, streamline depot operations, reduce management staffs at all levels, increase competition, team with private industry for remanufacturing/manufacturing, etc. Additional depot closures and realignments will be accomplished through the Base Realignment and Closure (BRAC) process. The Defense Depot Maintenance Council (DDMC) will provide limited oversight.

(1) Overview. This alternative assumes that each Service will realize the total of 6.4 billion dollars savings from FY91 to FY97 projected under CBP guidelines, with the DDMC providing management oversight. It will be very difficult for the Services to meet these goals and it is likely that they will be forced to take actions which will have severe impacts on readiness.

(2) Analysis. As reflected in the CBP, Services are reducing depot maintenance cost through the following:

(a) Near-term savings (downsizing work forces, facility closures, project cancellations, internal consolidations, etc.). These savings totaled 3.2 billion dollars of the 6.4 billion dollars, and represent 50 percent of the CBP total. Savings resulting from closing one CONUS and one overseas facility are included.

(b) Interservicing (transfer of a system's depot maintenance to another Service that has a facility maintaining the same or a similar system). These savings totaled 134.7 million dollars representing 2.1 percent of the CBP total.

(c) Competition (of organic depots with other depots and with private industry). Services' competition savings are projected at 1,733.4 million dollars, which represents 27.3 percent of the total savings.

(d) Elimination or storage of excess or unnecessary redundant capacity totaled 1,283.8 million dollars, which represents 20.2 percent of the total savings.

(3) Summary of Analysis Results. The CBP projects savings of 6.4 billion dollars that reduces the original projected depot maintenance budgets of the Army, NAVAIR, NAVSEA, Air Force, and Marine Corps by 7.0 percent from 89.8 to 83.5 billion dollars over FY91 through FY97.

(a) Cost Effectiveness. Table IV-2 details the distribution of the CBP savings. In comparison with all other alternatives, this is the least cost effective alternative.

**Table IV-2 Effect of DMRD 908 on Projected FY91-FY97 Depot Maintenance Budget**
(Then Year $ Millions)

| | Original Budget Projection | CBP Savings | % Savings of Budget | % of Total CBP | Current Budget Projection |
|---|---|---|---|---|---|
| ARMY | 15,080.5 | 1,065.8 | 7.0% | 16.8% | 14,014.7 |
| NAVAIR | 11,230.4 | 1,448.8 | 12.9% | 22.8% | 9,781.6 |
| NAVSEA | 34,229.9 | 2,108.0 | 6.2% | 33.0% | 32,121.9 |
| USAF | 28,305.2 | 1,708.3 | 6.0% | 26.9% | 26,596.9 |
| USMC | 967.3 | 28.6 | 3.0% | 0.5% | 938.7 |
| Total | 89,813.3 | 6,359.5 | 7.0% | 100.0% | 83,453.8 |

(b) Capacity Reduction. The CBP is the baseline for planned consolidations of depot maintenance functions. As discussed in Chapter III, the utilization rates shown in Table IV-3 are based on NAVSEA drydock utilization, FY91 through FY97 maximum capacities for NAVORD depots, and FY87 capacity for the Army, NAVAIR, Air Force, and Marine Corps.

**Table IV-3 Alternative A DOD Depot Capacity Utilization Rates**

| | | | |
|---|---|---|---|
| Army | 62% | USAF | 64% |
| NAVAIR | 56% | USMC | 100% |
| NAVSEA | 71% | NAVORD | 81% |

The overall utilization for the aggregate is 64 percent, which is used as the baseline utilization rate for the rest of the alternatives considered. When compared with all the other alternatives, this capacity utilization rate is the lowest.

(c) Unnecessary Duplication. The CBP is the baseline for depot consolidation, but leaves much redundancy and excess capacity throughout the depot organization.

(d) Military Responsiveness.

1. Peacetime Readiness. This alternative expends the peacetime depot maintenance budget on individual Service-managed depot organizations with limited interservicing. A higher percentage of available funds must be committed to maintaining excess capacity and unnecessary duplication within Service boundaries. Each Service will invest a higher percentage of their fixed peacetime depot maintenance budget in depot overhead and have less available for direct labor expenditures. Thus, this alternative yields the least amount of depot maintenance funds for hardware maintenance and readiness support.

2. Contingency Response, Deployment, and Reconstitution. Services believe that when they manage their own depot maintenance organization, the depots will be most responsive to their specific needs for contingency response, deployment, and reconstitution. No hard data was provided to support this contention. Surge capacity can be met by additional shifts, work hours, and workdays to meet total mobilization requirements. Excess capacity and redundancy within each Service will provide even greater support and surge capacity to the using Service when additional resources are provided for contingencies and subsequent reconstitution.

b. **Alternative B.** Each Service retains its own separate depot maintenance operations. Under DMRD 908 streamlining guidance, weapon system platforms, depot-level reparables (DLRs), components, and non-weapon-system equipment will be consolidated into "Centers of Excellence" within the using Service to the maximum extent possible. Depot maintenance could be performed by a contractor or in another Service's facilities.

(1) Overview. Alternative B reduces excess capacity and unnecessary duplication by increased implementation of the "Centers of Excellence" concept within using Service managed depot boundaries. Consolidations across Service boundaries and effects of increased interservicing/competition were not considered for the alternative.

(2) Analysis. The study team:

(a) Analyzed OSD depot output data for commodities of similar technology maintained by multiple depots within each Service.

(b) Reviewed JDMAG FY95 projected depot workload.

(c) Reviewed JDMAG depot capacity data from FY87 through FY97 to determine utilization rates.

(d) Projected the net cost of consolidating commodities into "Centers of Excellence" at sites that had demonstrated capacity to absorb that commodity with an objective of making other sites eligible for closure.

(3) Summary of Analysis Results. As described in Appendix G, there is significant potential for reducing excess capacity in each Service through consolidation of depot maintenance capabilities into "Centers of Excellence." In this analysis, the Army depot maintenance workload was consolidated from six depots into five. The Air Force predicted depot workload was consolidated into five vice six current facilities. The Navy depot workload was consolidated from six aviation depots into four, seven shipyards into five, and nine ordnance centers into three. The Marine Corps depot workload performed at two depots was consolidated into one.

(a) Cost Effectiveness. For comparison with Alternatives C through F, this alternative has the potential to achieve depot maintenance cost reductions of 1,589 to 6,661 million dollars from FY94 through FY03 as shown in Table IV-4.

**Table IV-4 Alternative B FY94-FY03 -- Projected Relative Savings (Constant FY93 $Millions)**

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (752) | (220) | (752) | (220) |
| 95 | (655) | (167) | (1,407) | (387) |
| 96 | 412 | 959 | (995) | 572 |
| 97 | 370 | 881 | (625) | 1,453 |
| 98 | 371 | 881 | (254) | 2,334 |
| 99 | 368 | 878 | 114 | 3,212 |
| 00 | 368 | 863 | 482 | 4,075 |
| 01 | 373 | 862 | 855 | 4,937 |
| 02 | 365 | 861 | 1,220 | 5,798 |
| 03 | 369 | 863 | 1,589 | 6,661 |
| Total | 1,589 | 6,661 | | |

(b) Capacity Reduction. The consolidations made in this alternative increased utilization by 18 percent. The utilization rates shown in Table IV-5 are based on NAVSEA drydock utilization, FY91 through FY97 maximum capacities for NAVORD and Marine Corps depots, and FY87 capacity for Army, NAVAIR, and the Air Force depots.

**Table IV-5 Alternative B DOD Depot Capacity Utilization Rates**

| | | | |
|---|---|---|---|
| Army | 70% | USAF | 76% |
| NAVAIR | 81% | USMC | 100% |
| NAVSEA | 92% | NAVORD | 100% |

The overall utilization rate is 82 percent for Alternative B after all recommended consolidations. Further increases in the utilization rate would require extensive and costly establishment of new commodity capabilities at bases that have not demonstrated capacity for those commodities in past years, or consolidation of depot maintenance across Service boundaries, not considered under this alternative.

(c) Unnecessary Duplication. The consolidations recommended within each Service significantly decrease and in some cases completely eliminate duplication, but only within Service boundaries. The final depot configuration in this alternative still provides duplicate capabilities among the Services.

(d) Military Responsiveness.

1. Peacetime Readiness. When compared with Alternative A, less available funds will be spent for excess capacity and unnecessary duplication when Services consolidate to "Centers of Excellence" within Service boundaries. However, duplication and excess capacity remain when commodities are considered across Service boundaries, so each Service will still pay a higher percentage of its peacetime depot maintenance budget for depot overhead than alternatives that consolidate across Service boundaries. Alternative B will provide more depot maintenance funds than Alternative A for hardware maintenance and readiness support.

2. Contingency Response, Deployment, and Reconstitution. As indicated in Alternative A, Services prefer to manage their own depot maintenance organization. It retains more flexibility than Alternatives C through G, although this flexibility is somewhat less than Alternative A. Surge capacity can be met by additional shifts, work hours, and workdays to meet total mobilization requirements. Excess capacity and redundancy within each Service will provide even greater support and surge capacity.

c. **Alternative C.** Depot maintenance management of common or similar weapon system platforms, (e.g., ships, fixed wing aircraft, rotary wing aircraft, large missiles, etc.) would be accomplished by single Services in "Centers of Excellence". Maintenance will be performed in the single Service's facilities, another Service's facilities or contractor facilities. Depot maintenance responsibility for DLRs, components, and non-weapon system equipment will remain in using Service's "Centers of Excellence".

(1) Overview. Alternative C consolidates depot maintenance responsibility for each major type of weapon system platform under an Executive Service. The using Service of each weapon system retains responsibility for depot maintenance of DLRs, components, and non-weapon system equipment.

(2) Analysis. The study team:

(a) Identified weapon system platform and DLR/component responsibilities for each Service.

(b) Established a workload baseline in each commodity based on FY91 workload.

(c) Reviewed JDMAG FY95 projected depot workload for each commodity.

(d) Reviewed JDMAG FY87 capacities for each commodity.

(e) Applied FY91 percentages of work to the FY95 total workload and the FY87 capacities. Marine Corps capacity was based on FY93 figures, NAVORD capacity was based on the maximum reported capacity between FY91 and FY97.

(f) Consolidated weapon system platform commodity workloads to the maximum extent possible at the depots of the Executive Service, and DLR/component commodity workloads within the depots of the owning Services.

(3) Summary of Analysis Results. As described in Appendix G, the analysis found little overall capacity reduction through migration of weapon system platforms across Service lines. The majority of depot-level maintenance is performed on DLRs and components, not weapon system platforms. As a result, these Services must retain much of their current structure to perform maintenance on the remaining workload. In addition, since the Services still maintain their weapon system DLR/components, greater consolidation was not possible. For aircraft, with the majority of the airframe maintenance work migrating to the Air Force, no Air Force consolidations were possible. Navy was consolidated from six NADEPs to four, but three sites would still perform airframe maintenance since the Navy's airframe maintenance requirements exceeded the Air Force's excess capacity. The fourth NADEP would perform depot maintenance on rotary wing aircraft. Since ships/underwater ordnance capability resides solely with the Navy, no workload was transferred among the Services. Within

the Navy, the work of seven shipyards was consolidated into five and nine NAVORD depots into three. For ground vehicles/ equipment, following the migration of Marine Corps platforms to the Army, the remaining Marine Corps workload was consolidated into a single Marine Corps depot and the workload of an Army depot was consolidated within the Army depot structure. Tactical and strategic missile workloads have already been incorporated into consolidation plans and hence, no further transfers and savings are possible.

(a) Cost Effectiveness. For comparison to Alternatives B through F, this alternative has the potential to achieve depot maintenance cost reductions between 1,294 and 5,141 million dollars. Table IV-6 shows the savings by each fiscal year.

**Table IV-6 Alternative C FY94-FY03--Projected Relative Savings (Constant FY93 $Millions)**

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (631) | (527) | (631) | (527) |
| 95 | (546) | (145) | (1,177) | (672) |
| 96 | 306 | 756 | (871) | 84 |
| 97 | 309 | 724 | (562) | 808 |
| 98 | 310 | 725 | (252) | 1,533 |
| 99 | 309 | 724 | 57 | 2,257 |
| 00 | 309 | 721 | 366 | 2,978 |
| 01 | 309 | 721 | 675 | 3,699 |
| 02 | 310 | 721 | 985 | 4,420 |
| 03 | 309 | 721 | 1,294 | 5,141 |
| Total | 1,294 | 5,141 | | |

(b) Capacity Reduction. This alternative increases utilization of DOD depots by 24 percent from 64 percent to 88 percent. Details of each Service's capacity utilization is shown in Table IV-7.

**Table IV-7 Alternative C DOD Depot Capacity Utilization Rates**

| | | | |
|---|---|---|---|
| Army | 74% | USAF | 76% |
| NAVAIR | 76% | USMC | 88% |
| NAVSEA | 100% | NAVORD | 100% |

(c) Unnecessary Duplication. This alternative reduces much of the duplication among the Services for maintenance of similar weapon system platform

(airframe/hull/body/ frame) commodities. With each Service maintaining DLR/components independently, much duplication among the Services remains. The adoption of the "Centers of Excellence" concept by every Service will help reduce the duplication, but will not eliminate duplication totally.

(d) Military Responsiveness.

1. Peacetime Readiness. The splitting of repair responsibilities of weapon systems and non-weapon system equipment does not complement the repair cycle. This splitting of responsibilities will require increased coordination and enhances the opportunity for something to get lost in the process. As found in Alternatives A and B, the Services will continue to spend available funds to maintain excess capacity and unnecessary duplication across Service boundaries. These inefficiencies will result in reducing the amount of depot maintenance funds for hardware maintenance and readiness support.

2. Contingency Response, Deployment, and Reconstitution. Excess capacity and unnecessary duplication will provide surge capacity across the Services. This is particularly true in wartime when a majority of the requirements are for DLRs and components, rather than for platforms.

d. **Alternative D.** Each Service retains its own separate depot maintenance operations for weapon system platforms under the "Centers of Excellence" concept. Similar DLRs, components and non-weapon system equipment will be consolidated to the maximum extent possible in single Service "Centers of Excellence".

(1) Overview. Alternative D consolidates depot maintenance responsibility for DLRs/ components of weapon system platforms and non-weapon system equipment under an Executive Service. The using Service of each weapon system retains responsibility for depot maintenance of the weapon system platforms. The Executive Service is usually the Service that performs the largest workload of DLRs/components.

(2) Analysis. The study team:

(a) Identified weapon system platform and DLRs/commodity responsibilities for each Service.

(b) Established a workload baseline in each commodity based on FY91 workload.

(c) Reviewed JDMAG FY95 projected depot workload for each commodity.

(d) Reviewed JDMAG FY87 capacities for each commodity.

(e) Applied FY91 percentages of work to the FY95 total workload and the FY87 capacities. Marine Corps capacity was based on FY93 figures, NAVORD capacity was based on the maximum reported capacity between FY91 and FY97.

(f) Consolidated DLRs/component commodity workloads to the maximum extent possible at the depots of the Executive Service, and the weapon system platform commodities within the depots of the using Service.

(3) Summary of Analysis Results. As described in Appendix G, capacity reductions are possible across Service lines. For aircraft, the work of six NADEPs was consolidated into four. The Army would require a depot as its sole source of Army airframe repair. All aircraft DLRs/components were consolidated into existing Air Force depots. For ships/underwater ordnance, the result was the same as Alternative B, with the work of seven shipyards consolidated into five and nine NAVORD depots consolidated into three. For ground vehicles/equipment, the workload of five Army depots was consolidated into four. The Marine Corps would require one of its depots for support of its ground platforms. Tactical and strategic missile workloads have already been incorporated into consolidation plans, and further consolidations will not result in significant cost reductions under the assumptions of this model.

(a) Cost Effectiveness. For comparison to Alternatives B through F, Alternative D has the potential to achieve depot maintenance cost reductions between 1,490 and 8,148 million dollars. Table IV-8 shows the cost reduction by fiscal year.

**Table IV-8 Alternative D FY94-FY03--Projected Relative Savings**
**(Constant FY93 $Millions)**

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (872) | (256) | (872) | (256) |
| 95 | (766) | (174) | (1,638) | (430) |
| 96 | 387 | 1,130 | (1,251) | 700 |
| 97 | 392 | 1,072 | (859) | 1,772 |
| 98 | 392 | 1,071 | (467) | 2,843 |
| 99 | 391 | 1,070 | (76) | 3,913 |
| 00 | 391 | 1,059 | 315 | 4,972 |
| 01 | 392 | 1,059 | 707 | 6,031 |
| 02 | 391 | 1,058 | 1,098 | 7,089 |
| 03 | 392 | 1,059 | 1,490 | 8,148 |
| Total | 1,490 | 8,148 | | |

(b) Capacity Reduction. The consolidations recommended increase utilization projections by 23 percent from 64 to 87 percent. Each Service's capacity utilization is shown in Table IV-9.

Table IV-9 Alternative D DOD Depot Capacity Utilization Rates

| | | | |
|---|---|---|---|
| Army | 90% | USAF | 80% |
| NAVAIR | 82% | USMC | 53% |
| NAVSEA | 100% | NAVORD | 100% |

(c) Unnecessary Duplication. This alternative reduces much of the duplication among the Services for maintenance of similar DLRs/components, but each Service must have an independent depot capability for its weapon system platforms, even when similar to other Services. While application of the "Centers of Excellence" concept will reduce this duplication within each Service, total elimination of duplication is not possible.

(d) Military Responsiveness.

1. Peacetime Readiness. The splitting of repair responsibilities of weapon systems, DLRs, and non-weapon system equipment does not complement the repair cycle. This splitting of responsibility will require increased coordination and enhances the opportunity for something to get lost in the process. As found in Alternatives A, B, and C, the Services will continue to spend available funds to maintain excess capacity and unnecessary duplication across Service boundaries, albeit to a somewhat lesser degree. These inefficiencies will result in reducing the amount of depot maintenance funds for hardware maintenance and readiness support.

2. Contingency Response, Deployment, and Reconstitution. Excess capacity and unnecessary duplication will provide surge capacity across the Services. With the primary wartime requirement being in DLRs and components, the Executive Service for these components will meet this need through additional shifts.

e. **Alternative E.** A single Executive Service will be responsible for the maintenance of similar/common platforms and their DLRs, components and non-weapon system equipment to the maximum extent possible under the "Centers of Excellence" concept. The "Centers of Excellence" may be located in the Executive Service's facilities, another Service's facilities or contractor facilities. Total weapon system management will be the responsibility of the using Service.

(1) Overview. Alternative E consolidates complete depot maintenance responsibility for similar weapon system platforms and their DLR/components under an Executive Service. Table IV-10 shows the weapon system platform assignments among the Services.

Table IV-10 Executive Service Assignment

| | |
|---|---|
| Army | Tactical Missiles<br>Combat Vehicles<br>Automotive<br>Construction Equipment<br>Ground Comm-Electronics<br>Ordnance<br>Weapons and Munitions<br>General Purpose Equipment |
| Navy | Ships and Ship Components<br>Underwater Ordnance |
| Air Force | Aircraft and Aircraft Components<br>Metrology<br>Strategic Missiles |

(2) Analysis. The study team:

(a) Assigned Executive Service responsibilities for each weapon system platform.

(b) Established a workload baseline in each depot commodity based on FY91 workload.

(c) Reviewed JDMAG FY95 projected depot workload for each commodity.

(d) Reviewed JDMAG FY87 capacities for each commodity.

(e) Applied FY91 percentages of work to the FY95 total workload and the FY87 capacities. NAVORD capacity was based on the maximum capacity reported between FY91 and FY97.

(f) Consolidated all commodities to reduce excess capability and fully utilize the Technology Repair Center and "Centers of Excellence" concepts.

(3) Summary of Analysis Results. As described in Appendix G, significant capacity reductions are possible through consolidations across Service lines. For aviation, the work of thirteen Service aviation depots was consolidated by transferring the work of five depots into the remaining eight depots. For ships/underwater weapons, the workload of seven shipyards was consolidated into five and nine NAVORD depots were consolidated into three. After consolidation of the ground vehicles/equipment workload, five Army depots were reduced to four, as well as assuming the workload requirements of the two Marine Corps depots. For strategic and tactical missiles, no further interservice transfer would result in additional closures and savings. All Services' metrology work was consolidated at one Air Force location.

(a) Cost Effectiveness. For comparison with Alternatives B through F, this alternative has the potential to achieve depot maintenance cost reductions of 1,761 to 9,180 million dollars from FY94 through FY03 as shown in Table IV-11.

**Table IV-11 Alternative E FY94-FY03--Projected Relative Savings**
(Constant FY93 $Millions)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (1,085) | (346) | (1,085) | (346) |
| 95 | (976) | (272) | (2,061) | (618) |
| 96 | 510 | 1,330 | (1,551) | 712 |
| 97 | 476 | 1,225 | (1,075) | 1,937 |
| 98 | 476 | 1,223 | (599) | 3,160 |
| 99 | 476 | 1,225 | (123) | 4,385 |
| 00 | 472 | 1,200 | 349 | 5,585 |
| 01 | 469 | 1,197 | 818 | 6,782 |
| 02 | 472 | 1,200 | 1,290 | 7,982 |
| 03 | 471 | 1,198 | 1,761 | 9,180 |
| Total | 1,761 | 9,180 | | |

(b) Capacity Reduction. The Executive Service alternative consolidates workloads across Service lines. Therefore, the Marine Corps and NAVAIR workloads are included in the Executive Services utilization rates. The consolidations recommended increase DOD depot utilization by 31 percent from 64 percent to 95 percent, and individual Service depot utilization as shown in Table IV-12.

**Table IV-12 Alternative E DOD Depot Capacity Utilization Rates**

| | | | |
|---|---|---|---|
| Army | 92% | USAF | 94% |
| NAVAIR | consolidated | USMC | consolidated |
| NAVSEA | 100% | NAVORD | 100% |

(c) Unnecessary Duplication. Aviation and ground workload is transferred into existing Technology Repair Centers and "Centers of Excellence". This eliminates duplication within and among the Services for the maintenance of aviation and ground weapon system platforms and DLR/components.

(d) Military Responsiveness.

1. Peacetime Readiness. Of the alternatives considered thus far, this alternative best meets the test of current and future budget reductions. Compared to Alternatives A, B, C, and D, Alternative E has the best potential to standardize depot production through centralized management to the component level. By closing depots to remove excess capacity across Service lines, the most depot maintenance funds of any alternative considered thus far

can be expected to be available for hardware maintenance and readiness support.

2. Contingency Response, Deployment, and Reconstitution. While Alternative E provides a centralized organization that should be most flexible to workload changes, overall surge capacity is significantly reduced and a longer period of time to reconstitute forces will be required. To meet all but Total Mobilization requirements, capacity is still available by adding additional shifts, work hours, and workdays over the 5-day/40-hour work week assumed for capacity computations.

f. **Alternative F.** All depot maintenance functions will be consolidated under a single organization external to the Services. Individual weapons platforms, DLRs, components, and non-weapon system equipment will be maintained in government owned depots or contracted out.

(1) Overview. Alternative F consolidates all depot maintenance functions under one organization external to the Services, and was evaluated as two distinct options. One option was a Defense Maintenance Agency (DMA). The other option was a Joint Depot Maintenance Command (JDMC).

(2) Analysis. The primary difference between Alternative E and the two options of this alternative is who is in charge of depot maintenance. Alternative E has three separate executives in charge. The F(DMA) option superimposes an external controlling agency on depot maintenance activities and eliminates Service control. The F(JDMC) option places central authority in the hands of a joint commander who executes his responsibilities through the Service components. It was assumed that the director of a DMA or a joint commander would be equally as vigorous and equally as effective as three separate Executive Services in bringing about consolidation, reduction in overhead, and closure of unnecessary depots. It was further assumed that the "Centers of Excellence" concept can also be maximized by either a DMA or a JDMC. No separate analysis was conducted for this alternative. It was assumed that relative cost savings, capacity reduction, and elimination of unnecessary duplication would be no less than that in Alternative E (see Tables IV-13, IV-14, and IV-15). Compared to Alternatives E and F(DMA), Alternative F(JDMC) with a direct tie between the warfighters and the "maintainers," will provide greater military responsiveness.

g. **Alternative G.** Contract out all depot maintenance requirements. Contract management would be maintained by either the Service or by a single organization external to the Services. The ultimate goal would be to include contract maintenance as part of the weapon system acquisition costs of new systems throughout their life cycle. When this alternative was analyzed for projected effects on depot efficiency and cost, it was quickly realized that the implementation of full contractor maintenance would be an

evolutionary process. Even if all depot work were put up for bid by private contractors, some DOD depots would be required to support weapon systems that do not attract bidders due to their low volume or use of older technology no longer available from commercial industry. The requirement for DOD depots is expected to decrease as force structure is decreased and quantities of replacement weapons are decreased. Further, after the first round of competitive bidding and the elimination of organic depot capability, there is a distinct probability that the commercialization process would become a sole-source environment with potentially higher costs. Finally, the size, cost, and optimal organization of the contract administration agency would be directly proportional to the size of the contracting effort and the amount of Service participation needed to provide a responsive depot system. This alternative would put the Services at a distinct disadvantage if their control of depot maintenance were completely eliminated because contract renegotiations would be required to implement changes in maintenance priorities and standards. Since profit maximization would drive private industry to size capacity solely to meet peacetime requirements, it would be difficult and costly to maintain surge capability to meet crisis and contingency requirements. Developing a contract depot maintenance organization which accounts for all these considerations requires a dedicated analysis and could be conducted as a follow-on effort to this study.

3. Alternative Savings Summary.

a. Table IV-13 summarizes the projected relative savings ranges for each alternative. These ranges are the result of the use of both optimistic and pessimistic cost estimates in those cases where actual data was not readily available. A review of each of the variable and fixed cost factors is in Chapter III and Appendix E.

**Table IV-13 Summary of FY94-FY03 -- Projected Relative Savings**
(Constant FY93 $Millions)

| Alternatives | FY | Annual | | Cumulative | |
|---|---|---|---|---|---|
| | | Minimum | Maximum | Minimum | Maximum |
| B | 94 | (752) | **(220)** | (752) | **(220)** |
| | 98 | 371 | 881 | (254) | 2,334 |
| | 03 | 369 | 863 | 1,589 | 6,661 |
| C | 94 | **(631)** | (527) | **(631)** | (527) |
| | 98 | 310 | 725 | **(252)** | 1,533 |
| | 03 | 309 | 721 | 1,294 | 5,141 |
| D | 94 | (872) | (256) | (872) | (256) |
| | 98 | 392 | 1,071 | (467) | 2,843 |
| | 03 | 392 | 1,059 | 1,490 | 8,148 |
| E&F | 94 | (1,085) | (346) | (1,085) | (346) |
| | 98 | **476** | **1,223** | (599) | **3,160** |
| | 03 | **471** | **1,198** | **1,761** | **9,180** |

Note: Bold face print indicates best case.

b. Table IV-14 summarizes the short-term net investment costs (investment costs less investment costs avoided) compared to long-term potential savings.

**Table IV-14 Net Short-Term Investment Costs vs Long-Term Savings FY94-FY03**
(Constant FY95 $Millions)

| Alternatives | Net Short-Term Investment Costs | | Net Long-Term Savings | |
|---|---|---|---|---|
| | Minimum | Maximum | Minimum | Maximum |
| B | **387** | 1,407 | 1,589 | 6,661 |
| C | 672 | **1,177** | **1,294** | **5,141** |
| D | 430 | 1,638 | 1,490 | 8,148 |
| E & F | 618 | 2,061 | 1,761 | 9,180 |

Note: Bold face print indicates best case.

c. Table IV-15 summarizes Service depot facility utilization rates derived from the various alternatives.

**Table IV-15 Summary Utilization Rates**
(Percent Utilization of Available Capacity)

| | Alternatives | | | | |
|---|---|---|---|---|---|
| | A | B | C | D | E&F |
| ARMY | 62 | 70 | 74 | 90 | 92 |
| NAVAIR | 56 | 81 | 76 | 82 | N/A |
| NAVSEA | 71[a] | 92[a] | 100[b] | 100[b] | 100[b] |
| USAF | 64 | 76 | 76 | 80 | 94 |
| USMC | 100 | 100 | 88 | 53 | N/A |
| NAVORD | 81 | 100 | 100 | 100 | 100 |
| Overall | 64 | 82 | 88 | 87 | 95 |

Notes: Bold face print indicates best case
a. Based on drydock utilization
b. Based on FY87 direct labor hours

d. The relative range of savings possible for each alternative will be discussed and compared in the following subparagraphs in the context of the overall management concept of each alternative: using Service Management, Alternatives A and B; Executive Service Management, Alternatives C, D, and E; DOD Consolidation Management, Alternatives F and G.

(1) Using Service Management Alternatives. The essential difference between Alternatives A and B is the source and timing of the savings. Alternative A assumes a total savings of 6.4 billion dollars from FY91 through FY97. All of these savings have already been deducted from the Services' budgets as part of DMRD 908. Alternative A assumes that the individual Services meet their yearly savings goals through FY97 and that no other consolidation and savings initiatives are implemented. Alternative A obtains most of its savings from the 45-60 percent of the annual depot maintenance costs that are direct expenditures. There is real doubt as to whether or not these savings can be met without serious readiness impact on the Services. Alternative B obtains most of its savings from workload consolidations and facility closures that affect the 40-55 percent of the depot maintenance budget that pays for indirect expenses. Alternative B savings that result from facility closures are long-term in comparison to Alternative A and require early added investments to make the long term savings possible. The one common ingredient in both alternatives is that both generate savings mostly from within Service boundaries. While savings tend to come from different sources, there is overlap; therefore, the savings from Alternatives A and B are not additive in any given year or in total.

(2) Executive Service Management Alternatives. Alternatives C, D, and E provide for varying degrees of Executive Service consolidations, with Alternative E consolidating both weapon system platforms and components. Alternative E provides significantly greater relative savings potential than do C or D. This is due to the fact that most Services' depots are responsible for the full spectrum of military hardware. Alternatives C and D consolidate only a portion of each depot's work and produce fewer consolidations, facility closures, and savings. Alternative E produces significantly greater savings than Alternative B. Because Alternative E considers consolidations across Service boundaries, it provides greater excess capacity reductions and eliminates unnecessary interservice duplication. Alternative E also generates savings from improvements to the repair process through the use of existing Technology Repair Centers and "Centers of Excellence".

(3) DOD Consolidation Management Alternatives. Alternative F examined maximum consolidation of depot maintenance activities under a Defense Depot Maintenance Agency or a Joint Depot Maintenance Command. The relative savings possible from these options are believed to be equal to or greater than that shown for Alternative E.

4. Executive Summaries of Service Views. Each Service was asked to provide their views of the seven alternatives and an executive summary of those views. Their executive summaries are provided in the following subparagraphs. Service views of the alternatives are included as Appendixes H through L.

a. **Army Executive Summary of Alternatives.**

The Army supports Alternative E for the following reasons. First, this alternative is responsive to readiness, sustainment, and reconstitution of our combat forces, while reducing capacity and duplication. Second, it is a logical management strategy, supports systems approach and maximizes cost savings. Third, this alternative can be quickly implemented and included in the BRAC 93 process. Finally, this alternative keeps the Services decisively engaged in the total logistics support of combat units during conflict. This alternative counters the DOD Consolidation initiative, which casts a purely business approach on depot support, and adds unneeded layers of bureaucracy into the depot maintenance structure.

Alternative E meets the Services requirement to train, organize, equip, and sustain our forces in response to any contingency operation. Peacetime readiness, repair/preparation of equipment to support deploying forces, sustainment to include providing personnel/equipment for a forward depot in contingency areas and reconstitution of deploying forces would all be accomplished under this alternative.

This approach to depot maintenance management is clearly the best for both weapon and non-weapon systems. Services will achieve maximum efficiencies and effectiveness from the "Centers of Excellence" concept, which will decrease the repair cost for end items and DLRs and facilitate closing depots to reduce excess capacity. It supports other Services on a system basis which facilitates support of PEOs/PMs and Service maintenance managers in acquisition, modification, field support, etc. This alternative also avoids system and depot management problems of splitting management of end items and depot level reparables (DLRs). Workloading, workload priorities, facilities maintenance/ modernization, funding, and coordination with other Services are all realistic and attainable under Alternative E. This is the only alternative which clearly presents "one face to the customer".

To achieve immediate efficiencies and cost savings, implementation of this depot strategy must be included in the BRAC 93 process even if it requires some delay, e.g. 30-60 days to accommodate any required closures/realignment. Not to pursue this course of action will defer accomplishing any significant closures/realignment initiatives until the BRAC 95 window.

In summary, it is critical that the Services be allowed to aggressively execute their Title 10 responsibilities in support of our national military strategy. An external agency restricts the Services ability execute centralized command and control over organic depots.

Our roles and responsibilities can not be separated. This alternative has the advantage of providing integrated management of weapons systems essential to Army readiness.

Detailed Army positions on all the alternatives can be found at Appendix H.

b. **Navy Executive Summary of Alternatives.**

The restructured Naval forces of the future will be optimized for joint operations to operate within the littoral regions of the world in support of national policy. This strategy requires that the Navy maintain close control over the organic infrastructure which allows "cradle-to-grave" program management coupled with fully integrated life cycle support across all levels of maintenance.

Our Navy depots contain vital engineering and emergency support capabilities which must be available to meet fleet safety and readiness objectives. These capabilities are very tightly integrated both among the depots and with corresponding maintenance activities and life cycle management functions. They exist to provide urgent responses to unanticipated requirements, and represent the core industrial capabilities without which the Navy will not retain control of its own readiness.

The progress we have made during the past two years in reducing depot costs through the Defense Depot Maintenance Council and the Defense Management Review process provides a sound framework for the difficult challenges that lie ahead. We have achieved near term savings from downsizing of both direct and indirect workforces, closure of facilities, cancellation of facility projects, and internal Service consolidation of workload.

Long range actions include increased interservicing, additional competition initiatives and improved capacity utilization. Savings projected through FY97 is $3.55 billion.

These results are based on the realities of the present environment and are wholly responsive to the future. Our present course is defined. We have actual results which verify the validity of the direction we have chosen. Alternative A provides for the mission imperatives and the greatest short and long term savings potential. It also recognizes the effect of reduced force levels and emphasizes the responsibility of each Service to use the Base Realignment and Closure process to correct any significant imbalance between projected depot-level maintenance requirements and capacity. We must stay the course.

Detailed Navy positions on all the alternatives can be found at Appendix I.

c. **Marine Corps Executive Summary of Alternatives.**

The Marine Corps multi-commodity maintenance centers are small, effective organizations geographically positioned to reduce costs and optimize responsive support to the operational commanders. These activities, primarily in direct support of Fleet Marine

Force (FMF) and Maritime Prepositioning Force readiness commitments, devote more than 80 percent of their direct labor hours to the maintenance/repair workload that is an extension of FMF capabilities and is less than total rebuild. Marine Corps maintenance centers conduct only one percent of the total annual DOD depot maintenance workload. Of this effort, 54 percent is in support of unique Marine Corps weapon systems. The remaining workload consists of a variety of small quantity, low dollar value items which if distributed to other DOD maintenance facilities would neither increase their utilization percentage nor decrease their overhead costs.

The Marine Corps had proven that more savings and greater efficiencies can be achieved through competition and increased interservicing than originally estimated in the DDMC Corporate Business Plan. In fact, as the current version of the DDMC Corporate Business Plan indicates, the Marine Corps will continue to achieve further efficiencies/savings while downsizing. Therefore, it is imperative that the Marine Corps retain the capability to satisfy the Marine Corps' statutory "force-in-readiness" mission while maintaining the surge capability required by the National Military Strategy and the Defense Planning Guidance.

Alternative A is preferred by the Marine Corps as it will allow us to exceed the current DMRD 908 savings while retaining an adequate capability to satisfy the National Military Strategy and allow the Commandant to effectively exercise his responsibilities under Title 10. Any alternative interfering with or decreasing the Marine Corps' capability to maintain and repair equipment in support of amphibious missions in unacceptable.

Detailed Marine Corps positions on all the alternatives can be found at Appendix J.

**d. Air Force Executive Summary of Alternatives.**

The Air Force recognized that changes to the DOD's depot system must occur. Thus, the Air Force supports Alternative E for three reasons. First, the Services retain their core logistics roles supporting readiness, sustainability, and reconstitution. Second, the greatest near and long term savings are achieved without imposing the "DOD Consolidation" alternative's overhead penalty. Last, this alternative can be rapidly implemented.

Alternative E appropriately retains the core Service roles of readiness, sustainability, and reconstitution within the Services. It promotes a single, uniformed focal point for the customer. It unites maintenance responsibilities for weapon systems/platforms/non-weapon system equipment and exchangeables under a unified management structure. Since representatives from the dominant supported Service are assigned to selected command and staff positions throughout the Executive/Single Service structure, Service parochialism is reduced.

Alternative E meets the business efficiency test of current an likely DMRDs and maximizes DOD's flexibility in economically and efficiently using its resources.

Production throughput is increased by further consolidating workloads under Centers of Excellence and Technology Repair Centers. Centralizing maintenance management promotes seamless technology insertion and integration among the Services. Depot maintenance production metrics are standardized. Unit costs and corresponding sales prices are reduced since expenses are distributed over a larger volume workload. Critical skills are retained and available to support surge requirements. Consolidation and downsizing reduce overhead and direct labor costs, the overhead to direct labor ration, duplicative facility and equipment investments, and facility and equipment maintenance expenses. These efficiencies can be achieved quickly with minimal expense since existing Service staffs need only be realigned to implement Alternative E--vice having to create a new organizational management structure to implement the "DOD Consolidation" alternative.

In closing, the Services have an inherent role to organize, train, and equip ready, sustainable forces capable of responding to any situation affecting the security of the United States. These inseparable core roles and responsibilities must be carried out in a progressive and aggressive manner, combining military effectiveness enhancements with business efficiencies. Alternative E clearly meets these requirements while producing the greatest short and long term opportunities and benefits.

Detailed Air Force positions on all the alternatives can be found at Appendix K.

e. **Coast Guard Executive Summary of Alternatives.**

The Coast Guard's mission mix (Search and Rescue, Maritime Law Enforcement, Marine Environmental Protection) and the current national emphasis on Coast Guard missions have resulted in a growth period for the Service. This growth and the resultant workload that is well beyond organic capacity has yielded full utilization of Coast Guard depots. Coast Guard platforms do not have the same sophistication of technology as DOD platforms, nor do they require the expensive infrastructure necessary for nuclear ships, submarines and high performance tactical aircraft. Coast Guard depots have focused on proper execution of basic depot maintenance for platforms. Component repair, with its high capital requirements, is primarily executed under contract and interservice support agreement. More than any other Service, the Coast Guard relies on DOD interservice support. The Coast Guard depot maintenance system is optimized to integrate organic, commercial and DOD depot maintenance. The resulting Coast Guard depots, with their austere plants and basic maintenance focus, are very cost competitive. The Coast Guard believes that the optimum alternative to even further consolidate Coast Guard and DOD depot maintenance lies in competing the consolidated DOD depots against commercial facilities for the repair of aviation components and large cutter shipyard availabilities. Coast Guard participation as an "Executive Agent Service" for small vessels should be limited to the geographic areas and roles discussed in Appendix L.

Detailed Coast Guard positions on all the alternatives can be found at Appendix L.

# CHAPTER V - CONCLUSIONS

1. General Conclusions. The analysis of previous studies and reports, visits to Services' depots and analyses of information provided by the Services constitute the basis for several general conclusions regarding DOD depot maintenance. They are as follows:

a. The Services are doing many things right. The separate depot maintenance systems have been responsive to changing needs and priorities largely as a result of clear, direct lines of authority and close ties to the operational units that they support. The Services have achieved near-term savings through methods which improve production processes and reduce unit costs. With a few exceptions, depots have not been closed. While the current way of doing business is not the most efficient or economical, it has provided high-quality maintenance where and when needed, in both peace and war.

b. The current depot management structure in DOD and the Services has not resulted in substantial competition, interservicing, or reduction of capacity or duplication of effort. Significant excess capacity and unneeded duplication continues to exist throughout DOD. Services are separately repairing similar and in some cases the same items. Services continue to invest in similar new technology applications and develop separate repair capabilities for new and similar items. There is nothing to indicate that continuation of the current way of doing business will result in any significant departure from past performance.

c. Currently, depot maintenance costs are not projected to decrease in direct proportion to decreasing force size (see Figure I-5). While some of this may be attributable to changes in resource allocation and accounting procedures, the cost of depot maintenance remains relatively stable largely because of the overhead associated with maintaining depot capacity greater than that needed to support a smaller force.

d. About 60 percent of total depot maintenance costs are attributed to direct labor and material. The opportunity for further reductions in this area are small because budgets have already been adjusted to accommodate DMRD 908. The portion of the DOD depot maintenance budget that is most sensitive to management action, indirect costs, amounts to about 40 percent or 5 billion dollars.

e. It is easier to measure excess capacity and to identify duplication than it is to measure military responsiveness. For the most part, information gathered regarding military responsiveness was anecdotal. There is no doubt, however, that clear lines of authority and close association between operations and maintenance activities enhance military responsiveness.

f. Both competition and interservicing offer substantial potential for greater efficiencies and cost reductions. The greatest opportunity for consolidation and elimination of duplication, however, results from closing depots. Closures also result in the greatest cost

savings. In the short term, closures cost more, but save more in the long term.

g. Excess capacity, when measured in terms of FY95 workload against FY97 capacity projected in the DDMC FY92-FY97 Corporate Business Plan (CBP), ranges from 10 percent to approximately 28 percent depending upon Service. Excess capacity, when measured in terms of FY87 capacity against FY95 workload, ranges as high as 44 percent. FY87 was a peak workload year with larger overall employment and more accurately reflects what work a depot facility can absorb during workload consolidation. Excess capacity is significantly greater if measured against a two-shift scheme of operations as opposed to the current one-shift approach. Most likely, true excess capacity exceeds workload requirements by 25 to 50 percent. It is acknowledged, that there is no direct relationship between capacity and the number of shifts, i.e., two shifts do not provide double the capacity of a one-shift operation.

h. Significantly greater savings are possible when consolidations occur across Service boundaries. Cross Service consolidation also results in greater reductions in excess capacity and duplication. Table V-1 summarizes the relative advantages of consolidation across Service boundaries. Alternative E and the two variations of Alternative F stand out as most advantageous.

**Table V-1 Summary Comparison of Alternatives**

| | Alternatives | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F(DMA) | F(JDMC) |
| Cost Effectiveness | o | + | + | ++ | +++ | +++ | +++ |
| Capacity Reduction | o | ++ | ++ | +++ | +++ | +++ | +++ |
| Unnecessary Duplication | o | + | ++ | ++ | +++ | +++ | +++ |
| Military Responsiveness | o | o | - | - | - | - | o |

Note: - Indicates not as good as current plan (Alt A)

o Indicates about the same as current plan

+ Indicates better than current plan

i. The Base Realignment and Closure (BRAC) process is the most effective and, most likely, the only way to effect the closure of depots. The Services are individually responsible to the Secretary of Defense for making BRAC recommendations. Early coordination and integration of Service proposals is essential to the identification of the best collective set of DOD facilities for retention.

j. Regardless of the action taken to reduce costs and improve efficiency in Service depot maintenance, be it process improvement, competition, interservicing, or capacity reduction, truly significant progress cannot be expected without some superior commander with the knowledge and authority to make decisions and follow through on action across Service boundaries. No matter what efforts are made, and the Services have worked the subject hard, without top-down direction they will not even be aware of the opportunities available to decrease capacity which will free up funds for higher priority needs or reduce the

overall cost of defense. There have been a number of attempts to solve the problem of a lack of top level management oversight. The most recent attempt has been the Defense Depot Maintenance Council. All attempts have been unsuccessful because they lacked a top level command authority to reduce excess capacity and duplication across Service lines.

k. Because of the turbulence involved with any reorganization and the negative effects of turbulence, any recommendation for change must result in a better way of doing business. This includes, as a minimum, the following.

(1) Business Considerations:

(a) Must result in significant net savings.

(b) Near-term costs must be affordable.

(c) Savings must be verifiable according to accepted audit practices.

(d) Future investments must consider the total maintenance and technology needs.

(2) Military Considerations:

(a) Must preserve or enhance the Services' ability to rapidly satisfy changes in maintenance priorities for primary weapon systems and their components.

(b) Must preserve overall materiel readiness rather than cause any increase in the downtime of equipment.

(c) Must preserve or improve the overall maintenance process rather than degrade it.

(d) Must enhance rather than degrade peacetime, contingency response, deployment, and reconstitution capabilities.

(e) Must preserve or enhance the ability of operational commanders to participate in maintenance decisions that influence their warfighting capabilities.

2. Choosing Alternatives. Taking into consideration the precautions outlined at the end of this chapter, relative savings potential identified through analysis, and the general conclusions enumerated above, the following specific conclusions have been reached regarding the choice of alternatives.

a. Alternatives A and B provide neither the cost savings desired in a shrinking military economy or the framework necessary to respond to the changes expected in the future regarding the shape and size of the Services. Accordingly, a substantial departure from the current way of doing business is considered necessary.

b. Alternatives C, D, and E all provide some degree of consolidation under an Executive Service. Alternatives C and D do not yield the greater potential cost savings available under other alternatives nor do they provide the necessary framework to manage the changes anticipated in requirements. Therefore, Alternatives C and D are excluded from further consideration.

c. No final conclusions are reached regarding Alternative G, the contracting out option, except to say a shift toward more or full commercial maintenance of Service equipment is possible under any of the other alternatives and does merit further study of individual weapons systems and individual facilities sometime in the future.

d. Alternative E, which provides for consolidation across Service boundaries under designated Executive Services, and Alternative F which provides the greatest degree of consolidation under either a Defense Maintenance Agency (DMA) or a Joint Depot Maintenance Command (JDMC), offer the greatest potential for cost reductions and more flexibility to handle future changes. It appears that the Secretary of Defense has the authority under Title 10, U.S. Code to effect any of these Alternatives. DOD directives on Service functions may need to be revised. The attributes associated with Alternatives E, F(DMA), and F(JDMC) are outlined below. An "X" under the alternatives column indicates possession of the attributes described.

**Table V-2 Attributes of Alternatives**

| ATTRIBUTES | ALTERNATIVES | | |
|---|---|---|---|
| | E | F(DMA) | F(JDMC) |
| Significant up-front costs to downsize | X | X | X |
| Accelerates down-sizing | X | X | X |
| Reduces overhead | X | X | X |
| Savings from divestitures | X | X | X |
| Synergistic savings from similar technology | X | X | X |
| Accelerates standard business practices | X | X | X |
| Reduces headquarters staff | X | X | |
| Single manager in charge | | X | X |
| Manageable span of control | X | | X |
| Full Service participation | | | X |
| Direct tie to Services/warfighters | | | X |
| Single source/point of contact for depot level maintenance/readiness | | X | X |
| Minimizes disruption and turbulence | | | X |
| Preserves Service accountability | | | X |
| Facilitates decisions on priority issues | | | X |
| Maximizes opportunity to balance investment in forces versus logistics | | | X |

3. Cautionary Notes. A number of precautions were taken into consideration in coming to the conclusions enumerated in this chapter. Readers are urged to consider these same precautions when coming to their own conclusions regarding the information in the study.

a. It is difficult to accurately compare alternative ways of doing business because of the lack of universally applied cost accounting, performance measurement, and capacity measurement procedures. Therefore, the data analyzed varies in accuracy.

b. Depot workload beyond FY95 is largely estimated by extrapolating projected work effort associated with the Base Force structure. Thus, if force structure changes substantially, depot workload will also change. Potential cost savings will decrease or increase depending on the scope and specific nature of the force structure change. Excess capacity and utilization estimates would similarly change.

c. Various combinations of depot workload consolidations were analyzed under Alternatives B through F. Consolidation candidates were selected on the basis of historical data, Services' updates of capabilities and the Services' projected workload. Consolidation candidates were not visited or audited to verify the data analyzed. Thus, the analysis is considered very useful to draw initial conclusions but not sufficiently accurate to make depot closure or resource allocation decisions.

d. It is important to note that potential savings identified apply to all of DOD. No attempt has been made to allocate these potential savings to individual Services. The calculated savings ranges are useful only for comparison of Alternatives B through F and are not "budget quality" figures, i.e., they are most useful for the relative ranking of Alternatives B through F in terms of cost savings.

e. Finally, various consolidation combinations were analyzed to determine what effect such actions would have on capacity, duplication, and costs. While depots consolidated in various alternatives could, in fact, become candidates for closure, no final conclusions on specific depot closures are drawn. Selection of candidates for closure are more appropriately identified in the BRAC process.

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# CHAPTER VI - RECOMMENDATIONS

1. Maintenance Depot Closures. It is recommended that the Services coordinate and integrate that portion of their submission to the Federal Base Closure and Realignment Commission that pertains to depot maintenance facilities. A coordinated effort that truly integrates requirements and accurately reflects unneeded facilities is essential to solving the problem of excess depot capacity and unnecessary duplication of capabilities. It is further recommended that the Air Force take the lead on aviation facilities; the Navy take the lead on ships; and the Army take the lead for ground systems. All Services should be full partners in this effort.

2. Organization for the Future. It is recommended that a Joint Depot Maintenance Command be established. A Joint Command has all of the advantages of an Executive Service or a Depot Maintenance Agency with few of the disadvantages. The Army and the Marine Corps are organized in a manner which would require minimal effort to provide Service components. The Navy and Air Force should be able to establish component commands with minimum difficulty and without any growth in overhead. It is further recommended that the Joint Chiefs of Staff take the lead in developing the organizational structure of the Joint Command in full coordination with the Office of the Secretary of Defense. It is envisioned that the Command would be organized along the following lines:

a. Mission. The mission of the Commander in Chief of the United States Depot Maintenance Command (CINCDEP), shall be to provide depot level maintenance for the Department of Defense, both in time of peace and time of war. The CINCDEP will:

(1) Be the DOD Single Manager for depot maintenance, other than theater-assigned depot assets.

(2) Be responsible for consolidations, competition initiatives, workload assignments, and standardization of systems and work processes, as appropriate, to maximize efficiency of the depot system.

(3) Recommend depots for closure through the BRAC process when required (post BRAC-93).

(4) Coordinate with the Services to assure appropriate modernization of depots.

(5) Control the depot maintenance accounts of the Defense Business Operating Fund (DBOF).

b. Forces. The Secretaries of the Military Departments shall assign depot assets, in time of peace and time of war, to the Commander in Chief, Depot Maintenance Command.

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| Title/Subject | Originator | Date |
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# GLOSSARY
# ACRONYMS/ABBREVIATIONS

AFMC - Air Force Materiel command

AGMC - Aerospace Guidance and Metrology Center

ALC - Air Logistics Center

AMARC - Aircraft Maintenance and Regeneration Center

AMC - Army Materiel Command

ANAD - Anniston Army Depot

BRAC - Base Realignment and Closure

CBP - Corporate Business Plan

CCAD - Corpus Christi Army Depot

CHNSY - Charleston Naval Shipyard

CJCS - Chairman of the Joint Chiefs of Staff

CNO - Chief of Naval Operations

COE - Center of Excellence

CONUS - Continental United States

DBOF - Defense Base Operating Fund

DCM - Depot Cost Model

DDMC - Defense Depot Maintenance Council

DESCOM - Depot System Command

DepSecDef - Deputy Secretary of Defense

DLA - Defense Logistics Agency

DLH - Direct Loabor Hours

DLR - Depot Level Reparable

DM - Depot Maintenance

DMA - Defense Maintenance Agency

DMDC - Defense Manpower Data Center

DMI - Depot Maintenance Interservicing

DMRD - Defense Management Report Decision

DOD - Department of Defense

DRMO - Defense Reutilization and Marketing Offices

G&A - General and Adminstrative

GAO - General Accounting Office

GOCO - Government Owned, Contractor Operated

GOGO - Government Owned, Government Operated

IPE - Industrial Plant Equipment

IWSM - Integrated Weapon Systems Management

JCS - Joint Chiefs of Staff

JDMAG - Joint Depot Maintenance Analysis Group

JDMC - Joint Depot Maintenance Command

JLC - Joint Logistics Commanders

KDLH - Thousand Direct Labor Hours

LBNSY - Long Beach Naval Shipyard

LEAD - Letterkenny Army Depot

MCLBA - Marine Corps Logistics Base, Albany, GA

MCLBB - Marine Corps Logistics Base, Barstow, CA

MINSY - Mare Island Naval Shipyard

NADEP - Naval Aviation Depot

NADEP-ALMD - Naval Aviation Depot, Alameda, CA

NADEP-CHYPT - Naval Aviation Depot, Cherry Point , NC

NADEP-JAX - Naval Aviation Depot, Jacksonville, FL

NADEP-NORIS - Naval Aviation Depot, North Island, CA

NASEP-NORVA - Naval Aviation Depot, Norfolk, VA

NADEP-PNCLA - Naval Aviation Depot, Pensacola, FL

NAVAIR - Naval Air Systems Command

NAVORD - Naval Ordnance

NAVSEA - Naval Sea Systems Command

NCA - National Command Authority

NESEC - Naval Electronic Systems Engineering Center

NESECP - Naval Electronics Systems Engineering Center, Protsmouth, VA

NESECS - Naval Electronics Systems Engineering Center, San Diego, CA

NNSY - Norfolk Naval Shipyard

NSWC - Naval Surface Weapons Center

NSY - Naval Shipyard

NUWC - Naval Undersea Warfare Center

O&M - Operation and Maintenance

OC-ALC - Oklahoma City Air Logistics Center

OO-ALC - Ogden Air Logistics Center

OSD - Office of the Secretary of Defense

PHNSY - Pearl Harbor Naval Shipyard

POS - Program Objective Summary

PSNSY - Puget Sound Naval Shipyard

PTNSY - Portsmouth Naval Shipyard

SA-ALC - San Antonio Air Logistics Center]

SM-ALC - Ascramento Air Logistics Center

SOF - Special Operations Forces

SPAWAR - Space and Naval Warfare Systems Command

TEAD - Tooele Army Depot

TOAD - Tobyhanna Army Depot

TRC - Technology Repair Center

WBS - Work Breakdown Structure

WR-ALC - Warner Robins Air Logistics Center

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# APPENDIX A

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| | |
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| Group Member: | Bryce Poe II<br>General, USAF (Ret) |
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| Air Force Representative: | Colonel Mark B. Roddy, USAF<br>HQ USAF/LGMM |
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# APPENDIX B

## TERMS OF REFERENCE

## FOR

## DEPOT MAINTENANCE CONSOLIDATION STUDY

I. BACKGROUND.

a. The demise of the Soviet Union and the Warsaw Pact promulgated a major shift in the focus of our national military strategy from global conflict to regional contingencies. Consistent with this shift in strategy, the Base Force concept was adopted which provides for a reduced force structure that is capable of meeting challenges to our regional interests. This downsizing, however, has not been limited exclusively to combatants. In recent years the Services have taken unilateral as well as collaborative measures to improve combat support efficiency to include their respective depot systems. Most recent measures were initiated in response to Defense Management Report Decisions (DMRD) 908 and 908C, both titled *Consolidating Depot Maintenance*, dated 17 November 1990, and 12 January 1991, respectively. While successful in achieving their objectives, they have not kept pace with the changes that have taken place in the world or the impact of these changes on our national military strategy. Accordingly, the Department of Defense (DOD) and the Services must consider further consolidation of our military depot maintenance systems. Each Service maintains its own depot maintenance system that includes management structures, overhead, and facilities to plan, program, and perform assigned missions. As force structure and equipment densities shrink, so must the depot level maintenance infrastructure required to maintain them.

b. On 17 August 1992, the Director, Joint Staff, issued a tasker, with guidance, for the development of an issue paper on Depot Maintenance Consolidation. Suspense for completion of the issue paper was 4 September 1992.

c. Additionally, the US Coast Guard, which is a component of the Department of Transportation and maintains a depot maintenance complex similar to the Services, albeit smaller, was invited to participate in this study and share in its benefits.

II. PURPOSE. These terms of reference establish the mission, organization, operation and duration of the Depot Maintenance Consolidation Study.

III. MISSION. To review the existing depot maintenance structure in each of the DOD Services and the Coast Guard; identify and analyze alternatives for reducing costs, duplication, overlap and overall depot maintenance capacity; recommend cost effective alternative(s) to existing maintenance structures that will continue to support peacetime readiness, sustainment

of force during crisis response and contingency operations, and immediately return equipment to established readiness standards upon redeployment.

## IV. ORGANIZATION.

a. The Directorate for Logistics (J-4), will serve as the Joint Staff lead agency for the Depot Maintenance Consolidation Study. J-4 representatives will be responsible for administrative support functions of the study group including the consolidation and ordering of input when required.

b. The Depot Maintenance Consolidation Study will be composed of an Executive Working Group, a staff group, staff group facilitators and a support staff.

c. The Executive Working Group will be formed from retired general/flag officers and one private sector industry executive of commensurate stature. The Executive Working Group will include retired general/flag officers from each of the following Services: Army, Navy, Air Force, and Marine Corps. One member will be designed as the Director, Executive Working Group.

d. The staff group will be formed and consist of the representatives from each of the Services and the Coast Guard. The staff group will be assigned representatives from J-4 who will serve as the group facilitators. There will be a separate facilitator for each of the alternatives under consideration. The facilitators will meet with the staff group in turn to lead analysis of their respective alternative. A J-4 Division Chief will serve as the coordinator for the staff group, however, each Service representative is responsible for keeping their respective Service Chiefs appraised of the findings and conclusions of the Executive Working Group.

e. Each Service representative is responsible for informing the study executives of past or current actions or thoughts that they deem important to the study effort. In addition, Service representatives will advise J-4 of their input to facilitate record keeping.

## V. OPERATIONS.

a. Staff group facilitators will meet periodically with the J-4 Division Chief Coordinator on an as required basis for workloading, coordinating issues, etc., with respect to tasking issued by the study executives or collectively determined essential by the Service leaders.

b. The staff group will meet as required to formulate, analyze, and discuss separate alternatives.

c. The staff group facilitators will then brief the results of staff group findings to the J-4 Division Chief and other staff group facilitators. The initial product of the staff group will

be an issue paper with a set of alternatives for changing the existing depot maintenance structure. The paper will be provided to the Executive Working Group for evaluation. This does not preclude Service leaders/facilitators from direct communications with the study executives.

d. The Executive Working Group will receive briefings from the staff group representatives, review and analyze alternatives, and present their assessment and recommendations for cost effective depot maintenance consolidation to the Joint Chiefs of Staff. The Executive Working Group is not limited to the specific set of alternatives developed by the staff group.

VI. DURATION. The Depot Maintenance Consolidation Study Group will brief the Joint Chiefs of Staff by 9 November 1992. These terms of reference will remain in effect for a period of 1 year to allow for additional taskings as required unless specific action is taken sooner to negate them.

Enclosure

# DEFINITION

**Depot Maintenance.**

The maintenance performed on materiel requiring major overhaul or a complete rebuild of parts, assemblies, subassemblies, and end items, including manufacturing, modification, modernization, repair, testing, and reclamation as required. Depot maintenance provides stocks of serviceable equipment by using a combination of special skills, equipment, and facilities for repairs that are not available in lower level maintenance activities.

# APPENDIX C

## CONCEPT PAPER

### I. DESCRIPTION OF ISSUE

With the demise of the Soviet Union and the Warsaw Pact, our military strategy has changed from global to regional scenarios and has moved away from prolonged conflict to shorter, decisive conflicts. In this environment, the focus of maintenance depots must be to support, in a cost effective manner: peacetime readiness, buildup of forces in response to contingencies, sustainment of forces during conflict, and the immediate return of equipment to established readiness standards. In a regional contingency environment, decreases in stockage levels require a highly responsive depot maintenance capability for both major end item equipment and components.

The Base Force goal for FY95 represents a DOD decrease of up to 25 percent of the FY91 force levels in both the active duty and reserve components. As weapon system inventories are decreased, so too must the depot level maintenance infrastructure needed to support them. Each Service maintains a separate depot maintenance capability as well as a separate management structure to plan, program and perform separate Service depot work. In many instances, more than one Service is performing depot maintenance on the same or similar equipment. As force structure and total depot maintenance requirements decrease, overhead costs become a larger percentage of the cost unless action is taken to restructure depot maintenance.

There are a number of alternatives for restructuring the Services' current depot maintenance organizations and workloading methodology. These alternatives provide a spectrum of possible solutions to align the depot structure with future Service requirements.

### II. ALTERNATIVES

<u>Alternative A. Individual Service Management</u>

Each Service retains its own separate depot maintenance operations in accordance with DMRD 908 directions to increase interservicing, streamline depot operation, reduce management staffs at all levels, increase competition, team with private industry for remanufacturing/manufacturing, etc. Additional depot closures and realignments will be accomplished through the Base Realignment and Closure (BRAC) process. The Defense Depot Maintenance Council (DDMC) will provide limited oversight.

**Alternative B Individual Service Management (Consolidation into "Centers of Excellence")**

Each Service retains its own separate depot maintenance operations. Under DMRD 908 streamlining guidance, weapon system platforms, DLRs, components[1] and non-weapon system equipment[2] will be consolidated into "Centers of Excellence" within the using Service to the maximum extent possible. Depot maintenance could be performed by a contractor or in another Services' facilities.

**Alternative C Consolidate Weapon System Platforms into Joint Service "Centers of Excellence"**

Depot maintenance management of common or similar weapon system platforms, (e.g., ships, fixed wing aircraft, rotary wing aircraft, large missiles, etc.) would be accomplished by single Services in "Centers of Excellence." Maintenance will be performed in the single Service's facilities, another Service's facilities or contractor facilities. Depot maintenance responsibility for DLRs, components[1] and non-weapon system equipment[2] will remain in using Service's "Centers of Excellence."

**Alternative D Individual Service Management of Weapon System Platforms in "Centers of Excellence" with DLRs, Components[1] and Non-Weapon System Equipment[2] Consolidated in Single Service "Centers of Excellence"**

Each Service retains its own separate depot maintenance operations for weapon platforms under the "Centers of Excellence" concept. Similar DLRs, components[1] and non-weapon system equipment[2] will be consolidated to the maximum extent possible in single Service "Centers of Excellence."

**Alternative E Consolidation of Similar/Common Platforms, DLRs, Components[1] and Non-Weapon System Equipment[2] Under Single Executive Service**

A single Executive Service will be responsible for the maintenance of similar/common platforms, and their DLRs, components[1] and non-weapon system equipment[2] to the maximum extent possible under the "Centers of Excellence" concept. The "Centers of Excellence" may be located in the Executive Service's facilities, another Service's facilities or contractor facilities. Total weapon system management will be the responsibility of the using Service.

**Alternative F DOD Consolidation**

All depot maintenance functions will be consolidated under a single organization external to the Services. Individual weapon platforms, DLRs, components[1] and non-weapon system equipment[2] will be maintained in government owned depots or contracted out. Government owned depots could be government operated (GOGO) or contractor operated (GOCO).

Alternative G Commercialize Maintenance

Contract out all depot maintenance requirements. Contract management would be maintained at either the Service level or by a single organization external to the Services. The ultimate goal would be to include contract maintenance as part of the weapon system acquisition costs of new systems throughout their life cycle.

Footnotes:
1. Components: hydraulic actuators, gas turbine engines, aircraft landing gear, inertial navigation systems, etc.

2. Non-Weapon System Equipment: automatic test equipment, ground support equipment, general purpose vehicles, etc.

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# APPENDIX D

## STUDY PLAN

I. Approve Terms of Reference.

II. Receive baseline briefings on Service depot maintenance programs, and historical items.

III. Review concept paper to establish a common understanding of problems and alternatives; agree on baseline alternatives to be analyzed.

IV. Define current business environment; how we perform depot maintenance now? How the world situation, collapse of communism, Base Force and shift to a regional focus have changed the volume and timing of what depots must produce. Collect data on:

- Financial Aspect (Appendix F)

- Facility Characteristics (Appendix F)

- Depot Commodity Workload (Appendix F)

V. Evaluate/assess current business environment; how can we better perform depot maintenance?

- Identify the following:

  -- Excess capacity

  -- Duplicative capability

  -- Overhead cost

VI. Assess each alternative in concept paper IAW Director for Strategic Plans and Policy, J-5, guidelines (Appendix C). Develop estimates of cost savings for each alternative (Appendix E). Criteria for selection of alternatives should include both military and business considerations:

- Military considerations. Any recommended change must preserve or enhance military capability and readiness by:

  -- Preserving or enhancing Service Chiefs' ability to rapidly satisfy changes in priorities of primary weapon system depot level maintenance.

-- Decreasing rather than increasing downtime of equipment.

-- Improving or sustaining (rather than degrading) the quality of the repair process.

-- Enhancing rather than degrading peacetime, contingency response, regional war, mobilization, and reconstitution capabilities.

- Business considerations. Any recommended change must result in significant net savings and:

-- Justify turbulence associated with change (judgment call).

-- Ensure that near term investment costs are not prohibitive.

VII. Reach conclusions.

VIII. Develop recommendations.

# APPENDIX E

## Workload Consolidation Calculation

1. Introduction. The procedures used to determine potential cost savings resulting from migrating workloads among the depots were taken from established references and previously accepted methodologies. Recurring and non-recurring costs associated with a movement of work were identified. The transition of work from one depot to another was spread over a 2 year period. The following primary references were used during this effort:

   a. DOD Depot Maintenance and Maintenance Support Cost Accounting Handbook, DOD 7220.29-H, Table 18 computer runs.

   b. DDMC Corporate Business Plan FY 1992-1997, October 1992 (FY 1993 data).

   c. JDMAG Depot Profiles 1991, May 1991, Depot Profile Size Attribute.

   d. National Defense Budget Estimates for FY 1993, OSD(C) March 1992.

   e. Service POM 94 MILCON Submissions data.

   f. DDMC Joint Service Engine Study, January 1991.

   g. Marine Corps Option Paper, 11 April 1990.

   h. DDMC DOD Tactical Missile Study, 18 January 1991.

   i. Joint Services Update of the Tactical Missile Maintenance Consolidation Savings and Cost Analysis, 1 August 1992 (rev. 26 August 1992).

   j. Air Force Logistics Command (AFLC) Air Logistics Center (ALC) Closure and Relocation Model, 2 March 1992.

   k. Service Commodity Matrix-Appendix F, Depot Maintenance Consolidation Study.

   l. Service Budget Estimate Submissions, FY 1994/1995.

   m. Analysis of Depot Maintenance Consolidation Proposals (Green Book), Naval Aviation Depot Corporate Board, 22 February 1990.

2. Analysis and Computations.

a. Each alternative sought to increase capacity utilization throughout DOD. In doing this, most alternatives contained a series of options that could be characterized as: centralizing the workload by pulling up the work from the smaller depots, decentralizing the work by pushing down the work from the larger depots, and the movement of work from mid-size depots to others.

b. The cost spreadsheets ran all options using the actual FY91 financial data from the transferring depot(s) and the gaining depot(s). FY91 actual hours attributed to the migrating work and the cost associated with that work were extracted from Reference 1a, listed on the previous page. The gaining depot is assumed to pick up the work at the gaining depot's labor rates. The total FY94 depot maintenance personnel levels from Reference 1b, were used to determine non-recurring costs. The cost calculations provide a relative cost measure of work moved from one location to another using FY91 actual accounting costs. These relative costs are not "budget quality" cost estimates.

c. The calculations accounted for non-recurring costs of severance pay, unemployment, early retirement, relocation, TDY, movement of equipment, facility/equipment shutdown, cost of disruption, recruitment of personnel, training, MILCON avoidance, productivity loss at the gaining site, and plant equipment. Recurring costs included operations overhead, and general and administrative (G&A). All costs were adjusted to FY93 constant dollars for comparison.

3. Recurring. Total direct labor costs for the migrating workload were determined by commodity direct labor hours (DLH) multiplied by the direct labor rates of the gaining depot(s). Recurring costs (labor, material, other, G&A, and operations overhead) are determined by two methodologies that provide a range of costs. The Low method assumed 35 percent of the total work cost at the losing depot(s) does not transfer (Reference 1f). The High alternative transferred 100 percent of the labor, material, and other and assumed that 30 percent of both G&A and operations overhead did not transfer (from Reference 1j). Savings were gained from workload consolidations and improvements to the repair process through the use of Technology Repair Centers (TRCs) and "Centers of Excellence" (COE).

4. Non-recurring.

a. MILCON Avoidance. MILCON avoidance includes the cost of approved and scheduled MILCON that would no longer be required as a depot closes or a workload specifically impacted by the MILCON is repostured. MILCON avoidance is determined in two ranges with one being the transfer of none of the MILCON

requirement (total cost avoidance), the other with all of the requirement (all MILCON costs transferred to the gaining depot). The study team utilized data from References 1b, 1e, 1k and 1l. No projects listed as "unfunded requirements" were used.

b. Industrial Plant Equipment (IPE) Avoidance. This area includes the cost of approved and scheduled IPE from Reference 1k, that would no longer be required as a depot closes. Costs are computed in two ranges with one being the transfer of none of the equipment (total cost avoidance), the other with all of the plant equipment requirements (all cost transferred to gaining depot). Where partial workload transfers, a proportional amount (based on relative DLHs) of future equipment purchases is costed in a like manner. Future, more detailed studies might more closely tie specific equipment purchases directly to commodities.

c. Severance Pay.

(1) The ratio of involuntary-to-voluntary separations will vary with many factors, most notably the availability of other government activities in the area. Fifteen and 55 percent (References 1f and 1g) of the total depot employment was used to estimate the low and high range of involuntary separations respectively.

(2) Severance pay costs are derived by taking the range of personnel that would be involuntarily separated multiplied by the average direct labor rate multiplied by 640 hours. (Based upon an average Federal Service time of 13.4 years, with one week's pay for up to 10 years of service and 2 weeks pay for every year after ten.)

d. Early-Out Retirement. This cost is based on data used in Reference 1j. The calculation uses 10 percent of the work force multiplied by 17,604 dollars, the annual annuity, multiplied by 5.9 years which represents the number of years the annuity is paid because of early-out retirement.

e. Unemployment Compensation. Unemployment compensation is based on a reemployment percent of 25. The computation was based on 212 dollars per week for 39 weeks multiplied by the number of unemployed as a result of workload movement. The cost is based on data used in Reference 1j.

f. Relocation Costs. Based on data used in the DDMC Joint Service Engine Study (Reference 1f), relocation costs were estimated as 31,600 dollars multiplied by 15 percent of the civilian personnel originally dedicated to that workload. Where military personnel are direct workers at the losing depot, it is assumed that they were replaced on a one-for-one basis at the gaining depot by civilian labor. Where partial depot transfer (work/commodity) occurs, special Defense Manpower Data Center (DMDC)

Table 18 (Reference 1a) reports were generated allocating appropriate cost categories and DLHs to the work/commodities selected for transfer. Direct labor personnel assigned to each commodity were assumed to equal the ratio of the commodity DLH to depot total DLH.

g. TDY Costs. Cost of TDY associated with a smooth and orderly transfer of the workload was estimated to be 150,000 dollars to cover travel and expenses for each gaining depot.

h. Movement of Equipment. This area measures the cost associated with the removal, shipment, and installation of equipment necessary to perform maintenance on the migrated workload. Based on the DDMC Joint Service Engine Study, Reference 1f, the total transfer cost is estimated as 22 percent of the total book value of the plant equipment at the transferring depot. The factor of 22 percent is the sum of 2 percent to de-install, 6 percent for packing, crating, and handling, 4 percent for transportation and 10 percent for unpacking, uncrating, and installation. The book value of the equipment is obtained from Reference 1c.

i. Recruitment Cost. The number of new hires was based on References 1f and 1j. The methodology assumes 85 percent of the civilian workers dedicated to the migrating workload would be recruited at the new facility. The recruitment cost is this number of people times 200 dollars.

j. Training Costs. The cost associated with the training of new hires is determined by multiplying the number of new hires times 33 percent times the direct labor rate times 5.6 months (References 1f and 1j).

k. Facility/Equipment/Equipment Shutdown Costs. This item includes costs for closing buildings and other production facilities because of closure or reposture of single site workload. The current recognized value for this is 1.13 dollars per square foot. This value was used per OSD direction in BRAC-91 and represents only the cost to mothball the facility. Source is Reference 1m.

l. Productivity Loss. Loss of productivity results from the realignment of work to new activities. Two sources were used to provide a high and low estimate. Based on the Joint Services Update of the Tactical Missile Study (Reference 1i) a 3 year effect was used with the first year productivity loss being 26 percent of the direct labor cost, the second being 12 percent and the third year 5 percent (High). Based on Reference 1f, the team took a 1 year loss in productivity of 10 percent of the direct labor cost (Low).

m. Cost of Disruption (Losing Depot/Workload). Completion of work-in-process will become increasingly inefficient at a closing or losing facility because of low morale, supply and material shortages, tear down of equipment, etc. Based on Reference 1m, disruption cost was determined based on the following formula; (0.25 multiplied by the hours transferred multiplied by the losing depot's labor rate) multiplied by 2. This cost was based on a 2 year transition.

5. Miscellaneous. Additional MILCON and equipment, above that currently programmed for a losing or gaining depot, may be required but were not priced.

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# APPENDIX F

## DEPOT COMMODITY MATRIX

I. A depot commodity matrix was created for this study to provide a quick reference of each maintenance depot's mission by commodity, financial data and facility characteristics. These factors are oriented vertically. Depots, which are listed horizontally, are grouped into three categories: Aviation, Shipyards and Ground Equipment depots. An "x" was placed in the commodity section for a depot only if that commodity represented 5 percent or more of that depot's workload. As a result, all the work performed at a depot may not be reflected in the matrix.

II. The matrix consists of 27 pages. When properly arranged, it will form a 3 x 9 page document. Individual pages should be oriented as indicated in Table F-1.

**Table F-1 Commodity Matrix Orientation Scheme**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| F-1-A | F-2-A | F-3-A | F-4-A | F-5-A | F-6-A | F-7-A | F-8-A | F-9-A |
| F-1-B | F-2-B | F-3-B | F-4-B | F-5-B | F-6-B | F-7-B | F-8-B | F-9-B |
| F-1-C | F-2-C | F-3-C | F-4-C | F-5-C | F-6-C | F-7-C | F-8-C | F-9-C |

III. The information contained in the matrix was provided by OSD, JDMAG and the Services.

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# Depot Commodity Matrix - Appendix F

| Aviation | | AGMC Newark | ALC Ogden | ALC Oklahoma City | ALC Sacramento |
|---|---|---|---|---|---|
| **Financial** | | | | | |
| Budget (91 actual/92 budget) | S | 84/77.2 | 437.1/436.4 | 536.1/497.8 | 458.7/423.3 |
| Civilian Personnel (# people/%) | | 1120 | 5457 | 5935 | 5337 |
| Direct | J | 785 | 4120 | 4613 | 4038 |
| Indirect | J | 335 | 1337 | 1322 | 1299 |
| Military Personnel (# people/%) | | 10 | 136 | 45 | 49 |
| Direct | J | 0 | 94 | 14 | 25 |
| Indirect | J | 10 | 42 | 31 | 24 |
| Utilization (%) | | | | | |
| 1 Shift | S | 71.00% | 81.20% | 84.00% | 90.00% |
| 2 Shifts | S | 19.40% | 15.90% | 11.10% | 9.00% |
| 3 Shifts | S | 9.60% | 2.90% | 4.90% | 1.00% |
| 5 Day Workweek | S | 100.00% | 100.00% | 100.00% | 100.00% |
| 7 Day Workweek | S | 0.00% | 0.00% | 0.00% | 0.00% |
| Overtime | S | 2.30% | 7.60% | 7.30% | 5.50% |
| Interservicing ($/%) FY91 | | | | | |
| Army | J | 3408 | 366 | 75 | 967 |
| Navy | J | 8313 | 4008 | 3455 | 11561 |
| Air Force | J | N/A | N/A | N/A | N/A |
| Marine Corps | J | 0 | 54 | 0 | 454 |
| Coast Guard | S | | | | 9.4 |
| FY91 Workload Value ($K) | O | 123126 | 454002 | 716597 | 434434 |
| | | | | | |
| **Facility** | | | | | |
| Depot Size (sqft) (covered) | J | 472M* | 3.7M* | 5.2M* | 3.546M* |
| Acreage | J | 72* | 6698* | 4885* | 2949* |
| Storage Space | | | | | |
| covered | J | 100K* | 1208K* | 253K* | 539K* |
| uncovered | J | | | | 2917 |
| Equipment Value($M) | J | 301.8* | 663.6* | 526.2* | 503.5* |
| Facility Value($M) | J | 243.5* | 351.8* | 1,133.4* | 633.6* |
| Access | | | | | |
| Air (distance to airport) | S | 0.25 | 8 | 15 | 14 |
| Rail (y/n) | S | Y | Y | Y | Y |
| Water (y/n) | S | N | N | N | 15M |
| Road (miles to Interstate) | S | I-70(10Mi) | I-15,I-80(.25Mi) | I-35,I-40(.25Mi) | I-5,I-80(.25Mi) |
| MILCON (past 10 yrs, prod related)($K) | S | 6,700 | 73,200 | 129,100 | 72,100 |
| MILCON (SYDP)($K) | S | 0 | 8,600 | 14,900 | 59,500 |
| Plant Equipment (past 10 years)($K) | S | 57,400 | 140,668 | 172,251 | 177,446 |
| Plant Equipment (SYDP)($K) | S | 9,700 | 58,600 | 127,939 | 91,600 |
| Capacity Utilization(%) | J | 75% | 96% | 93% | 84% |
| Workload (DLH) | J | 1,232 | 6,875 | 7,072 | 6,495 |
| Capacity (DLH) | J | 1,644 | 7,150 | 7,644 | 7,705 |

**S= Service provided, O= OSD provided, J= JDMAG provided**

* Service vice JDMAG provided

** Figures reflect 3 years (93-95)

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| | | AGMC | ALC | ALC | ALC |
|---|---|---|---|---|---|
| | | Newark | Ogden | Oklahoma City | Sacramento |
| **Commodity (at least 5% of workload)** | | | | | |
| **Aircraft** | S | | | | |
| Aircraft, Fixed Wing | S | | | | |
| Engine | S | | | X | |
| Propeller | S | | | | |
| Landing Gear | S | | X | | |
| Airframe | S | | | | |
| Small (<=2 engines) | S | | X | | X |
| Large (>2 engines) | S | | X | X | X |
| Comm/Nav Equipment | S | | X | | |
| Instruments | S | X | | | |
| Mechanical Systems | S | | | | X |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Aircraft, Rotary Wing | S | | | | |
| Engine | S | | | | |
| Blade | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Remote Piloted Vehicles | S | | | | |
| **Missile** | S | | | | |
| Strategic Airframes | S | | X | | |
| Tactical Airframes | S | | | | |
| Propulsion/Payload/Explosive | S | | | | |
| Support & Launch Equip | S | | | | |
| Guidance & Control | S | X | | | |
| **Ship** | S | | | | |
| Carrier | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Surface | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
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| | | AGMC Newark | ALC Ogden | ALC Oklahoma City | ALC Sacramento |
|---|---|---|---|---|---|
| Submarine | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Service Craft | S | | | | |
| **Vehicles** | S | | | | |
| Armored Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon/Gun | S | | | | |
| Wheeled Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Weapon/Gun | S | | | | |
| Artillery | S | | | | |
| Towed | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Self-propelled | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Construction Vehicles | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| General | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| Rail | S | | | | |
| **Communications-Electronic** | S | | | | |
| Ground | S | | | | X |
| Satt | S | | | | |
| **Ordnance/Weapons/Munitions** | S | | | | |
| Torpedos/Mines | S | | | | |
| Chemical | S | | | | |
| Small Arms | S | | | | |
| Conv. munitions | S | | | | |
| **Metrology** | S | X | | | |
| **Automatic Test Equipment** | S | | | | |
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# Depot Commodity Matrix

| Aviation | | ALC | ALC | NADEP | NADEP |
|---|---|---|---|---|---|
| | | Warner-Robins | San Antonio | Alameda | Jacksonville |
| **Financial** | | | | | |
| Budget (91 actual/92 budget) | S | 467.1/493.4 | 618.5/550.2 | ?/378.0 | ?/319.6 |
| Civilian Personnel (# people/%) | | 5780 | 6602 | 3284 | 2539 |
| Direct | J | 4326 | 4807 | 1718 | 1507 |
| Indirect | J | 1452 | 1795 | 1566 | 1032 |
| Military Personnel (# people/%) | | 54 | 38 | 32 | 30 |
| Direct | J | 30 | 16 | 0 | 0 |
| Indirect | J | 24 | 22 | 32 | 30 |
| Utilization (%) | | | | | |
| 1 Shift | S | 87.00% | 88.00% | 86.00% | 89.00% |
| 2 Shifts | S | 10.00% | 11.00% | 14.00% | 10.00% |
| 3 Shifts | S | 3.00% | 1.00% | 0.00% | 1.00% |
| 5 Day Workweek | S | 69.00% | 100.00% | 100.00% | 100.00% |
| 7 Day Workweek | S | 31.00% | 0.00% | 0.00% | 0.00% |
| Overtime | S | 8.30% | 12.40% | 8.60% | 11.91% |
| Interservicing ($/%) FY91 | | | | | |
| Army | J | 1608 | 70 | 3673 | 626 |
| Navy | J | 4149 | 5238 | N/A | N/A |
| Air Force | J | N/A | N/A | 53207 | 4947 |
| Marine Corps | J | 9 | 0 | 0 | 0 |
| Coast Guard | S | | 21.2 | | |
| FY91 Workload Value ($K) | O | 566352 | 873715 | 354339 | 258565 |
| | | | | | |
| **Facility** | | | | | |
| Depot Size (sqft) (covered) | J | 3.371M* | 3.784M* | 2.3M | 1.6M |
| Acreage | J | 8720* | 4660* | 138 | 96 |
| Storage Space | | | | | |
| covered | J | | 1065 | | |
| uncovered | J | | | | |
| Equipment Value($M) | J | 850.1* | 646.9* | 183 | 250 |
| Facility Value($M) | J | 257.5* | 372* | 246 | 393 |
| Access | | | | | |
| Air (distance to airport) | S | 10 | 15 | Y | Y |
| Rail (y/n) | S | Y | Y | N | N |
| Water (y/n) | S | N | N | Y | Y |
| Road (miles to Interstate) | S | US129,I-75(8 Mi) | I-10,I-35(.25Mi) | I-80,I-880 | I-10,I-295 |
| MILCON (past 10 yrs, prod related)($K) | S | 51,400 | 81,600 | 72,100 | 41,400 |
| MILCON (SYDP)($K) | S | 32,800 | 27,200 | 2,400** | 0** |
| Plant Equipment (past 10 years)($K) | S | 159,530 | 192,103 | 73,300 | 62,100 |
| Plant Equipment (SYDP)($K) | S | 59,815 | 136,405 | 20,001** | 13,378** |
| Capacity Utilization(%) | J | 87% | 92% | 90% | 90% |
| Workload (DLH) | J | 7,046 | 8,193 | 2,626 | 2,426 |
| Capacity (DLH) | J | 8,075 | 8,935 | 2,915 | 2,693 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| * Service vice JDMAG provided | | | | | |
| ** Figures reflect 3 years (93-95) | | | | | |
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| | | ALC | ALC | NADEP | NADEP |
|---|---|---|---|---|---|
| | | Warner-Robins | San Antonio | Alameda | Jacksonville |
| **Commodity (at least 5% of workload)** | | | | | |
| **Aircraft** | S | | | | |
| Aircraft, Fixed Wing | S | | | | |
| Engine | S | | X | X | X |
| Propeller | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Small (<=2 engines) | S | X | | X | X |
| Large (>2 engines) | S | X | X | X | X |
| Comm/Nav Equipment | S | X | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | X | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Aircraft, Rotary Wing | S | | | | |
| Engine | S | | | | |
| Blade | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Remote Piloted Vehicles | S | | | | |
| **Missile** | S | | | | |
| Strategic Airframes | S | | | | |
| Tactical Airframes | S | | | | |
| Propulsion/Payload/Explosive | S | | | | |
| Support & Launch Equip | S | | | | |
| Guidance & Control | S | | | | |
| **Ship** | S | | | | |
| Carrier | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Surface | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| | | | | | |
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| | | ALC | ALC | NADEP | NADEP |
|---|---|---|---|---|---|
| | | Warner-Robins | San Antonio | Alameda | Jacksonville |
| | | | | | |
| Submarine | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Service Craft | S | | | | |
| **Vehicles** | S | | | | |
| Armored Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon/Gun | S | | | | |
| Wheeled Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Weapon/Gun | S | | | | |
| Artillery | S | | | | |
| Towed | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Self-propelled | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Construction Vehicles | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| General | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| Rail | S | | | | |
| **Communications-Electronic** | S | | | | |
| Ground | S | | | | |
| Satt | S | | | | |
| **Ordnance/Weapons/Munitions** | S | | | | |
| Torpedos/Mines | S | | | | |
| Chemical | S | | | | |
| Small Arms | S | | | | |
| Conv. munitions | S | | | | |
| **Metrology** | S | | | | |
| **Automatic Test Equipment** | S | | | | |
| | | | | | |
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# Depot Commodity Matrix

| Aviation | | NADEP Norfolk | NADEP North Island | NADEP Pensacola | NADEP Cherry Point |
|---|---|---|---|---|---|
| **Financial** | | | | | |
| Budget (91 actual/92 budget) | S | ?/325.6 | ?/316.5 | ?/334.4 | ?/360.8 |
| Civilian Personnel (# people/%) | | 3985 | 3365 | 3408 | 2767 |
| Direct | J | 2061 | 1858 | 1776 | 1440 |
| Indirect | J | 1924 | 1507 | 1632 | 1327 |
| Military Personnel (# people/%) | | 34 | 32 | 40 | 91 |
| Direct | J | 0 | 0 | 0 | 0 |
| Indirect | J | 34 | 32 | 40 | 30 |
| Utilization (%) | | | | | |
| 1 Shift | S | 94.00% | 88.90% | 94.50% | 87.50% |
| 2 Shifts | S | 5.70% | 9.80% | 5.00% | 11.00% |
| 3 Shifts | S | 0.30% | 1.30% | 0.50% | 1.50% |
| 5 Day Workweek | S | 100.00% | 100.00% | 100.00% | 100.00% |
| 7 Day Workweek | S | 0.00% | 0.00% | 0.00% | 0.00% |
| Overtime | S | 9.28% | 14.99% | 14.76% | 17.73% |
| Interservicing ($/%) FY91 | | | | | |
| Army | J | 80 | 390 | 3578 | 10806 |
| Navy | J | N/A | N/A | N/A | N/A |
| Air Force | J | 14 | 10206 | 128726 | 9720 |
| Marine Corps | J | 0 | 314 | 4 | 104 |
| Coast Guard | S | | | | |
| FY91 Workload Value ($K) | O | 252915 | 331598 | 364336 | 239827 |
| | | | | | |
| **Facility** | | | | | |
| Depot Size (sqft) (covered) | J | 2.3M | 2.5M | 1.7M | 1.5M |
| Acreage | J | 172 | 362 | 326 | 114 |
| Storage Space | | | | | |
| covered | J | | | | |
| uncovered | J | | | | |
| Equipment Value($M) | J | 297 | 288 | 218 | 250 |
| Facility Value($M) | J | 356 | 287 | 214 | 274 |
| Access | | | | | |
| Air (distance to airport) | S | Y | Y | Y | Y |
| Rail (y/n) | S | Y | Y | Y | Y |
| Water (y/n) | S | Y | Y | Y | 20M |
| Road (miles to Interstate) | S | I-64 | I-5,1-8 | US29,I-10 | US70,17 |
| MILCON (past 10 yrs, prod related)($K) | S | 25,000 | 30,600 | 13,200 | 83,000 |
| MILCON (SYDP)($K) | S | 17,200** | 0** | 1,560** | 0** |
| Plant Equipment (past 10 years)($K) | S | 76,600 | 82,200 | 52,600 | 76,700 |
| Plant Equipment (SYDP)($K) | S | 18,335** | 12,918** | 16,994** | 20,844** |
| Capacity Utilization(%) | J | 95% | 91% | 91% | 92% |
| Workload (DLH) | J | 3,133 | 2,706 | 3,054 | 2,419 |
| Capacity (DLH) | J | 3,314 | 2,992 | 3,375 | 2,639 |

* Service vice JDMAG provided

** Figures reflect 3 years (93-95)

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| | | NADEP | NADEP | NADEP | NADEP |
|---|---|---|---|---|---|
| | | Norfolk | North Island | Pensacola | Cherry Point |
| **Commodity (at least 5% of workload)** | | | | | |
| **Aircraft** | S | | | | |
| Aircraft, Fixed Wing | S | | | | |
| Engine | S | | | | X |
| Propeller | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Small (<=2 engines) | S | X | X | | X |
| Large (>2 engines) | S | | | | X |
| Comm/Nav Equipment | S | | X | | |
| Instruments | S | | X | | |
| Mechanical Systems | S | X | X | | X |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | X |
| Aircraft, Rotary Wing | S | | | | |
| Engine | S | | | | X |
| Blade | S | | | | X |
| Landing Gear | S | | | | |
| Airframe | S | | | X | X |
| Comm/Nav Equipment | S | | | X | |
| Instruments | S | | | X | |
| Mechanical Systems | S | | X | X | X |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Remote Piloted Vehicles | S | | | | |
| **Missile** | S | | | | |
| Strategic Airframes | S | | | | |
| Tactical Airframes | S | | | | |
| Propulsion/Payload/Explosive | S | | | | |
| Support & Launch Equip | S | | | | |
| Guidance & Control | S | | | | |
| **Ship** | S | | | | |
| Carrier | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Surface | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| | | | | | |
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**INTENTIONALLY LEFT BLANK**

| | | NADEP Norfolk | NADEP North Island | NADEP Pensacola | NADEP Cherry Point |
|---|---|---|---|---|---|
| | | | | | |
| Submarine | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Service Craft | S | | | | |
| **Vehicles** | S | | | | |
| Armored Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon/Gun | S | | | | |
| Wheeled Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Weapon/Gun | S | | | | |
| Artillery | S | | | | |
| Towed | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Self-propelled | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Construction Vehicles | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| General | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| Rail | S | | | | |
| **Communications-Electronic** | S | | | | |
| Ground | S | | | | |
| Satt | S | | | | |
| **Ordnance/Weapons/Munitions** | S | | | | |
| Torpedos/Mines | S | | | | |
| Chemical | S | | | | |
| Small Arms | S | | | | |
| Conv. munitions | S | | | | |
| **Metrology** | S | X | X | | |
| **Automatic Test Equipment** | S | X | | | |
| | | | | | |
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# Depot Commodity Matrix - Appendix F

| Aviation | | Army Depot | USCG |
|---|---|---|---|
| | | Corpus Christi | Elizabeth City |
| **Financial** | | | |
| Budget (91 actual/92 budget) | S | 328.5/358.2 | 42.7/43.8*** |
| Civilian Personnel (# people/%) | | 3137 | 301 |
| Direct | J | 1945 | 251/83.4% |
| Indirect | J | 1192 | 50/16.6% |
| Military Personnel (# people/%) | | 2 | 53 |
| Direct | J | 0 | 36/67.9% |
| Indirect | J | 2 | 17/32.1% |
| Utilization (%) | | | |
| 1 Shift | S | 95.00% | 83.00% |
| 2 Shifts | S | 2.00% | 17.00% |
| 3 Shifts | S | 3.00% | 0.00% |
| 5 Day Workweek | S | 100.00% | 100.00% |
| 7 Day Workweek | S | 0.00% | 0.00% |
| Overtime | S | 15.30% | 5.00% |
| Interservicing ($/%) FY91 | | | |
| Army | J | N/A | 0 |
| Navy | J | 16803 | 0 |
| Air Force | J | 8713 | 0 |
| Marine Corps | J | 0 | 0 |
| Coast Guard | S | | N/A |
| FY91 Workload Value ($K) | O | 417565 | 43915 |
| | | | |
| **Facility** | | | |
| Depot Size (sqft) (covered) | J | 2.2M | 283K* |
| Acreage | J | 186 | 39* |
| Storage Space | | | |
| covered | J | | 51.7K* |
| uncovered | J | 1.5M | 4.8K* |
| Equipment Value($M) | J | 93 | 2* |
| Facility Value($M) | J | 362 | 25.4* |
| Access | | | |
| Air (distance to airport) | S | Y/0mi | Y |
| Rail (y/n) | S | Y/12mi | Y |
| Water (y/n) | S | Y/15mi | N |
| Road (miles to Interstate) | S | I-37/14mi | Y/4mi |
| MILCON (past 10 yrs, prod related)($K) | S | 34,000 | TBD |
| MILCON (SYDP)($K) | S | 21,200 | TBD |
| Plant Equipment (past 10 years)($K) | S | 117,200 | 1,141 |
| Plant Equipment (SYDP)($K) | S | 122,700 | 1,501 |
| Capacity Utilization(%) | J | 78% | 0.9982* |
| Workload (DLH) | J | 4,042 | 499* |
| Capacity (DLH) | J | 5,155 | 500* |
| | | | |
| | | | |
| | | | |
| * Service vice JDMAG provided | | | |
| ** Figures reflect 3 years (93-95) | | | |
| *** Reflects FY92 Actual/FY93 Budget | | | |
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| | | Army Depot | USCG |
|---|---|---|---|
| | | Corpus Christi | Elizabeth City |
| **Commodity (at least 5% of workload)** | | | |
| **Aircraft** | S | | |
| Aircraft, Fixed Wing | S | | X |
| Engine | S | | X |
| Propeller | S | | X |
| Landing Gear | S | | X |
| Airframe | S | | |
| Small (<=2 engines) | S | | X |
| Large (>2 engines) | S | | |
| Comm/Nav Equipment | S | | X |
| Instruments | S | X | X |
| Mechanical Systems | S | | X |
| Ord/Guns | S | | |
| Radar | S | | X |
| Simulators | S | | X |
| GSE/AGE | S | | X |
| Aircraft, Rotary Wing | S | X | X |
| Engine | S | X | X |
| Blade | S | X | X |
| Landing Gear | S | X | X |
| Airframe | S | X | X |
| Comm/Nav Equipment | S | X | X |
| Instruments | S | X | X |
| Mechanical Systems | S | X | X |
| Ord/Guns | S | | |
| Radar | S | | X |
| Simulators | S | | X |
| GSE/AGE | S | | X |
| Remote Piloted Vehicles | S | | |
| **Missile** | S | | |
| Strategic Airframes | S | | |
| Tactical Airframes | S | | |
| Propulsion/Payload/Explosive | S | | |
| Support & Launch Equip | S | | |
| Guidance & Control | S | | |
| **Ship** | S | | |
| Carrier | S | | |
| Nuclear Propulsion | S | | |
| Conventional Propulsion | S | | |
| Radar | S | | |
| Comm/Nav/Electronics | S | | |
| Fire Control System | S | | |
| Weapons/Guns | S | | |
| Surface | S | | |
| Nuclear Propulsion | S | | |
| Conventional Propulsion | S | | |
| Radar | S | | |
| Comm/Nav/Electronics | S | | |
| Fire Control System | S | | |
| Weapons/Guns | S | | |
| | | | |
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| | | Army Depot | USCG |
|---|---|---|---|
| | | Corpus Christi | Elizabeth City |
| | | | |
| Submarine | S | | |
| Nuclear Propulsion | S | | |
| Conventional Propulsion | S | | |
| Radar | S | | |
| Comm/Nav/Electronics | S | | |
| Fire Control System | S | | |
| Weapons/Guns | S | | |
| Service Craft | S | | |
| **Vehicles** | S | | |
| Armored Vehicles | S | | |
| Chassis | S | | |
| Powertrain | S | | |
| Fire Control System | S | | |
| Weapon/Gun | S | | |
| Wheeled Vehicles | S | | |
| Chassis | S | | |
| Powertrain | S | | |
| Weapon/Gun | S | | |
| Artillery | S | | |
| Towed | S | | |
| Chassis | S | | |
| Powertrain | S | | |
| Fire Control System | S | | |
| Weapon | S | | |
| Self-propelled | S | | |
| Chassis | S | | |
| Powertrain | S | | |
| Fire Control System | S | | |
| Weapon | S | | |
| Construction Vehicles | S | | |
| Powertrain | S | | |
| Chassis | S | | |
| General | S | | |
| Powertrain | S | | |
| Chassis | S | | |
| Rail | S | | |
| **Communications-Electronic** | S | | |
| Ground | S | | |
| Satt | S | | |
| **Ordnance/Weapons/Munitions** | S | | |
| Torpedos/Mines | S | | |
| Chemical | S | | |
| Small Arms | S | | |
| Conv. munitions | S | | |
| **Metrology** | S | | |
| **Automatic Test Equipment** | S | | |
| | | | |
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# Depot Commodity Matrix

| Ships | | NSY Portsmouth | NSY Philadelphia | NSY Norfolk | NSY Charleston |
|---|---|---|---|---|---|
| **Financial** | | | | | |
| Budget (91 actual/92 budget) | S | 412.3/382.2M | 518.8/452.4M | 676.0/680.1M | 485.2/423.2M |
| Civilian Personnel (# people/%) | | 6027 | 6199 | 9997 | 5766 |
| Direct | J | 3301 | 3903 | 5999 | 3455 |
| Indirect | J | 2726 | 2296 | 3998 | 2311 |
| Military Personnel (# people/%) | | 105 | 42 | 103 | 59 |
| Direct | J | 0 | 14 | 0 | 0 |
| Indirect | J | 105 | 28 | 103 | 59 |
| Utilization (%) | | | | | |
| 1 Shift | S | 100.00% | 100.00% | 100.00% | 100.00% |
| 2 Shifts | S | | | | |
| 3 Shifts | S | | | | |
| 5 Day Workweek | S | 100.00% | 100.00% | 100.00% | 100.00% |
| 7 Day Workweek | S | | | | |
| Overtime | S | 9.70% | 14.00% | 4.90% | 12.10% |
| Interservicing ($/%) | | | | | |
| Army | J | 0 | 0 | 0 | 0 |
| Navy | J | N/A | N/A | N/A | N/A |
| Air Force | J | 0 | 0 | 0 | 0 |
| Marine Corps | J | 0 | 1 | 38 | 420 |
| Coast Guard | S | | | | |
| FY91 Workload Value ($K) | O | 94453*** | 81771*** | 1029415 | 447318 |
| | | | | | |
| **Facility** | | | | | |
| Depot Size (sqft) (covered) | J | 3.9M | 7M | 3.6M | |
| Acreage | J | 298 | 904 | 1275 | 590 |
| Storage Space | | | | | |
| covered | J | | | | |
| uncovered | J | | | | |
| Equipment Value($M) | J | 388.1* | 189* | 216.3* | 220.5* |
| Facility Value($M) | J | 1,123* | 2,371* | 2,497* | 1702* |
| Access | | | | | |
| Air (distance to airport) | S | 4M | 3M | Y | 5M |
| Rail (y/n) | S | Y/0 | Y | Y | Y |
| Water (y/n) | S | Y/1 | Y | Y | Y |
| Road (miles to Interstate) | S | I-95 | I-70,I-95 | I-64 | I-26 |
| MILCON (past 10 yrs, prod related) | S | 52.2M** | 25.1M** | 36.3M** | 12.9M** |
| MILCON (SYDP) | S | 14.9M | 0 | 36.4M | 2.8M |
| Plant Equipment (past 10 years) | S | 107.4M | 116.3M | 207.4M | 121.5M |
| Plant Equipment (SYDP) | S | 34M | 6.3M | 35.2M | 37.6M |
| Drydock Utilization(%) | J | 36% | 90% | 103% | 84% |
| Workload (DLH) | J | 6,130 | 8,308 | 12,755 | 7,565 |
| Capacity (DLH) | J | | | | |

**S= Service provided, O= OSD provided, J= JDMAG provided**

* Service vice JDMAG provided

** Reflects past 7 years vice 10

*** Apparent reporting error

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| | | NSY | NSY | NSY | NSY |
|---|---|---|---|---|---|
| | | Portsmouth | Philadelphia | Norfolk | Charleston |
| **Commodity (at least 5% of workload)** | | | | | |
| **Aircraft** | S | | | | |
| Aircraft, Fixed Wing | S | | | | |
| Engine | S | | | | |
| Propeller | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Small (<=2 engines) | S | | | | |
| Large (>2 engines) | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Aircraft, Rotary Wing | S | | | | |
| Engine | S | | | | |
| Blade | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Remote Piloted Vehicles | S | | | | |
| **Missile** | S | | | | |
| Strategic Airframes | S | | | | |
| Tactical Airframes | S | | | | |
| Propulsion/Payload/Explosive | S | | | | |
| Support & Launch Equip | S | | | | |
| Guidance & Control | S | | | | |
| **Ship** | S | | | | |
| Carrier | S | | X | X | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | X | | |
| Radar | S | | X | | |
| Comm/Nav/Electronics | S | | X | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Surface | S | | | X | X |
| Nuclear Propulsion | S | | | X | |
| Conventional Propulsion | S | | X | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| | | | | | |
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| | | NSY Portsmouth | NSY Philadelphia | NSY Norfolk | NSY Charleston |
|---|---|---|---|---|---|
| Submarine | S | X | | X | X |
| Nuclear Propulsion | S | | | X | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Service Craft | S | | | | |
| **Vehicles** | S | | | | |
| Armored Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon/Gun | S | | | | |
| Wheeled Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Weapon/Gun | S | | | | |
| Artillery | S | | | | |
| Towed | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Self-propelled | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Construction Vehicles | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| General | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| Rail | S | | | | |
| **Communications-Electronic** | S | | | | |
| Ground | S | | | | |
| Satt | S | | | | |
| **Ordnance/Weapons/Munitions** | S | | | | |
| Torpedos/Mines | S | | | | |
| Chemical | S | | | | |
| Small Arms | S | | | | |
| Conv. munitions | S | | | | |
| **Metrology** | S | | | | |
| **Automatic Test Equipment** | S | | | | |
| | | | | | |
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# Depot Commodity Matrix

| | | NSY Mare Island | NSY Long Beach | NSY Pearl Harbor | NSY Puget Sound |
|---|---|---|---|---|---|
| **Financial** | | | | | |
| Budget (91 actual/92 budget) | S | 483.8/497.2M | 288.7/310.1M | 385.7/363.2M | 754.0/759.2M |
| Civilian Personnel (# people/%) | | 6033 | 4292 | 4541 | 11571 |
| Direct | J | 3742 | 2379 | 2366 | 6863 |
| Indirect | J | 2291 | 1913 | 2175 | 4708 |
| Military Personnel (# people/%) | | 106 | 26 | 52 | 134 |
| Direct | J | 0 | 0 | 0 | 0 |
| Indirect | J | 106 | 26 | 52 | 134 |
| Utilization (%) | | | | | |
| 1 Shift | S | 100.00% | 100.00% | 100.00% | 100.00% |
| 2 Shifts | S | | | | |
| 3 Shifts | S | | | | |
| 5 Day Workweek | S | 100.00% | 100.00% | 100.00% | 100.00% |
| 7 Day Workweek | S | | | | |
| Overtime | S | 7.90% | 9.20% | 6.00% | 11.10% |
| Interservicing ($/%) | | | | | |
| Army | J | 0 | 0 | 0 | 0 |
| Navy | J | N/A | N/A | N/A | N/A |
| Air Force | J | 0 | 712 | 0 | 0 |
| Marine Corps | J | 1 | 0 | 52 | 0 |
| Coast Guard | S | | | | |
| FY91 Workload Value ($K) | O | 531932 | 287528 | 298006 | 598696 |
| | | | | | |
| **Facility** | | | | | |
| Depot Size (sqft) (covered) | J | 10.7M* | 2.5M* | 3.6M* | 5M* |
| Acreage | J | 5548 | 214 | 160 | 1367 |
| Storage Space | | | | | |
| covered | J | | | | |
| uncovered | J | | | | 3.9M |
| Equipment Value($M) | J | 331.8* | 281.4* | 222.6* | 302.4* |
| Facility Value($M) | J | 2,253* | 2,235.6* | 1,195.5* | 2,011.1* |
| Access | | | | | |
| Air (distance to airport) | S | 36M | 23M | Y | 30M |
| Rail (y/n) | S | Y | Y | Y | Y |
| Water (y/n) | S | Y | Y | Y | Y |
| Road (miles to Interstate) | S | CA37,I-80 | I-710 | H-1 | US3,I-5 |
| MILCON (past 10 yrs, prod related) | S | 32,.9M** | 10.8M** | 2.66M** | 167.15M** |
| MILCON (SYDP) | S | 10.8M | 4.0M | 2.9M | 57.58M |
| Plant Equipment (past 10 years) | S | 146.4M | 66.1M | 97.5M | 203.0M |
| Plant Equipment (SYDP) | S | 38.1M | 17.4M | 45.1M | 71.3M |
| Drydock Utilization(%) | J | 142% | 38% | 76% | 203% |
| Workload (DLH) | J | 7,153 | 4,389 | 4,569 | 13,917 |
| Capacity (DLH) | J | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| * Service vice JDMAG provided | | | | | |
| ** Reflects past 7 years vice 10 | | | | | |
| *** Apparent reporting error | | | | | |
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| | | NSY | NSY | NSY | NSY |
|---|---|---|---|---|---|
| | | Mare Island | Long Beach | Pearl Harbor | Puget Sound |
| **Commodity (at least 5% of workload)** | | | | | |
| **Aircraft** | S | | | | |
| Aircraft, Fixed Wing | S | | | | |
| Engine | S | | | | |
| Propeller | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Small (<=2 engines) | S | | | | |
| Large (>2 engines) | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Aircraft, Rotary Wing | S | | | | |
| Engine | S | | | | |
| Blade | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | |
| Remote Piloted Vehicles | S | | | | |
| **Missile** | S | | | | |
| Strategic Airframes | S | | | | |
| Tactical Airframes | S | | | | |
| Propulsion/Payload/Explosive | S | | | | |
| Support & Launch Equip | S | | | | |
| Guidance & Control | S | | | | |
| **Ship** | S | | | | |
| Carrier | S | | | | X |
| Nuclear Propulsion | S | | | | X |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Surface | S | | X | X | X |
| Nuclear Propulsion | S | | | | X |
| Conventional Propulsion | S | | X | | |
| Radar | S | | X | | |
| Comm/Nav/Electronics | S | | | X | |
| Fire Control System | S | | X | | |
| Weapons/Guns | S | | | | |
| | | | | | |
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| | | NSY | NSY | NSY | NSY |
|---|---|---|---|---|---|
| | | Mare Island | Long Beach | Pearl Harbor | Puget Sound |
| | | | | | |
| Submarine | S | X | | | X |
| Nuclear Propulsion | S | X | | X | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Service Craft | S | | | | |
| **Vehicles** | S | | | | |
| Armored Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon/Gun | S | | | | |
| Wheeled Vehicles | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Weapon/Gun | S | | | | |
| Artillery | S | | | | |
| Towed | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Self-propelled | S | | | | |
| Chassis | S | | | | |
| Powertrain | S | | | | |
| Fire Control System | S | | | | |
| Weapon | S | | | | |
| Construction Vehicles | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| General | S | | | | |
| Powertrain | S | | | | |
| Chassis | S | | | | |
| Rail | S | | | | |
| **Communications-Electronic** | S | | | | |
| Ground | S | | | | |
| Satt | S | | | | |
| **Ordnance/Weapons/Munitions** | S | | | | |
| Torpedos/Mines | S | | | | |
| Chemical | S | | | | |
| Small Arms | S | | | | |
| Conv. munitions | S | | | | |
| **Metrology** | S | | | | |
| **Automatic Test Equipment** | S | | | | |
| | | | | | |
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# Depot Commodity Matrix

| | | NESEC | NESEC | USCG |
|---|---|---|---|---|
| | | Portsmouth | San Diego | Curtis Bay |
| **Financial** | | | | |
| Budget (91 actual/92 budget) | S | ?/21945 | ?/20454 | 53.2M/59.1M**** |
| Civilian Personnel (# people/%) | | 325 | 222 | 630 |
| Direct | J | 277 | 205 | 462/73.3% |
| Indirect | J | 48 | 17 | 168/26.7% |
| Military Personnel (# people/%) | | 0 | 0 | 140 |
| Direct | J | 0 | 0 | 77/55% |
| Indirect | J | 0 | 0 | 63/45% |
| Utilization (%) | | | | |
| 1 Shift | S | 100% | 100% | 100% |
| 2 Shifts | S | | | 5% |
| 3 Shifts | S | | | 0% |
| 5 Day Workweek | S | 100% | 100% | 100% |
| 7 Day Workweek | S | | | |
| Overtime | S | 2% | 8% | 20% |
| Interservicing ($/%) | | | | |
| Army | J | | | 0 |
| Navy | J | N/A | N/A | 0 |
| Air Force | J | | | 0 |
| Marine Corps | J | | | 0 |
| Coast Guard | S | | | N/A |
| FY91 Workload Value ($K) | O | | | 59,100 |
| | | | | |
| **Facility** | | | | |
| Depot Size (sqft) (covered) | J | 83K | 72K | 1M |
| Acreage | J | 3.25 | 3.5 | 113 |
| Storage Space | | | | |
| covered | J | | | 250K |
| uncovered | J | | | 20 Acres |
| Equipment Value($M) | J | 6.4 | 40 | 50 |
| Facility Value($M) | J | 3.3 | 36 | 87 |
| Access | | | | |
| Air (distance to airport) | S | 5mi | Y | y/10mi |
| Rail (y/n) | S | Y | Y | y |
| Water (y/n) | S | 5mi | Y | y |
| Road (miles to Interstate) | S | I-64 | I-5,I-8 | Y/1mi |
| MILCON (past 10 yrs, prod related) | S | 4200 | 814 | 7M |
| MILCON (SYDP) | S | | | 26M |
| Plant Equipment (past 10 years) | S | | | 6M |
| Plant Equipment (SYDP) | S | | | 6M |
| Drydock Utilization(%) | J | 82% | 92% | 95% |
| Workload (DLH) | J | 503 | 606 | 1M |
| Capacity (DLH) | J | 615 | 660 | |
| | | | | |
| | | | | |
| * Service vice JDMAG provided | | | | |
| ** Reflects past 7 years vice 10 | | | | |
| *** Apparent reporting error | | | | |
| **** Reflects FY92 Actual/FY93 Budget | | | | |
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| | | NESEC | NESEC | USCG |
|---|---|---|---|---|
| | | Portsmouth | San Diego | Curtis Bay |
| **Commodity (at least 5% of workload)** | | | | |
| **Aircraft** | S | | | |
| Aircraft, Fixed Wing | S | | | |
| Engine | S | | | |
| Propeller | S | | | |
| Landing Gear | S | | | |
| Airframe | S | | | |
| Small (<=2 engines) | S | | | |
| Large (>2 engines) | S | | | |
| Comm/Nav Equipment | S | | | |
| Instruments | S | | | |
| Mechanical Systems | S | | | |
| Ord/Guns | S | | | |
| Radar | S | | | |
| Simulators | S | | | |
| GSE/AGE | S | | | |
| Aircraft, Rotary Wing | S | | | |
| Engine | S | | | |
| Blade | S | | | |
| Landing Gear | S | | | |
| Airframe | S | | | |
| Comm/Nav Equipment | S | | | |
| Instruments | S | | | |
| Mechanical Systems | S | | | |
| Ord/Guns | S | | | |
| Radar | S | | | |
| Simulators | S | | | |
| GSE/AGE | S | | | |
| Remote Piloted Vehicles | S | | | |
| **Missile** | S | | | |
| Strategic Airframes | S | | | |
| Tactical Airframes | S | | | |
| Propulsion/Payload/Explosive | S | | | |
| Support & Launch Equip | S | | | |
| Guidance & Control | S | | | |
| **Ship** | S | | | |
| Carrier | S | | | |
| Nuclear Propulsion | S | | | |
| Conventional Propulsion | S | | | |
| Radar | S | | | |
| Comm/Nav/Electronics | S | X | | |
| Fire Control System | S | | | |
| Weapons/Guns | S | | | |
| Surface | S | | | X |
| Nuclear Propulsion | S | | | |
| Conventional Propulsion | S | | | X |
| Radar | S | | | X |
| Comm/Nav/Electronics | S | X | X | X |
| Fire Control System | S | | | X |
| Weapons/Guns | S | | | X |
| | | | | |
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| | | NESEC Portsmouth | NESEC San Diego | USCG Curtis Bay |
|---|---|---|---|---|
| Submarine | S | | | |
| Nuclear Propulsion | S | | | |
| Conventional Propulsion | S | | | |
| Radar | S | | | |
| Comm/Nav/Electronics | S | | | |
| Fire Control System | S | | | |
| Weapons/Guns | S | | | |
| Service Craft | S | | | |
| **Vehicles** | S | | | |
| Armored Vehicles | S | | | |
| Chassis | S | | | |
| Powertrain | S | | | |
| Fire Control System | S | | | |
| Weapon/Gun | S | | | |
| Wheeled Vehicles | S | | | |
| Chassis | S | | | |
| Powertrain | S | | | |
| Weapon/Gun | S | | | |
| Artillery | S | | | |
| Towed | S | | | |
| Chassis | S | | | |
| Powertrain | S | | | |
| Fire Control System | S | | | |
| Weapon | S | | | |
| Self-propelled | S | | | |
| Chassis | S | | | |
| Powertrain | S | | | |
| Fire Control System | S | | | |
| Weapon | S | | | |
| Construction Vehicles | S | | | |
| Powertrain | S | | | |
| Chassis | S | | | |
| General | S | | | |
| Powertrain | S | | | |
| Chassis | S | | | |
| Rail | S | | | |
| **Communications-Electronic** | S | | | |
| Ground | S | | | |
| Satt | S | | | |
| **Ordnance/Weapons/Munitions** | S | | | |
| Torpedos/Mines | S | | | |
| Chemical | S | | | |
| Small Arms | S | | | |
| Conv. munitions | S | | | |
| **Metrology** | S | | | |
| **Automatic Test Equipment** | S | | | |
| | | | | |
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# Depot Commodity Matrix

| Ground | | Army Depot Anniston | Army Depot Letterkenny | Army Depot Red River | Army Depot Tooele |
|---|---|---|---|---|---|
| **Financial** | | | | | |
| Budget (91 actual/92 budget) | S | 265.8/253.8 | 163.4/155.1 | 160.8/250.4 | 146.8/128.5 |
| Civilian Personnel (# people/%) | | 2739 | 1818 | 2152 | 1742 |
| Direct | J | 1808 | 1127 | 1356 | 1132 |
| Indirect | J | 931 | 691 | 796 | 610 |
| Military Personnel (# people/%) | | 4 | 13 | 8 | 9 |
| Direct | J | 0 | 0 | 0 | 0 |
| Indirect | J | 4 | 13 | 8 | 9 |
| Utilization (%) | | | | | |
| 1 Shift | S | 88.00% | 90.00% | 89.00% | 94.00% |
| 2 Shifts | S | 10.00% | 1.00% | 8.00% | 1.00% |
| 3 Shifts | S | 2.00% | 9.00% | 3.00% | 5.00% |
| 5 Day Workweek | S | | | | |
| 7 Day Workweek | S | | | | |
| Overtime | S | 8.90% | 6.60% | 13.40% | 5.10% |
| Interservicing ($/%) | | | | | 13 |
| Army | J | N/A | N/A | N/A | N/A |
| Navy | J | 1619 | 669 | 156 | 667 |
| Air Force | J | 337 | 116 | 0 | 3461 |
| Marine Corps | J | 2021 | 1378 | 9 | 1834 |
| Coast Guard | S | | | | |
| FY91 Workload Value ($K) | O | 355671 | 41565 | 216128 | 178229 |
| | | | | | |
| **Facility** | | | | | |
| Depot Size (sqft) (covered) | J | 1.5M | 1.4M | 1.4M | .9M |
| Acreage | J | 18113 | 19511 | 19081 | 44096 |
| Storage Space | | | | | |
| covered | J | 5.8M | | | 2.5M |
| uncovered | J | 2.3M | | | |
| Equipment Value ($M) | J | 117 | 150 | 137 | 23 |
| Facility Value ($M) | J | 138 | 600 | 855 | 1700 |
| Access | | | | | |
| Air (distance to airport) | S | 60mi | 60mi | 20mi | 35mi |
| Rail (y/n) | S | y | y | Y | Y |
| Water (y/n) | S | n | 80mi | N | N |
| Road (miles to Interstate) | S | I-20 | I-81 | I-30 | UT36,I-80 |
| MILCON (past 10 yrs, prod related) | S | 15000 | 0 | 58000 | 37000 |
| MILCON (SYDP) | S | 1150 | 6820 | 29000 | 0 |
| Plant Equipment (past 10 years) | S | 104300 | 70000 | 110700 | 112100 |
| Plant Equipment (SYDP) | S | 45700 | 65700 | 62200 | 33500 |
| Capacity Utilization(%) | J | 85% | 83% | 81% | 82% |
| Workload (DLH) | J | 3,670 | 2,157 | 2,786 | 2,197 |
| Capacity (DLH) | J | 4,330 | 2,590 | 3,454 | 2,670 |

S= Service provided, O= OSD provided, J= JDMAG provided

*Service vice JDMAG provided

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| | | Army Depot | Army Depot | Army Depot | Army Depot |
|---|---|---|---|---|---|
| | | Anniston | Letterkenny | Red River | Tooele |
| **Commodity (at least 5% of workload)** | | | | | |
| **Aircraft** | S | | | | |
| Aircraft, Fixed Wing | S | | | | |
| Engine | S | | | | |
| Propeller | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Small (<=2 engines) | S | | | | |
| Large (>2 engines) | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | X |
| GSE/AGE | S | | | | |
| Aircraft, Rotary Wing | S | | | | |
| Engine | S | | | | |
| Blade | S | | | | |
| Landing Gear | S | | | | |
| Airframe | S | | | | |
| Comm/Nav Equipment | S | | | | |
| Instruments | S | | | | |
| Mechanical Systems | S | | | | |
| Ord/Guns | S | | | | |
| Radar | S | | | | |
| Simulators | S | | | | |
| GSE/AGE | S | | | | X |
| Remote Piloted Vehicles | S | | | | |
| **Missile** | S | | | | |
| Strategic Airframes | S | | | | |
| Tactical Airframes | S | X | | | |
| Propulsion/Payload/Explosive | S | X | | | |
| Support & Launch Equip | S | X | | X | X |
| Guidance & Control | S | X | | | |
| **Ship** | S | | | | |
| Carrier | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Surface | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| | | | | | |
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| | | Army Depot Anniston | Army Depot Letterkenny | Army Depot Red River | Army Depot Tooele |
|---|---|---|---|---|---|
| Submarine | S | | | | |
| Nuclear Propulsion | S | | | | |
| Conventional Propulsion | S | | | | |
| Radar | S | | | | |
| Comm/Nav/Electronics | S | | | | |
| Fire Control System | S | | | | |
| Weapons/Guns | S | | | | |
| Service Craft | S | | | | |
| **Vehicles** | S | | | | |
| Armored Vehicles | S | | | | |
| Chassis | S | X | X | X | |
| Powertrain | S | X | X | X | |
| Fire Control System | S | X | X | X | |
| Weapon/Gun | S | X | | X | |
| Wheeled Vehicles | S | | X | | |
| Chassis | S | | | | X |
| Powertrain | S | | | | X |
| Weapon/Gun | S | X | | | |
| Artillery | S | | | | |
| Towed | S | | X | | |
| Chassis | S | | X | | |
| Powertrain | S | | X | | |
| Fire Control System | S | | X | | |
| Weapon | S | | X | | |
| Self-propelled | S | | | | |
| Chassis | S | | X | | |
| Powertrain | S | | X | | |
| Fire Control System | S | | X | | |
| Weapon | S | | X | | |
| Construction Vehicles | S | | | | |
| Powertrain | S | | | | X |
| Chassis | S | | | | X |
| General | S | | | | |
| Powertrain | S | | | | X |
| Chassis | S | | | | X |
| Rail | S | | | | X |
| **Communications-Electronic** | S | | | | |
| Ground | S | | | | |
| Satt | S | | | | |
| **Ordnance/Weapons/Munitions** | S | | | | |
| Torpedos/Mines | S | X | | | X |
| Chemical | S | X | X | | X |
| Small Arms | S | X | | | |
| Conv. munitions | S | X | X | X | X |
| **Metrology** | S | | | | |
| **Automatic Test Equipment** | S | X | X | X | X |
| | | | | | |
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# Depot Commodity Matrix

| | | Army Depot Tobyhanna | MCLB Albany | MCLB Barstow |
|---|---|---|---|---|
| **Financial** | | | | |
| Budget (91 actual/92 budget) | S | 153.4/173.2 | 79.3M/51.3M | 60.7M/63.7M |
| Civilian Personnel (# people/%) | | 2525 | 756 | 822 |
| Direct | J | 1793 | 373 | 494 |
| Indirect | J | 732 | 383 | 328 |
| Military Personnel (# people/%) | | 3 | 135 | 123 |
| Direct | J | 0 | 45 | 100 |
| Indirect | J | 3 | 90 | 23 |
| Utilization (%) | | | | |
| 1 Shift | S | 97.50% | 99.40% | 91.30% |
| 2 Shifts | S | 2.30% | 0.60% | 8.30% |
| 3 Shifts | S | 0.20% | 0.00% | 0.40% |
| 5 Day Workweek | S | | 100.00% | 100.00% |
| 7 Day Workweek | S | | | |
| Overtime | S | 4.80% | 25.20% | 15.60% |
| Interservicing ($/%) | | 126 | | |
| Army | J | N/A | 1633 | 811 |
| Navy | J | 422 | 633 | 180 |
| Air Force | J | 3086 | 20 | 13 |
| Marine Corps | J | 1730 | N/A | N/A |
| Coast Guard | S | | 0 | 0 |
| FY91 Workload Value ($K) | O | 156392 | 66906 | 59989 |
| | | | | |
| **Facility** | | | | |
| Depot Size (sqft) (covered) | J | | .48M | .69M |
| Acreage | J | 1193 | 89 | 355 |
| Storage Space | | | | |
| covered | J | | .19M* | .13M* |
| uncovered | J | | 1.4M | 1.7M |
| Equipment Value ($M) | J | 90 | 35 | 23 |
| Facility Value ($M) | J | 220 | 26 | 47 |
| Access | | | | |
| Air (distance to airport) | S | 22mi | 10mi | 5mi |
| Rail (y/n) | S | Y | Y | Y |
| Water (y/n) | S | 120MI | N | N |
| Road (miles to Interstate) | S | I-380 | US19(2),US82(2) | I-40(1),I-15(1) |
| MILCON (past 10 yrs, prod related) | S | 34600 | 11.8M | 1.53M |
| MILCON (SYDP) | S | 0 | 12M | 27.5M |
| Plant Equipment (past 10 years) | S | 65500 | 25.1M | 16.5M |
| Plant Equipment (SYDP) | S | 69900 | 5.1M | 14.3M |
| Capacity Utilization(%) | J | 64% | 145% | 128% |
| Workload (DLH) | J | 3,336 | 1,582 | 1,501 |
| Capacity (DLH) | J | 5,207 | 1,091 | 1,169 |

*Service vice JDMAG provided

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| | | Army Depot | MCLB | MCLB |
|---|---|---|---|---|
| | | Tobyhanna | Albany | Barstow |
| **Commodity (at least 5% of workload)** | | | | |
| **Aircraft** | S | | | |
| Aircraft, Fixed Wing | S | | | |
| Engine | S | | | |
| Propeller | S | | | |
| Landing Gear | S | | | |
| Airframe | S | | | |
| Small (<=2 engines) | S | | | |
| Large (>2 engines) | S | | | |
| Comm/Nav Equipment | S | | | |
| Instruments | S | | | |
| Mechanical Systems | S | | | |
| Ord/Guns | S | | | |
| Radar | S | | | |
| Simulators | S | | | |
| GSE/AGE | S | | | |
| Aircraft, Rotary Wing | S | | | |
| Engine | S | | | |
| Blade | S | | | |
| Landing Gear | S | | | |
| Airframe | S | | | |
| Comm/Nav Equipment | S | | | |
| Instruments | S | | | |
| Mechanical Systems | S | | | |
| Ord/Guns | S | | | |
| Radar | S | | | |
| Simulators | S | | | |
| GSE/AGE | S | | | |
| Remote Piloted Vehicles | S | | | |
| **Missile** | S | | | |
| Strategic Airframes | S | | | |
| Tactical Airframes | S | | | |
| Propulsion/Payload/Explosive | S | | | |
| Support & Launch Equip | S | X | | X |
| Guidance & Control | S | | | |
| **Ship** | S | | | |
| Carrier | S | | | |
| Nuclear Propulsion | S | | | |
| Conventional Propulsion | S | | | |
| Radar | S | | | |
| Comm/Nav/Electronics | S | | | |
| Fire Control System | S | | | |
| Weapons/Guns | S | | | |
| Surface | S | | | |
| Nuclear Propulsion | S | | | |
| Conventional Propulsion | S | | | |
| Radar | S | | | |
| Comm/Nav/Electronics | S | | | |
| Fire Control System | S | | | |
| Weapons/Guns | S | | | |
| | | | | |
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| | | Army Depot Tobyhanna | MCLB Albany | MCLB Barstow |
|---|---|---|---|---|
| Submarine | S | | | |
| Nuclear Propulsion | S | | | |
| Conventional Propulsion | S | | | |
| Radar | S | | | |
| Comm/Nav/Electronics | S | | | |
| Fire Control System | S | | | |
| Weapons/Guns | S | | | |
| Service Craft | S | | | |
| **Vehicles** | S | | | |
| Armored Vehicles | S | | X | X |
| Chassis | S | | | |
| Powertrain | S | | | |
| Fire Control System | S | | | |
| Weapon/Gun | S | | | |
| Wheeled Vehicles | S | | X | X |
| Chassis | S | | | |
| Powertrain | S | | | |
| Weapon/Gun | S | | | |
| Artillery | S | | | |
| Towed | S | | | |
| Chassis | S | | | |
| Powertrain | S | | | |
| Fire Control System | S | | | |
| Weapon | S | | | |
| Self-propelled | S | | X | |
| Chassis | S | | | |
| Powertrain | S | | | |
| Fire Control System | S | | | |
| Weapon | S | | | |
| Construction Vehicles | S | | | |
| Powertrain | S | | | |
| Chassis | S | | | |
| General | S | | | |
| Powertrain | S | | | |
| Chassis | S | | | |
| Rail | S | | | |
| **Communications-Electronic** | S | | | |
| Ground | S | | X | |
| Satt | S | | | X |
| **Ordnance/Weapons/Munitions** | S | | | |
| Torpedos/Mines | S | | | |
| Chemical | S | | | |
| Small Arms | S | | | |
| Conv. munitions | S | | | |
| **Metrology** | S | | X | |
| **Automatic Test Equipment** | S | | | |
| | | | | |
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# APPENDIX G

## ANALYSIS OF ALTERNATIVE A

1. Overview. Alternative A assumes that each Service will retain its own separate depot maintenance operations in accordance with DMRD 908. DMRD 908 directs the Services to increase interservicing, streamline depot operations, reduce management staffs at all levels, increase competition, team with private industry for remanufacturing/manufacturing, etc. Additional depot closures and realignments will be accomplished through the Base Realignment and Closure (BRAC) process. The Defense Depot Maintenance Council (DDMC) will provide management oversight.

2. Corporate Business Plan. The DDMC Corporate Business Plan (CBP), FY92-97, October 1992 (draft) is the source document for the analysis of Alternative A in Chapter IV. Savings/projected savings are presented in this draft plan that describe the joint Service strategy for managing the organic depot maintenance industrial base during the remainder of the 1990s and beyond. The main focus is on achieving the 6.36 billion dollar savings during FY91 through FY97 called for in DMRD 908 and DMRD 908C. The plan details savings attributable to both near-and long-term Service actions. Near-term savings are downsizing of both the direct and indirect work force at depot installations, closure of facilities, cancellation of facility projects, and internal Service workload consolidations. Long-range actions are interservicing, competition, and capacity utilization. In addition to describing the strategy for achieving DMRD 908 savings, this plan also provides the joint Service *Depot Maintenance Vision Statement of the Future for FY95 and Beyond,* (CBP, Appendix A).

3. Summary.

a. Cost savings. Table G-1 provides the details of Services' projected savings.

**Table G-1 Service Projected Savings FY91-FY97**
($ Millions)

| | ARMY | NAVAIR | NAVSEA | AIR FORCE | MARINES |
|---|---|---|---|---|---|
| Near-term | 339.2 | 448.8 | 1755.2 | 664.4 | 0.0 |
| Interservicing | 8.9 | 52.6 | 0.7 | 70.0 | 2.5 |
| Competition | 138.7 | 555.9 | 69.8 | 943.3 | 25.8 |
| Capacity Utilization | 579.0 | 391.5 | 282.3 | 30.6 | 0.4 |
| Total | 1065.8 | 1448.8 | 2108.0 | 1708.3 | 28.6 |

Alternative A establishes a standard against which to measure the other alternatives, except for cost savings. The other alternatives provide cost savings projections relative to each other only.

b. Capacity Reduction. The CBP facility consolidations maintain the current inventory of depots, other than the previously scheduled closings of Sacramento Army Depot and Philadelphia Naval Shipyard. After these closings, the DOD capacity utilization rate will be 64 percent, the baseline for all other alternatives.

c. Unnecessary Duplication. Even after all initiatives of DMRD 908 are complete, substantial unnecessary duplication and excess capacity will exist within each Service as well as among all Services. This provides for the highest level of unnecessary duplication of all the alternatives.

# APPENDIX G

## ANALYSIS OF ALTERNATIVE B

1. Overview. Alternative B consolidates within Service boundaries. As a result, consolidation computations will be treated sequentially for each Service, beginning with the Army. It should be noted that FY87 capacity figures were used in the analysis of Alternatives B through F since it was a peak year with larger overall employment and more accurately reflects what work a depot facility could absorb during workload consolidation. The FY87 capacity figures were used to determine excess capacity and utilization rates for Army, Air Force, and NAVAIR depots. Marine Corps capacity was based on FY93 figures, NAVORD capacity was based on the maximum reported capacity between FY91 and FY97. Capacity of depots earmarked for closure was not considered in this study.

2. Army.

a. Capacity vs. Workload.

(1) As shown in Table G-2, the six Army depots are projected by JDMAG to have a workload of 16,500 KDLH in FY95.

(2) The FY87 capacity of Army depots was 26,700 KDLH, a capacity excess of 10,200 KDLH over the FY95 workload projection. Based on this capacity, Army depot utilization would be 62 percent. The Army has concentrated most technologies into "Centers of Excellence" with the exception of a few specific systems where the cost of moving specialized facilities would exceed the savings potential over the remaining life of the system. ANAD is the sole Army facility configured for heavy combat vehicles and all Services' small arms. CCAD performs Army and Air Force helicopter depot maintenance. LEAD is responsible for all Services' tactical missiles, RRAD for light combat vehicles and artillery, TEAD for automotive and rail, and TOAD for all Army electronics.

**Table G-2 Comparison of Army Depots**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| ANAD | 2000 | 4600 | 2600 |
| CCAD | 4400 | 4800 | 400 |
| LEAD | 2700 | 3800 | 1100 |
| RRAD | 2700 | 4800 | 2100 |
| TEAD | 1100 | 3200 | 2100 |
| TOAD | 3600 | 5500 | 1900 |
| Total | 16500 | 26700 | 10200 |

b. Potential Consolidations. Excess Army depot capacity was reduced by consolidating automotive and other relatively low-tech commodities maintained at four Army depots into three of the above facilities.

c. Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the work of six Army depots into five has the potential to achieve depot maintenance cost reductions ranging from 142 to 548 million dollars during FY94 through FY03, as shown in Table G-3. An in-depth study of Army munitions depots may yield additional savings through consolidation.

**Table G-3 Alternative B (Army) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (35) | 3 | (35) | 3 |
| 95 | (27) | 9 | (62) | 12 |
| 96 | 23 | 69 | (39) | 81 |
| 97 | 26 | 68 | (13) | 149 |
| 98 | 26 | 68 | 13 | 217 |
| 99 | 26 | 67 | 39 | 284 |
| 00 | 26 | 66 | 65 | 350 |
| 01 | 26 | 66 | 91 | 416 |
| 02 | 25 | 66 | 116 | 482 |
| 03 | 26 | 66 | 142 | 548 |
| Total | 142 | 548 | | |

(2). Capacity Reduction. Assuming the workload of one depot is absorbed by three others, projected utilization will increase by 8 percent from 62 percent to 70 percent.

(3) Unnecessary Duplication. Unnecessary duplication within the Army is reduced by highly specialized "Centers of Excellence" for each commodity.

3. NAVAIR.

a. Capacity vs. Workload.

(1) As shown in Table G-4, the six Naval aviation depots are projected to have a workload of 14,700 KDLH in FY95.

(2) The capacity of these depots in FY87 was 26,400 KDLH, a capacity excess of 11,700 KDLH over the FY95 workload projection. Based on this capacity, NAVAIR depot utilization would be 56 percent.

(3) NADEP-PNCLA provides specialized support to Navy and Air Force helicopters. The others primarily support fixed-wing aircraft. NADEP-CHYPT primarily supports Marine Corps aviation platforms. The Navy maintains two other depots for the depot maintenance of Space and Naval Warfare Systems Command (SPAWAR) electronics. These depots are not considered NAVAIR depots but do have a combined projected FY95 electronics depot maintenance workload of 1,200 KDLH and FY87 capacity of 1,100 KDLH. A portion of this work is avionics depot maintenance.

**Table G-4 Comparison of NAVAIR Depots**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| NADEP-ALMD | 2400 | 4800 | 2400 |
| NADEP-CHYPT | 2000 | 3000 | 1000 |
| NADEP-JAX | 2200 | 3400 | 1200 |
| NADEP-NORVA | 2800 | 5800 | 3000 |
| NADEP-NORIS | 2500 | 5800 | 3300 |
| NADEP-PNCLA | 2800 | 3600 | 800 |
| Total | 14700 | 26400 | 11700 |

b. Potential Consolidations. Excess NAVAIR depot capacity at six facilities was reduced by consolidating the workload at four remaining facilities along the following lines:

(1) Airframes and Airframe Accessories/Components.

(a) NADEP-PNCLA has large fixed facilities required for helicopter dynamic components and rotor blades. It is also located in close physical proximity to high priority Air Force Special Operations Forces (SOF) operational units and is well suited to continue to provide Air Force and Navy helicopter support.

(b) The fixed-wing airframe and airframe accessories/components workload of five depots was consolidated into three depots.

(2) Engines and engine accessories/components. The engines and engine accessories/components workload of NADEP-ALMD, NADEP-JAX, NADEP-CHYPT, NADEP-NORVA and NADEP-NORIS was eonsolidated into three depots.

(3) Avionics. The avionics workload of all NAVAIR depots was also consolidated into three depots. Additionally, the SPAWAR electronics depot maintenance workload should be reviewed with a goal of transferring the avionics workload from these NAVAIR depots to the SPAWAR depots, or consolidating the SPAWAR depot maintenance workload at NAVAIR depots. If the latter alternative were considered, further SPAWAR consolidation would be possible. Additional study is required in this area.

c. Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the work of six NAVAIR depots into four has the potential to achieve depot maintenance cost reductions ranging from 343 to 1,747 million dollars from FY94 through FY03, as shown in Table G-5. Consolidation of SPAWAR electronics depots may yield additional savings.

**Table G-5 Alternative B (NAVAIR) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (159) | (40) | (159) | (40) |
| 95 | (142) | (32) | (301) | (72) |
| 96 | 75 | 227 | (226) | 155 |
| 97 | 81 | 228 | (145) | 383 |
| 98 | 82 | 228 | (63) | 611 |
| 99 | 81 | 228 | 18 | 839 |
| 00 | 82 | 228 | 100 | 1,067 |
| 01 | 81 | 226 | 181 | 1,293 |
| 02 | 81 | 227 | 262 | 1,520 |
| 03 | 81 | 227 | 343 | 1,747 |
| Total | 343 | 1,747 | | |

(2) Capacity Reduction. With work from two depots absorbed by the others, projected utilization increases by 25 percent from 56 percent to 81 percent.

(3) Unnecessary Duplication. Unnecessary duplication within NAVAIR is reduced by highly specialized "Centers of Excellence."

4. NAVSEA.

a. Capacity vs. Workload.

(1) A long-term shipyard capacity limitation is its physical limitation expressed in drydock-equivalents. A drydock-equivalent is the number of drydocks at a facility multiplied by the drydock utilization index for that shipyard. The drydock utilization index used is the annual index provided by OPNAV N-431 to JDMAG, which includes annual days for ship docking/undocking and drydock maintenance. When the total of drydock-equivalents for all Navy shipyards is divided by the number of Navy drydocks, a Navy drydock utilization rate results. As shown in Table G-6, the seven NAVSEA shipyards are projected by JDMAG to have an average drydock utilization rate of 71 percent in FY95. A check of projected utilization through FY97 shows this rate to be relatively constant as older, maintenance-intensive ships are retired and the naval force is restructured. A conservative goal for drydock utilization would be a factor of 1.0 or (100 percent), representing one ship-year for each drydock. Contingency capacity is available by acknowledging that more than one small ship can be docked in each drydock when required. This may reduce schedule flexibility as both ships must be docked and undocked at the same time. Floating drydocks available at shipyards offer further contingency capacity. Subjective limitations on shipyard capacity in addition to the facilities include the skills of the work force, complexity of the work, and the maximum concurrent work a shipyard can manage. Some of these factors can be overcome in the long-term by expanding work forces and management staffs. Because a measure of the limit imposed by these factors over the long-term was not available, drydock utilization was the only factor used in this analysis.

(2) Puget Sound and Norfolk are considered essential shipyards for their nuclear carrier drydocking capabilities. Because other nuclear capable sites can service submarines, they offer a more flexible capability, although much of the projected workload reduction is due to the retirement of nuclear powered cruisers and attack submarines. Long Beach is not staffed with nuclear capable personnel but has one large, modern drydock located near major southern California homeports that is capable of docking nuclear carriers. There are three other Navy drydocks not included in this analysis (two at Norfolk and one at Pearl Harbor) that are no longer in use.

**Table G-6 Comparison of NAVSEA FY95 Drydock Utilization Rates**

| SHIPYARD | DRYDOCKS | UTILIZATION INDEX (%) | DRYDOCK-EQUIVALENTS |
|---|---|---|---|
| Portsmouth | 3 | 20 | 0.60 |
| Norfolk | 4 | 28 | 1.12 |
| Charleston | 3 | 67 | 2.00 |
| Puget Sound | 6 | 156 | 9.36 |
| Mare Island | 4 | 58 | 2.32 |
| Long beach | 3 | 42 | 1.26 |
| Pearl Harbor | 3 | 56 | 1.68 |
| Total | 26 | 71 | 18.34 |

b. Potential Consolidations. The utilization rate of 71 percent indicates that almost one of every three drydocks is unused, on the average, at all times. Acknowledging the priority of nuclear capable and carrier capable shipyards on each coast, the work of at least two shipyards, one on each coast, was consolidated into the other five shipyards to improve this utilization rate by 21 percent to a projected 92 percent. Excess capacity in the two remaining east coast shipyards would still remain above 45 percent. Further consolidation or reduction of a shipyard capability to a Ship Repair Facility could be made if the remaining facility is adequate for all nuclear work projected.

c. Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the work of seven shipyards into five has the potential to achieve depot maintenance cost reductions ranging from 702 to 2,701 million dollars from FY94 through FY03 as shown in Table G-7.

**Table G-7 Alternative B (NAVSEA) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (350) | (130) | (350) | (130) |
| 95 | (302) | (95) | (652) | (225) |
| 96 | 174 | 386 | (478) | 161 |
| 97 | 169 | 363 | (309) | 524 |
| 98 | 169 | 363 | (140) | 887 |
| 99 | 168 | 363 | 28 | 1,250 |
| 00 | 169 | 363 | 197 | 1,613 |
| 01 | 168 | 363 | 365 | 1,976 |
| 02 | 169 | 362 | 534 | 2,338 |
| 03 | 168 | 363 | 702 | 2,701 |
| Total | 702 | 2,701 | | |

(2) Capacity Reduction. With the work of two shipyards absorbed by the other facilities, the projected FY95 drydock utilization rate will increase by 21 percent from 71 percent to 92 percent.

(3) Unnecessary Duplication. Unnecessary duplication within NAVSEA is reduced, particularly when commodity and component consolidation is pursued following consolidation of shipyards.

5. Air Force.

a. Capacity vs. Workload.

(1) As shown in Table G-8, the six Air Force depots are projected by JDMAG to have a workload of 34,000 KDLH in FY95.

(2) The FY87 capacity of Air Force depots was 53,100 KDLH, an excess capacity of 19,100 KDLH over the FY95 workload. Based on this capacity, Air Force depot utilization is 64 percent.

(3) The Air Force has concentrated many technologies into Technical Repair Centers (TRC), similar to the Army's "Centers of Excellence" concept. Nonetheless, many redundant sources of repair are retained at other facilities. AGMC's highly accurate Type I precision measuring equipment capability, made possible by its geographic

location, provides a capability to repair precision inertial navigation systems that does not exist elsewhere in DOD.

**Table G-8 Comparison of Air Force Depots**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| OC-ALC | 6800 | 12400 | 5600 |
| OO-ALC | 6300 | 9900 | 3600 |
| SA-ALC | 7200 | 12900 | 5700 |
| SM-ALC | 6000 | 8500 | 2500 |
| WR-ALC | 6600 | 8100 | 1500 |
| AGMC | 1100 | 1300 | 200 |
| Total | 34000 | 53100 | 19100 |

b. Potential Consolidations. The maintenance workload of one ALC was consolidated at the remaining facilities along the following guidelines:

(1) Airframes and Airframe Accessories/Components. Airframe and airframe accessories/components depot maintenance conducted at OO-ALC, OC-ALC, SA-ALC, SM-ALC and WR-ALC was consolidated into four of these five depots. Source of Repair (SOR) responsibilities for specific aircraft was transferred to depots with excess capacity that are currently SOR for other aircraft of the same or similar size, mission and technology.

(2) Engines and Engine Accessories/Components. Engine accessories/components depot maintenance was consolidated at two depots where engine maintenance is conducted to extend the initiative already undertaken by the Air Force for engines.

(3) Avionics and Ground Electronics. Electronics and technologies related to maintenance of sensors and communications were consolidated at one electronics maintenance TRC. This required consolidation of many widely varying technologies (infrared, microwave, flight instruments, etc.), in addition to electronics used in several environments (air, land, space).

(4) Instruments and Metrology. These commodities were consolidated at the one small specialized, non-airframe depot.

(5) General Purpose Equipment. Support of Air Force electronic general purpose equipment was consolidated at one depot.

c. Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the work of six Air Force depots into five has the potential to achieve depot maintenance cost reductions ranging from 368 to 1,317 million dollars from FY94 through FY03, as shown in Table G-9.

**Table G-9 Alternative B (Air Force) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (164) | (41) | (164) | (41) |
| 95 | (147) | (41) | (311) | (82) |
| 96 | 127 | 230 | (184) | 148 |
| 97 | 79 | 175 | (105) | 323 |
| 98 | 79 | 174 | (26) | 497 |
| 99 | 79 | 174 | 53 | 671 |
| 00 | 78 | 161 | 131 | 832 |
| 01 | 80 | 162 | 211 | 994 |
| 02 | 78 | 162 | 289 | 1,156 |
| 03 | 79 | 161 | 368 | 1,317 |
| Total | 368 | 1,317 | | |

(2) Capacity Reduction. When the work of one large ALC is absorbed by the projected excess capacity of the other depots, the utilization will increase by 12 percent from 64 percent to 76 percent.

(3) Unnecessary Duplication. Like Army "Centers of Excellence", the Air Force TRC concept provides a framework for eliminating duplication. Consolidation of six depot maintenance activities into five and a concurrent review of workload assignments at those five will reduce duplication within the Air Force.

6. Marine Corps.

a. Capacity vs. Workload.

(1) As shown in Table G-10, the two Marine Corps depots are projected by JDMAG to have a workload of 2,400 KDLH in FY95.

(2) The FY87 capacity of Marine Corps depots was over 2,400 KDLH, exactly the workload of FY95. No excess capacity results in a computed utilization rate of 100 percent.

(3) Both depots have similar, redundant capabilities, although restrictive environmental laws may make one site preferable to the other. MCLBA directly supports the Maritime Pre-positioning Force through its Blount Island facility in Jacksonville, Florida.

**Table G-10 Comparison of Marine Corps Depots**

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| MCLBA | 1200 | 1100 | None |
| MCLBB | 1200 | 1300 | 100 |
| Total | 2400 | 2400 | None |

b. Potential Consolidations. The projected post-Operation DESERT STORM workload for each Marine Corps depot is 1,700 KDLH in FY93. This demonstrates an ability to expand capability more than 35 percent above computed capacity figures. Following the completion of Operation DESERT STORM reconstitution, the FY96 workload of the two depots declines to a total of 2,200 KDLH. This figure is 35 percent greater than the workload of FY90, the last year unaffected by Operation DESERT STORM requirements. Considering Base Force reductions, this projection of future workload may be high due to the inclusion of other-than-depot-level maintenance. Taking advantage of the additional capacity demonstrated during Operation DESERT STORM reconstitution, and expanding capacity by transfer of production equipment from one depot to the other, all projected Marine Corps depot maintenance was consolidated at one "Center of Excellence".

c. Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the work of two Marine Corps depots into one has the potential to achieve depot maintenance cost reductions ranging from 33 to 170 million dollars from FY94 through FY03 as shown in Table G-11.

**Table G-11 Alternative B (Marine Corps) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (21) | (7) | (21) | (7) |
| 95 | (18) | (5) | (39) | (12) |
| 96 | 8 | 23 | (31) | 11 |
| 97 | 10 | 23 | (21) | 34 |
| 98 | 9 | 23 | (12) | 57 |
| 99 | 9 | 23 | (3) | 80 |
| 00 | 9 | 23 | 6 | 103 |
| 01 | 10 | 22 | 16 | 125 |
| 02 | 8 | 22 | 24 | 147 |
| 03 | 9 | 23 | 33 | 170 |
| Total | 33 | 170 | | |

(2) Capacity Reduction. If one depot assumes the entire Marine Corps workload of 2,200 KDLH, excess capacity will remain zero.

(3) Unnecessary Duplication. Unnecessary duplication within the Marine Corps is eliminated by having one "Center of Excellence."

7. NAVORD.

a. Capacity vs. Workload.

(1) As shown in Table G-12, NAVORD has Naval Surface Weapons Centers, Naval Underwater Weapons Centers, and Naval Weapons Stations at nine separate sites. The nine sites are projected by JDMAG to have a workload of 4,550 KDLH in FY95.

(2) The FY87 depot maintenance capacity of NAVORD facilities was 27,925 KDLH. This capacity has been significantly reduced by the effects of the transfer of much of the ordnance maintenance workload to the Army, reduced requirements for depot maintenance on new weapon systems, and the smaller fleet size. Computation of utilization based on this FY87 capacity would yield a utilization rate of 15 percent, an inaccurate representation of capabilities of depots which have been permanently downsized. A more accurate reflection of capacity of NAVORD facilities is the maximum recent capacity demonstrated since FY91 and in projections through FY97. This capacity is projected to be 5,590 KDLH, 1,330 KDLH over the FY95 workload

projection. Based on this capacity, NAVORD depot utilization is 81 percent.

(3) NSWC Louisville supports Navy surface gunnery. NUWC Keyport is the sole site for support of the Navy's underwater weapons. NWS Yorktown is the sole site for support of Navy mines. NSWC Crane is resident on a Army facility and primarily an electronics depot. Depot maintenance work is a relatively minor function of NAVORD facilities. They primarily perform research, development, intermediate maintenance, and ordnance storage/issue. The equipment used for depot maintenance is a very small fraction of NAVORD facilities, and no cost of consolidating this equipment was included in this analysis.

**Table G-12 Comparison of NAVORD Depots**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | MAX CAPACITY | EXCESS |
|---|---|---|---|
| NSWC-Indian Head | 210 | 200 | None |
| NSWC-Louisville | 1440 | 1170 | None |
| NUWC-Keyport | 1840 | 2600 | 760 |
| NWS-Charleston | 30 | 50 | 20 |
| NWS-Concord | 10 | 150 | 140 |
| NWS-Earle | 30 | 50 | 20 |
| NWS-Seal Beach | 230 | 460 | 230 |
| NWS-Yorktown | 70 | 60 | None |
| NSWC-Crane | 690 | 850 | 160 |
| Total | 4550 | 5590 | 1330 |

b. Potential Consolidations. Excess NAVORD capacity was used to consolidate the ordnance depot workload into three depots along the following lines.

(1) The NUWC is a unique facility required to support the development, test and maintenance of naval underwater weapons.

(2) One NSWC absorbed the workload of the other two.

(3) The depot maintenance workload of the five NWS's was consolidated at one NWS with additional support provided by NUWC and the remaining NSWC.

(4) The ordnance electronics depot maintenance of all NAVORD depots was consolidated into other depots supporting Navy electronics, NADEP-NORVA and

NADEP-NORIS, and the two SPAWAR depots at Portsmouth, VA, and San Diego, CA.

c. Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the depot maintenance work of nine NAVORD depots into three has the potential to achieve depot maintenance cost reductions of 1 to 178 million dollars from FY94 through FY03, as shown in Table G-13.

**Table G-13 Alternative B (NAVORD) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (23) | (5) | (23) | (5) |
| 95 | (18) | (2) | (41) | (7) |
| 96 | 4 | 24 | (37) | 17 |
| 97 | 5 | 24 | (32) | 41 |
| 98 | 6 | 24 | (26) | 65 |
| 99 | 5 | 24 | (21) | 89 |
| 00 | 5 | 22 | (16) | 111 |
| 01 | 6 | 22 | (10) | 133 |
| 02 | 5 | 23 | (5) | 156 |
| 03 | 6 | 22 | 1 | 178 |
| Total | 1 | 178 | | |

(2) Capacity Reduction. This consolidation of nine depots into three eliminates FY95 capacity excess.

(3) Unnecessary Duplication. Unnecessary duplication within NAVORD is eliminated by the consolidation of nine depots into three.

8. Summary.

a. Cost Savings. Aggregating the above Service cost reductions, for comparison to Alternatives C through F, Alternative B consolidations have the potential to achieve depot maintenance cost reductions ranging from 1,589 to 6,661 million dollars during FY94 through FY03, as shown in Table G-14.

**Table G-14 Alternative B (DOD) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (752) | (220) | (752) | (220) |
| 95 | (655) | (167) | (1,407) | (387) |
| 96 | 412 | 959 | (995) | 572 |
| 97 | 370 | 881 | (625) | 1,453 |
| 98 | 371 | 881 | (254) | 2,334 |
| 99 | 368 | 878 | 114 | 3,212 |
| 00 | 368 | 863 | 482 | 4,075 |
| 01 | 373 | 862 | 855 | 4,937 |
| 02 | 365 | 861 | 1,220 | 5,798 |
| 03 | 369 | 863 | 1,589 | 6,661 |
| Total | 1,589 | 6,661 | | |

b. Capacity Reduction. The total utilization of DOD depots after the consolidations recommended under Alternative B rises from 64 percent to 82 percent.

c. Unnecessary Duplication. The "Centers of Excellence" concept reduces or eliminates unnecessary duplication within each Service, but significant duplication will exist among the Services after the consolidations recommended in this alternative.

# APPENDIX G

# ANALYSIS OF ALTERNATIVE C

1. Overview.

a. Alternative C consolidates depot maintenance responsibility for each major type of weapon system platform (fixed/rotary wing aircraft, ships/underwater ordnance, ground vehicles/equipment, missiles) under an Executive Service. The using Service of each weapon system retains responsibility for depot maintenance of depot-level reparables (DLR)/components of the weapon system platforms.

b. Following these guidelines, the weapon system platform and DLR/component commodity responsibilities were distributed as shown in Table G-15.

**Table G-15 Alternative C Distribution of Commodity Responsibilities**

| COMMODITY | RESPONSIBLE SERVICE |
|---|---|
| Aircraft | |
| Fixed/Rotary Wing Airframes | Air Force |
| All Aircraft Components/DLRs | Using Service |
| Ships/UnderwaterOrdnance | |
| Hulls and All Components | Navy |
| Ground Vehicles/Equipment | |
| Vehicles Hull/Body/Frame | Army |
| Artillery/Vehicles Armament | Army |
| Vehicle Components | Using Service |
| Ground Comm-Electronics | Using Service |
| General Purpose Equipment (GPE) | Using Service |
| Ordnance | Using Service |
| Missiles | |
| Tactical | Army |
| Strategic | Air Force |

c. Capacity and work projections provided by JDMAG did not distribute commodities in detail for other-than-aviation maintenance. FY91 workload, distributed by Work Breakdown Structure categories in DOD 7220.9-M, was used to establish a workload baseline in each commodity. The FY91 percentage of work in each commodity was applied to the FY95 total workload and the FY87 capacities. If an airframe/hull/body/frame commodity generated less than 8 KDLH work at any depot, that work was not transferred to the Executive Service depots.

2. Aircraft.

a. Capacity vs Workload.

(1) As shown in Table G-16, fixed wing/rotary wing aircraft depots were projected by JDMAG to have an airframe workload of 19,700 KDLH in FY95.

(2) The FY87 capacity of the aviation airframe depots was 29,600 KDLH, a capacity excess of 9,900 KDLH over the FY95 workload projection. Based on this capacity, depot airframe utilization would be 67 percent. As stated above, the Air Force would be the Executive Service for all aviation airframe depot maintenance while the using Services would retain DLR/component maintenance in their depots. Since the total FY95 airframe depot maintenance workload is projected to exceed the FY87 capacity of the existing Air Force depots, airframe work was transferred to appropriate Air Force depots until it reached FY87 capacity limits. The remainding workload was left at using Service depots.

**Table G-16 Comparison of Aviation Depot Airframe Capacity and Workload**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| OC-ALC | 2900 | 4400 | 1500 |
| OO-ALC | 2200 | 4300 | 2100 |
| SA-ALC | 2000 | 3100 | 1100 |
| WR-ALC | 3300 | 3700 | 400 |
| SM-ALC | 2400 | 3100 | 700 |
| NADEP-ALMD | 500 | 1000 | 500 |
| NADEP-CHYPT | 600 | 1400 | 800 |
| NADEP-JAX | 800 | 1100 | 300 |
| NADEP-NORVA | 1300 | 1900 | 600 |
| NADEP-NORIS | 1200 | 2400 | 1200 |
| NADEP-PNCLA | 1200 | 1500 | 300 |
| CCAD | 1300 | 1700 | 400 |
| Total | 19700 | 29600 | 9900 |

b. Potential Consolidations.

(1) Army. No consolidation of Army aviation depot activities was possible since the Army requires its only aviation depot for DLR/component repairs.

(2) Navy. To obtain a range of potential savings, three analyses of potential consolidations were conducted. They compared consolidation of residual airframe work and Navy DLR/component work into:

(a) two large NADEPs;

(b) three mid-size NADEPs; and

(c) four small NADEPs.

c. Aircraft Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of aviation airframe depot maintenance into all existing Air Force depots to the maximum extent possible, with consolidation of aircraft DLR/components within depots of the using Service has the potential to achieve depot maintenance cost reductions ranging from 351 to 1,511 million dollars during FY94 through FY03, as shown in Table G-17. The maximum savings were obtained by consolidating the six NADEPs into four.

**Table G-17 Alternative C (Aviation) -- Projected Relative Savings**
(Constant FY93 $M)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (197) | (380) | (197) | (380) |
| 95 | (181) | (53) | (378) | (433) |
| 96 | 88 | 248 | (290) | (185) |
| 97 | 91 | 243 | (199) | 58 |
| 98 | 92 | 242 | (107) | 300 |
| 99 | 92 | 242 | (15) | 542 |
| 00 | 91 | 242 | 76 | 784 |
| 01 | 92 | 242 | 168 | 1,026 |
| 02 | 91 | 243 | 259 | 1,269 |
| 03 | 92 | 242 | 351 | 1,511 |
| Total | 351 | 1,511 | | |

(2) Capacity Reduction. Assuming the workload of the Air Force depots is maximized for airframes, CCAD is retained after migrating aviation airframe work, and six NADEPs are consolidated into four, the projected total Air Force depot capacity utilization will increase from 64 to 76 percent and Navy depot capacity utilization from 56 to 76 percent.

(3) Unnecessary Duplication. Reduced duplication in the aircraft airframe commodity is eliminated although substantial duplication still remains within and among the Services for depot maintenance of aviation DLRs/components.

3. Ships/Underwater Weapons. The methodology employed in Alternatives C, D, and E differs from Alternative B in that Alternative B's capacity analysis was based on drydock capacity vice direct labor hours as in Alternatives C, D, and E. These separate paths lead to the same conclusions. Capacity utilization figures for Alternative B and Alternatives C, D, and E differ since they have different foundations. Ship and underwater weapons commodities offer no potential for consolidation under any Service other than the current using Service--the Navy. A summary of those conclusions follows.

a. Capacity vs. Workload.

(1) As shown in Table G-18, shipyards were projected by JDMAG to have a workload of 50,200 KDLH in FY95.

(2) The FY87 capacity of the shipyards was 75,500 KDLH, a capacity excess of over 25,300 KDLH over the FY95 workload projection. Based on this capacity, shipyard capacity utilization would be 67 percent.

**Table G-18 Comparison of Shipyard Capacity and Workload**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| Portsmouth | 4000 | 7800 | 3800 |
| Philadelphia | 4000 | 10200 | 6200 |
| Norfolk | 9100 | 14300 | 5200 |
| Charleston | 6400 | 8800 | 2400 |
| Puget Sound | 12000 | 12600 | 600 |
| Mare Island | 6800 | 8900 | 2100 |
| Long Beach | 3600 | 6200 | 2600 |
| Pearl Harbor | 4300 | 6700 | 2400 |
| Total | 50200 | 75500 | 25300 |

b. Potential Consolidations. In addition to the Philadelphia shipyard which will be closed by FY96, the workload at two additional shipyards was consolidated into the remaining five.

c. Shipyard Summary.

(1) Cost Savings. The savings resulting from the consolidation of the work of seven shipyards into five is the same for Alternatives B, C, D, and E, and has the potential to achieve depot maintenance cost reductions of from 702 to 2,701 million dollars from FY94 through FY03. A summary chart of these reductions is shown in Table G-7.

(2) Capacity Reduction. With the work of two shipyards absorbed by the other facilities, the projected capacity utilization rate will increase by 33 percent from 67 to 100 percent based on direct labor hour workload requirements.

(3) Unnecessary Duplication. Unnecessary duplication within NAVSEA is reduced, particularly when commodity and component consolidation is pursued following consolidation of shipyards.

d. NAVORD Depots.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the depot maintenance work of nine NAVORD depots into three has the potential to achieve depot maintenance cost reductions of 1 to 178 million dollars from FY94 through FY03.

(2) Capacity Reduction. This consolidation of nine depots into three eliminates the FY95 capacity excess and brings them to 100 percent capacity utilization.

(3) Unnecessary Duplication. Unnecessary duplication within NAVORD is virtually eliminated by the consolidation of nine depots into three.

4. <u>Ground Vehicles/Equipment</u>.

a. Capacity vs. Workload.

(1) As shown in Table G-19, and as broken down in Table G-15, the depots performing ground equipment platform maintenance were projected by JDMAG to have a workload of 1,700 KDLH in FY95.

(2) The FY87 capacity for ground vehicle/equipment platforms was 2,600 KDLH, a capacity excess of 900 KDLH over the FY95 workload projection. Based on this capacity, ground vehicle/equipment platform capacity utilization would be 65 percent. As stated above, the Army would be the Executive Service for all ground vehicles and equipment while the using Services maintain responsibility for vehicle DLRs/components. The Army has concentrated most technologies into "Centers of Excellence" with the exception of a few specific systems where the cost of moving

specialized facilities would exceed the savings potential over the remaining life of the systems. ANAD is the sole Army facility configured for heavy combat vehicles and all Services' small arms. LEAD is responsible for all Services' tactical missiles, RRAD for light combat vehicles and artillery, TEAD for automotive and rail, and TOAD for all electronics. Marine Corps depots are virtually identical in depot maintenance capabilities to provide independent support to operating forces based on geographic location.

**Table G-19 Comparison of Ground Vehicles/Equipment (Platform) Depots**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| ANAD | 200 | 600 | 400 |
| LEAD | 100 | 200 | 100 |
| RRAD | 200 | 300 | 100 |
| TOAD | 200 | 400 | 200 |
| TEAD | 100 | 100 | 0 |
| MCLBA | 500 | 500 | 0 |
| MCLBB | 400 | 500 | 100 |
| Total | 1700 | 2600 | 900 |

b. Potential Consolidations.

(1) Army. The five Army ground depots were consolidated into four.

(2) Air Force. No Air Force depots were consolidated due to their support of aviation commodities.

(3) Marine Corps. As discussed in Alternative B, the Marine Corps has projected the workload for each of their depots to be 1,700 KDLH in FY93. This figure exceeds the FY87 capacity by 35 percent. Therefore, in the case of the Marine Corps, the FY93 workload projection figure was used as the baseline for depot capacity. Taking advantage of this additional capacity and with the migration of 37 percent of the Marine Corps workload to the Army, all the Marine Corps' workload was consolidated into a single depot.

c. Ground Vehicle/Equipment Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of land hull/body/frames, and artillery/vehicle armament into

Army depots has the potential to achieve depot maintenance cost reductions ranging from 240 to 751 million dollars during FY94 through FY03, as shown in Table G-20.

**Table G-20 Alternative C (Ground) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (62) | (11) | (62) | (11) |
| 95 | (44) | 4 | (106) | (7) |
| 96 | 40 | 97 | (66) | 90 |
| 97 | 44 | 95 | (22) | 185 |
| 98 | 43 | 96 | 21 | 281 |
| 99 | 44 | 95 | 65 | 376 |
| 00 | 44 | 94 | 109 | 470 |
| 01 | 44 | 93 | 153 | 563 |
| 02 | 43 | 94 | 196 | 657 |
| 03 | 44 | 94 | 240 | 751 |
| Total | 240 | 751 | | |

(2) Capacity Reduction. Consolidating the Army ground equipment maintenance depots from five to four, the projected capacity utilization will increase by 5 percent from 62 percent to 67 percent. Marine Corps capacity utilization will drop from 100 percent to 88 percent.

(3) Unnecessary Duplication. Unnecessary duplication in ground vehicle/equipment platform maintenance is eliminated although some duplication still remains among the Services for depot maintenance of DLRs/components

5. Missiles.

a. Tactical Missiles. Ongoing initiatives have consolidated much of the tactical missile work at LEAD. Some Navy work remains at NAVORD depots. After the consolidation into three NAVORD depots above, the transfer of this tactical missile work to LEAD would not permit further consolidation of NAVORD depots. Cost reductions from this transfer were negligible although the consolidation would decrease the unit costs for tactical missile maintenance.

b. Strategic Missiles. This commodity has already been consolidated under the Air Force at OO-ALC and no cost reductions were found.

6. Summary.

a. Cost Savings. For the purpose of comparing Alternatives B through F, Alternative C consolidations have the potential to achieve depot maintenance cost reductions ranging from 1,294 to 5,141 million dollars during FY94 through FY03, as shown in Table G-21.

**Table G-21 Alternative C FY94-FY03--Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (631) | (527) | (631) | (527) |
| 95 | (546) | (145) | (1,177) | (672) |
| 96 | 306 | 756 | (871) | 84 |
| 97 | 309 | 724 | (562) | 808 |
| 98 | 310 | 725 | (252) | 1,533 |
| 99 | 309 | 724 | 57 | 2,257 |
| 00 | 309 | 721 | 366 | 2,978 |
| 01 | 309 | 721 | 675 | 3,699 |
| 02 | 310 | 721 | 985 | 4,420 |
| 03 | 309 | 721 | 1,294 | 5,141 |
| Total | 1,294 | 5,141 | | |

b. Capacity Reduction. The total capacity utilization of DOD depots after the consolidations recommended under Alternative C rises from 64 percent to 88 percent.

c. Unnecessary Duplication. As discussed for each of the commodities above, Alternative C reduces much of the duplication among the Services for maintenance of similar weapon system platforms. By requiring each Service to provide its own support for DLRs/components of those platforms, duplication among the Services remains for these commodities. Adoption of the "Centers of Excellence" concept by every Service will help reduce the total duplication, but total elimination is not possible under this alternative for the DLRs/components.

# APPENDIX G

# ANALYSIS OF ALTERNATIVE D

1. Overview.

a. Alternative D consolidates depot maintenance responsibility for depot-level reparables (DLRs)/components of weapon system platforms along similar technology lines under an Executive Service. The using Service of each weapon system retains responsibility for depot maintenance of the weapon system platforms. The Executive Service is usually the Service with the largest inventory of the DLR/component.

b. Following these guidelines, the weapon system platform and DLR/component commodity responsibilities were distributed as shown in Table G-22.

**Table G-22 Alternative D Distribution of Commodity Responsibilities**

| COMMODITY | RESPONSIBLE SERVICE |
|---|---|
| Aircraft | |
| Fixed/Rotary Wing Airframes | Using Service |
| All Aircraft Components/DLRs | Air Force |
| Ships/UnderwaterOrdnance | |
| Hulls and All Components | Navy |
| Ground Vehicles/Equipment | |
| Vehicles Hull/Body/Frame | Using Service |
| Artillery/Vehicles Armament | Using Service |
| Vehicle Components | Army |
| Ground Comm-Electronics | Army |
| General Purpose Equipment (GPE) | Army |
| Ordnance | Army |
| Missiles | |
| Tactical | Army |
| Strategic | Air Force |

c. Capacity and work projections provided by JDMAG did not distribute commodities in detail for other-than-aviation maintenance. FY91 workload, distributed by Work Breakdown Structure categories in DOD 7220.9-M, was used to establish a workload baseline in each commodity. The FY91 percentage of work in each commodity was applied to the FY95 total workload and the FY87 capacities. If a DLR/component commodity generated less than eight KDLH work at any depot, that work was not transferred to the Executive Service depots.

2. Aircraft.

a. Capacity vs. Workload.

(1) As shown in Table G-23, Service depots were projected by JDMAG to have an aircraft DLR/component workload of 28,900 KDLH in FY95.

(2) The FY87 capacity of the aircraft DLR/component depots was 53,900 KDLH, a capacity excess of 25,500 KDLH over the FY95 workload projection. Based on this capacity, depot aircraft DLR/component utilization would be 54 percent. As stated above, the Air Force would be the Executive Service for all aircraft DLR/component depot maintenance while the using Services would retain airframe maintenance in their depots. After all aircraft DLR/component work was consolidated to Air Force depots, the other Service depots were consolidated to the maximum extent possible using FY87 capacities.

**Table G-23 Comparison of Depot Aircraft DLR/Component Capacity and Workload**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| OC-ALC | 3900 | 8100 | 4200 |
| OO-ALC | 3000 | 5500 | 2500 |
| SA-ALC | 4400 | 9800 | 5400 |
| WR-ALC | 3200 | 4400 | 1200 |
| SM-ALC | 1800 | 5500 | 3700 |
| NADEP-ALMD | 1900 | 3800 | 1900 |
| NADEP-CHYPT | 1400 | 1600 | 200 |
| NADEP-JAX | 1400 | 2300 | 900 |
| NADEP-NORVA | 1400 | 4000 | 2600 |
| NADEP-NORIS | 1200 | 3400 | 2200 |
| NAPED-PNCLA | 1700 | 2100 | 400 |
| CCAD | 3100 | 3400 | 300 |
| LEAD | 200 | None | None |
| RRAD | 100 | None | None |
| TOAD | 200 | None | None |
| Totals | 28900 | 53900 | 25500 |

b. Potential Consolidations.

(1) Army. No consolidation of Army aviation depot activities was possible as the Army required its sole source of airframe repair.

(2) Navy. The work of six NADEPs was consolidated into three for airframe repair, and one other NADEP, performing only helicopter maintenance.

c. Aircraft Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of aircraft DLR/component depot maintenance into existing Air Force depots and consolidation of the airframe commodity within depots of the using Service has the potential to achieve depot maintenance cost reductions ranging from 420 million dollars to 3,641 million dollars during FY94 through FY03, as shown in Table G-24.

**Table G-24 Alternative D (Aviation) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (318) | (63) | (318) | (63) |
| 95 | (291) | (35) | (609) | (98) |
| 96 | 128 | 497 | (481) | 399 |
| 97 | 129 | 464 | (352) | 863 |
| 98 | 129 | 464 | (223) | 1,327 |
| 99 | 128 | 463 | (95) | 1,790 |
| 00 | 129 | 463 | 34 | 2,253 |
| 01 | 129 | 463 | 163 | 2,716 |
| 02 | 128 | 462 | 291 | 3,178 |
| 03 | 129 | 463 | 420 | 3,641 |
| Total | 420 | 3,641 | | |

(2) Capacity Reduction. The fixed-wing airframe workload of six NADEPs was consolidated into three. The projected aviation depot aircraft DLR/component capacity utilization rate increased by 8 percent from 54 percent to 62 percent. Total Navy aviation depot capacity utilization increased from 56 to 82 percent and Air Force depot capacity utilization will increase from 64 to 80 percent.

(3) Unnecessary Duplication. Unnecessary duplication in the aircraft DLR/component commodities is reduced although substantial duplication still remains within and among

the Services for depot maintenance of airframes.

3. Ships/Underwater Weapons. The methodology employed in Alternatives C, D, and E differs from Alternative B in that Alternative B's capacity analysis was based upon drydock capacity vice direct labor hours as in Alternatives C, D, and E. These separate paths lead to the same conclusions. Capacity utilization figures for Alternative B and Alternatives C, D, and E differ since they have different foundations. Ship and underwater weapons commodities offer no potential for consolidation under any Service other than the current using Service--the Navy. A summary of those conclusions follows.

a. NAVSEA Shipyards.

(1) Cost Savings. The savings resulting from the consolidation of the work of seven shipyards into five is the same for Alternatives B, C, D, and E, and has the potential to achieve depot maintenance cost reductions ranging from 702 to 2,701 million dollars from FY94 through FY03. A summary of these cost reductions is shown in Table G-7.

(2) Capacity Reduction. With the work of two shipyards absorbed by the other facilities, the projected capacity utilization rate will increase by 33 percent from 67 to 100 percent based on direct labor hour workload requirements.

(3) Unnecessary Duplication. Unnecessary duplication within NAVSEA is reduced, particularly when commodity and component consolidation is pursued following consolidation of shipyards.

b. NAVORD Depots.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the depot maintenance work of nine NAVORD depots into three has the potential to achieve depot maintenance cost reductions of 1 to 178 million dollars from FY94 through FY03.

(2) Capacity Reduction. This consolidation of nine depots into three eliminates FY95 capacity excess, bringing them to 100 percent capacity utilization.

(3) Unnecessary Duplication. Unnecessary duplication within NAVORD is virtually eliminated by the consolidation of nine depots into three.

4. Ground Vehicles/Equipment.

a. Capacity vs. Workload.

(1) As shown in Table G-25, ground vehicle/equipment DLR/components depots were

projected by JDMAG to have workload of 15,500 KDLH in FY95.

(2) The FY87 capacity of the ground vehicle/equipment DLR/components depots was 26,900 KDLH, a capacity excess of 11,500 KDLH over the FY95 workload projection. Based on this capacity, ground vehicle/equipment depot utilization would be 58 percent. As stated above, the Army would be the Executive Service for all vehicle and equipment DLRs/components. Army depots would also assume Executive Service responsibilities for general purpose equipment and ordnance while the using Service would retain depot maintenance of vehicle hull/body/frame. The Army has concentrated most technologies into "Centers of Excellence" with the exception of a few specific systems where the cost of moving specialized facilities would exceed the savings potential over the remaining life of the systems. Anniston is the sole Army facility configured for heavy combat vehicles and all Services' small arms. LEAD is responsible for all Services' tactical missiles, RRAD for light combat vehicles and artillery, TEAD for automotive and rail, and TOAD for all electronics. Marine Corps depots are virtually identical in depot maintenance capabilities.

**Table G-25 Comparison for Ground Vehicles/Equipment (DLR/ Components) Depots**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| ANAD | 1700 | 4000 | 2300 |
| LEAD | 2400 | 3600 | 1200 |
| RRAD | 2500 | 4500 | 2000 |
| TOAD | 3200 | 5100 | 1900 |
| TEAD | 1000 | 3100 | 2100 |
| MCLBA | 700 | 600 | None |
| MCLBB | 800 | 900 | 100 |
| OO-ALC | 500 | 500 | None |
| SA-ALC | 800 | 1700 | 900 |
| SM-ALC | 1800 | 2800 | 1000 |
| WR-ALC | 100 | 100 | None |
| Total | 15500 | 26900 | 11500 |

b. Potential Consolidations.

(1) Army. The workload of the five Army ground depots were consolidated into four.

(2) Air Force. Although ground communications-electronics and general purpose equipment are consolidated at Army depots, no Air Force depots could be consolidated due to their support of aviation commodities.

(3) Marine Corps. As discussed in Alternative B, the Marine Corps has projected the workload for each of their depots to be 1,700 KDLH in FY93. This figure exceeds the FY87 capacity by 35 percent. Therefore, in the case of the Marine Corps, the FY93 workload projection figure was used as the baseline for depot capacity. Taking advantage of this additional capacity and with the migration of 37 percent of the Marine Corps workload to the Army, all the Marine Corps workload was consolidated into a single depot.

c. Ground Vehicle/Equipment Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of land vehicle DLR/components, ground communications-electronics, and general purpose equipment into Army depots has the potential to achieve depot maintenance cost reductions ranging from 366 to 1,628 million dollars during FY94 through FY03. The cumulative annual distribution of these potential reductions is shown in Table G-26.

**Table G-26 Alternative D (Ground) -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (182) | (58) | (182) | (58) |
| 95 | (154) | (41) | (336) | (99) |
| 96 | 81 | 222 | (255) | 123 |
| 97 | 89 | 221 | (166) | 344 |
| 98 | 88 | 220 | (78) | 564 |
| 99 | 89 | 220 | 11 | 784 |
| 00 | 89 | 211 | 100 | 995 |
| 01 | 89 | 211 | 189 | 1,206 |
| 02 | 89 | 211 | 278 | 1,417 |
| 03 | 88 | 211 | 366 | 1,628 |
| Total | 366 | 1,628 | | |

(2) Capacity Reduction. Assuming the workload of the Army depots are consolidated from five to four and two Marine Corps depots are consolidated into one, the projected ground Army depot utilization will increase by five percent from 82 percent to 87 percent. Since the work remaining at the one Marine Corps depot was a small portion

of their overall workload requirement, the Marine Corps depot utilization dropped from 100 percent to 53 percent.

(3) Unnecessary Duplication. Unnecessary duplication in the ground vehicle/equipment commodity is reduced although some duplication still remains among the Services for depot maintenance of commodities common to land vehicles and artillery.

5. Missiles.

a. Tactical Missiles. Ongoing initiatives have consolidated much of the tactical missile work at LEAD. Some Navy work remains outstanding at NAVORD depots. After the consolidation into three NAVORD depots discussed in sub paragraph 3.b., above, the transfer of this tactical missile work to LEAD would not permit further consolidation of NAVORD depots. Cost reductions from this transfer were negligible although the consolidation would decrease the unit costs for tactical missile maintenance.

b. Strategic Missiles. This commodity has already been consolidated under the Air Force at OO-ALC and no cost reductions were found.

6. Summary.

a. Cost Savings. For the purpose of comparing Alternatives B through F, Alternative D consolidations have the potential to achieve depot maintenance cost reductions ranging from 1,490 to 8,148 million dollars during FY94 through FY03 as shown in Table G-27.

**Table G-27 Alternative D FY94-FY03--Projected Relative Savings**
**(Constant FY93 $Million)**

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (872) | (256) | (872) | (256) |
| 95 | (766) | (174) | (1,638) | (430) |
| 96 | 387 | 1,130 | (1,251) | 700 |
| 97 | 392 | 1,072 | (859) | 1,772 |
| 98 | 392 | 1,071 | (467) | 2,843 |
| 99 | 391 | 1,070 | (76) | 3,913 |
| 00 | 391 | 1,059 | 315 | 4,972 |
| 01 | 392 | 1,059 | 707 | 6,031 |
| 02 | 391 | 1,058 | 1,098 | 7,089 |
| 03 | 392 | 1,059 | 1,490 | 8,148 |
| Total | 1,490 | 8,148 | | |

b. Capacity Reduction. The total utilization of DOD depots after the consolidations recommended under Alternative D rises by 23 percent from 64 percent to 87 percent.

c. Unnecessary Duplication. As discussed for each of the commodities above, Alternative D reduces much of the duplication among the Services for maintenance of similar weapon system platform DLR/components. By requiring each Service to provide its own support for the hull/body/frame of similar weapon system platforms, duplication among the Services remains for these commodities. Adoption of the "Centers of Excellence" concept by every Service will help reduce the duplication.

# APPENDIX G

## ANALYSIS OF ALTERNATIVE E

1. Overview.

a. Alternative E consolidates complete depot maintenance responsibility for similar weapon system platforms and their depot-level reparables (DLRs)/components under an Executive Service. The Executive Service is usually the Service that has the largest inventory of the DLR/component. Work distributions among depots were made using the best information on commodities and depot capabilities available to the analyst.

b. Following these guidelines, the weapon system platform and DLR/component commodity responsibilities were distributed as shown in Table G-28. Metrology was added as a commodity because consolidation of metrology support would be a logical extension of this alternative that consolidates all types of depot maintenance under a minimum number of Executive Services.

**Table G-28 Alternative E Distribution of Commodity Responsibilities**

| COMMODITY | RESPONSIBLE SERVICE |
|---|---|
| Aircraft | Air Force |
| Strategic Missiles | Air Force |
| Metrology | Air Force |
| Tactical Missiles | Army |
| Combat Vehicles | Army |
| Automotive | Army |
| Construction Equipment | Army |
| Ground Communication and Electronics | Army |
| Ordnance, Weapons & Munition | Army |
| General Purpose Equipment | Army |
| Ships | Navy |
| Underwater Ordnance | Navy |

c. Capacity and work projections provided by JDMAG did not distribute commodities in detail for other-than-aviation maintenance. FY91 workload, distributed by Work Breakdown Structure categories in DOD 7220.9-M, was used to establish a workload baseline in each commodity. The FY91 percentage of work in each commodity was applied to the FY95 total workload and the FY87 capacities. If a DLR/component commodity generated less than 8 KDLH work at any depot, that work was not considered.

2. Aircraft.

a. Capacity vs. Workload

(1) As shown in Table G-29, Service depots were projected by JDMAG to have an aviation workload of 47,200 KDLH in FY95. AGMC was not a candidate for consolidation in the aircraft analysis but was considered separately under metrology.

(2) The FY87 capacity of the aviation depots was ~~75,100~~ 75,400 KDLH, a capacity excess of 28,200 KDLH over the FY95 workload projection. Based on this capacity, depot aircraft DLR/component utilization would be 62 percent. As stated above, the Air Force would be the Executive Service for all aviation depot maintenance. After all aircraft DLR/component work was consolidated to Air Force depots, the other Service depots were consolidated to the maximum extent possible using FY87 capacities. Unique capabilities of depots were considered and retained such as SA-ALC large aircraft hangars, "Technology Repair Centers" (TRCs), and CCAD/NADEP-PNCLA and CHYPT rotary wing facilities.

**Table G-29 Comparison of Depot Aviation Capacity and Workload**
(Thousands of Direct Labor Hours)

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| OC-ALC | 6800 | 12400 | 5600 |
| OO-ALC | 5100 | 8000 | 2900 |
| SA-ALC | 6400 | 11200 | 4800 |
| WR-ALC | 6500 | 8000 | 1500 |
| SM-ALC | 4200 | 6000 | 1800 |
| NADEP-ALMD | 2400 | 4800 | 2400 |
| NADEP-CHYPT | 2000 | 3000 | 1000 |
| NADEP-JAX | 2200 | 3400 | 1200 |
| NADEP-NORVA | 2800 | 5800 | 3000 |
| NADEP-NORIS | 2400 | 5800 | 3400 |
| NADEP-PNCLA | 2800 | 3600 | 800 |
| CCAD | 3100 | 3400 | 300 |
| LEAD | 200 | None | None |
| RRAD | 100 | None | None |
| TOAD | 200 | None | None |
| Total | 47200 | 75400 | 28200 |

b. Potential Consolidations. Analysis was conducted on consolidation of workloads from large depots into small depots, consolidation of a large depot and several small depots, and consolidation of all small depots into the large depots. The analysis concluded that consolidation of a number of small depots and one large depot was the most feasible. This consolidation took advantage of the Technology Repair Centers (TRCs) resident in larger depots and the unique capabilities of three smaller depots. The consolidation includes the following.

(1) Army. Army's aviation depot activities consisted solely of rotary wing airframe and dynamic components. The Air Force acquired this depot as part of the Executive Service for all aviation.

(2) Navy. The workload requirement of four NADEPs was consolidated into the remaining depots.

(3) Air Force. The aviation workload from one depot is consolidated into the remaining depots.

c. Aircraft Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of aviation depot maintenance into four existing Air Force depots, two NADEPs, and CCAD has the potential to achieve depot maintenance cost reductions ranging from 776 to 4,700 during FY94 through FY03. The cumulative annual distribution of these potential reductions is shown in Table G-30. Note that the break even point for the low savings exreme is seven years.

**Table G-30 Alternative E (Aviation) -- Projected Relative Savings**
**(Constant FY93 $Million)**

NOTE: Only for comparison with Alternatives B through F

| FY | Annual | | Cumulative | |
|---|---|---|---|---|
| | Minimum | Maximum | Minimum | Maximum |
| 94 | (512) | (143) | (512) | (143) |
| 95 | (493) | (135) | (1,005) | (278) |
| 96 | 258 | 699 | (747) | 421 |
| 97 | 221 | 620 | (526) | 1,041 |
| 98 | 220 | 619 | (306) | 1,660 |
| 99 | 220 | 619 | (86) | 2,279 |
| 00 | 215 | 605 | 129 | 2,884 |
| 01 | 216 | 605 | 345 | 3,489 |
| 02 | 215 | 606 | 560 | 4,095 |
| 03 | 216 | 605 | 776 | 4,700 |
| Total | 776 | 4,700 | | |

(2) Capacity Reduction. Assuming the workload of four NADEPs and one ALC are consolidated, the projected utilization will increase from 62 to 94 percent.

(3) Unnecessary Duplication. Duplication in the aviation commodities is significantly reduced.

3. Ships/Underwater Weapons. The analysis of ships/underwater weapons for this Alternative were identical to that of Alternatives C and D as ship and underwater weapons commodities offer no potential for consolidation under any Service other than the current using Service, the Navy. A summary of those conclusions is as follows.

a. NAVSEA Shipyards.

(1) Cost Savings. For the purpose of comparing Alternatives B through G, consolidation of the work of seven shipyards into five has the potential to achieve depot maintenance cost reductions ranging from 702 to 2,701 million dollars from FY94 through FY03.

(2) Capacity Reduction. With the work of two shipyards absorbed by the other facilities, the projected FY95 utilization rate will increase from 67 to 100 percent based on direct labor hour workload requirements.

(3) Unnecessary Duplication. Unnecessary duplication within NAVSEA is reduced, particularly when commodity and component consolidation is pursued following consolidation of shipyards.

b. NAVORD Depots.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of the depot maintenance work of nine NAVORD depots into three has the potential to achieve depot maintenance cost reductions of 1 to 178 million dollars from FY94 through FY03.

(2) Capacity Reduction. This consolidation of nine depots into three eliminates FY95 capacity excess.

(3) Unnecessary Duplication. Unnecessary duplication within NAVORD is reduced by the consolidation of nine depots into three.

4. Ground Vehicles/Equipment.

a. Capacity vs. Workload.

(1) As shown in Table G-31, ground vehicle/equipment depots were projected by JDMAG to have workload of 17,300 KDLH in FY95.

(2) The FY87 capacity of the ground vehicle/equipment depots was 29,500 KDLH, a capacity excess of 12,300 KDLH over the FY95 workload projection. Based on this capacity, ground vehicle/equipment depot utilization would be 58 percent. As shown in Table G-26, the Army would be the Executive Service for all ground vehicles and equipment. Army depots would also assume Executive Service responsibilities for general purpose equipment, artillery, and ordnance. ANAD is the sole Army facility configured for heavy combat vehicles and all Services' small arms. LEAD is responsible for all Services' tactical missiles, RRAD for light combat vehicles and artillery, TEAD for automotive and rail, and TOAD for all electronics. Marine Corps depots are virtually identical in depot maintenance capabilities.

**Table G-31 Comparison of Ground Vehicles/Equipment Depots**
**(Thousands of Direct Labor Hours)**

| DEPOT | FY95 WORK | FY87 CAPACITY | EXCESS |
|---|---|---|---|
| ANAD | 2000 | 4600 | 2600 |
| LEAD | 2500 | 3800 | 1300 |
| RRAD | 2700 | 4800 | 2100 |
| TOAD | 3400 | 5500 | 2100 |
| TEAD | 1100 | 3200 | 2100 |
| MCLBA | 1200 | 1100 | None |
| MCLBB | 1200 | 1400 | 200 |
| OO-ALC | 500 | 500 | None |
| SA-ALC | 800 | 1700 | 900 |
| SM-ALC | 1800 | 2800 | 1000 |
| WR-ALC | 100 | 100 | None |
| Total | 17300 | 29500 | 12300 |

b. Potential Consolidations.

(1) Army. The work of five Army depots were consolidated into four.

(2) Air Force. Ground communications-electronics and general purpose equipment depot maintenance was consolidated at Army depots. Since this work was conducted at the same depot which was consolidated under aviation, no further depots were consolidated.

(3) Marine Corps. The work of two depots was consolidated into the Army depots to take advantage of the "Centers of Excellence" concept.

c. Ground Vehicle/Equipment Summary.

(1) Cost Savings. For the purpose of comparing Alternatives B through F, consolidation of land vehicles, ground communications-electronics, and general purpose equipment into Army depots has the potential to achieve depot maintenance cost reductions from 281 to 1,600 million dollars during FY94 through FY03. The cumulative annual distribution of these potential reductions is shown in Table G-32. Note that the break even point for the low savings extreme occurs after seven years.

**Table G-32 Alternative E (Ground Vehicles/Equipment) -- Projected Relative Savings (Constant FY93 $Million)**

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (201) | (68) | (201) | (68) |
| 95 | (162) | (40) | (363) | (108) |
| 96 | 74 | 221 | (289) | 113 |
| 97 | 81 | 218 | (208) | 331 |
| 98 | 81 | 217 | (127) | 548 |
| 99 | 82 | 218 | (45) | 766 |
| 00 | 82 | 209 | 37 | 975 |
| 01 | 80 | 208 | 117 | 1,183 |
| 02 | 82 | 208 | 199 | 1,391 |
| 03 | 82 | 209 | 281 | 1,600 |
| Total | 281 | 1,600 | | |

(2) Capacity Reduction. Assuming the workload of five Army depots is consolidated into four, and two Marine Corps depots are consolidated into the Army, the projected utilization will increase from 58 to 92 percent.

(3) Unnecessary Duplication. Unnecessary duplication in the ground vehicle/equipment commodity is eliminated.

5. Missiles.

a. Tactical Missiles. Ongoing initiatives have consolidated much of the tactical missile work at LEAD. Some Navy work remains outstanding at NAVORD depots. After the consolidation into three NAVORD depots, the transfer of this tactical missile work to

LEAD would not permit further consolidation of NAVORD depots.

b. Strategic Missiles. This commodity has already been consolidated within the Air Force at OO-ALC.

6. Metrology.

a. Capacity vs Workload. There are three metrology laboratories. The Air Force lab is at AGMC, the Navy lab is being consolidated at NADEP-NORIS, and the Army lab is at Redstone Arsenal, AL. Specific capacity and workload statistics were not available for all locations.

b. Potential Consolidations. A 29 January 1991, JLC/DDMC report titled "*A Study of the Services' Primary Standards Laboratories for the Joint Logistics Commanders and the Defense Depot Maintenance Council*", was reviewed to obtain costs for consolidation analyses. The most cost effective consolidation was to establish the Air Force as the Executive Service and consolidate metrology support at AGMC.

c. Metrology Summary.

(1) Cost Savings. After a consolidation cost of 8 million dollars, annual savings of 1.54 million dollars would begin accruing in the sixth year. Cummulative savings through FY03 are 8 million dollars.

(2) Capacity Reduction. AGMC metrology capacity would be expanded during consolidation. The facility would operate very close to 100 percent capacity.

(3) Unnecessary Duplication. All unnecessary metrology duplication within and among the Services would be eliminated.

7. Summary.

a. Cost Savings. For the purpose of comparing Alternatives B through F, Alternative E consolidations have the potential to achieve depot maintenance cost reductions ranging from 1,761 to 9,180 million dollars during FY94 through FY03 as shown in table G-33.

**Table G-33 Alternative E FY94-FY03 -- Projected Relative Savings**
(Constant FY93 $Million)

NOTE: Only for comparison with Alternatives B through F

| | Annual | | Cumulative | |
|---|---|---|---|---|
| FY | Minimum | Maximum | Minimum | Maximum |
| 94 | (1,085) | (346) | (1,085) | (346) |
| 95 | (976) | (272) | (2,061) | (618) |
| 96 | 510 | 1,330 | (1,551) | 712 |
| 97 | 476 | 1,225 | (1,075) | 1,937 |
| 98 | 476 | 1,223 | (599) | 3,160 |
| 99 | 476 | 1,225 | (123) | 4,385 |
| 00 | 472 | 1,200 | 349 | 5,585 |
| 01 | 469 | 1,197 | 818 | 6,782 |
| 02 | 472 | 1,200 | 1,290 | 7,982 |
| 03 | 471 | 1,198 | 1,761 | 9,180 |
| Total | 1,761 | 9,180 | | |

b. Capacity Reduction. The total utilization of DOD depots after the consolidations recommended under Alternative E rises from 61 percent to 95 percent.

c. Unnecessary Duplication. As discussed for each of the commodities above, Alternative E reduces virtually all duplication among the Services for maintenance of similar weapon system platforms and DLR/components.

# APPENDIX G

## ANALYSIS OF ALTERNATIVE F

1. Overview. Alternative F considers the creation of a single manager to control all depot maintenance within DOD. Two different and distinct options are examined. One is a Defense Maintenance Agency (DMA) reporting to OSD and the other is a Joint Depot Maintenance Command (JDMC), a unified command, reporting to the National Command Authority (NCA) through the CJCS. The basic difference between Alternative E and Alternatives F(DMA) and F(JDMC) is who is in charge. In Alternative E, there are three separate Service Executives in charge of depot maintenance. In Alternative F(DMA), there is a central agency is charge of all depot activities. In Alternative F(JDMC), there is a unified commander in charge of four separate Service components. It is assumed for the purpose of this analysis that both options under Alternative F would result in no less consolidation and elimination of duplication than is possible in Alternative E. Therefore, the analysis developed for Alternative E is also applied to both options in Alternative F.

2. DMA. A DMA involves the creation of a central authority that is superimposed over the existing depot maintenance system with full responsibility and authority to change, manage, and operate the depot maintenance effort DOD-wide. A DMA implies removing the responsibility for depot maintenance from the Services and placing it in the hands of a central authority. Basically, the Services would purchase depot level maintenance from the DMA. A DMA would:

a. Directly own, control, and operate applicable depot level maintenance facilities, other than theater assigned depot assets.

b. Be responsible for consolidations, competition initiatives, workload assignments, capital investment decisions, and standardization of systems and work processes, as appropriate, to maximize the efficiency of the depot system.

c. Work to Service specified technical aspects of work packages.

d. Negotiate with the Services on time schedules and costs.

e. Ensure adequate depot capacity for peacetime and surge requirements.

f. Submit and defend depot budget requirements. The Services would control the funds authorized for depot level maintenance.

g. Develop BRAC recommendations (post BRAC-93).

3. JDMC. A JDMC would be the central authority for depot maintenance with full responsibility and authority to change, manage, and operate the depot maintenance effort. In this case, however, the Services would have a fully participating role through their Service components, including ownership and operation of those depots that remain active after consolidation decisions are made by the Joint Commander. A JDMC would:

a. Be responsible for consolidations, competition initiatives, workload assignments, capital investment decisions, and standardization of systems and work processes, as appropriate, to maximize the efficiency of the depot system. The ownership and day-to-day control of the individual depot facilities would remain with the appropriate Services.

b. Negotiate time standards and costs with the users.

c. Work to Service specified technical aspects of work packages.

d. Ensure adequate depot capacity for peacetime and surge requirements.

e. Coordinate consolidated submission of depot budget requirements. The Services would control the funds authorized for depot level maintenance.

f. Develop BRAC recommendations (post BRAC-93).

# APPENDIX G

## ANALYSIS OF ALTERNATIVE G

1. Overview. Alternative G considers contracting the entire depot maintenance workload to private industry either through industry facilities or government-owned/contractor-operated (GOCO) facilities. Depot maintenance management and contract coordination would be provided by a new OSD-level organization or Service organizations. In either case, the contracting agency would:

a. Assess contractor capabilities before awarding a contract.
b. Provide pricing and negotiation support.
c. Support source selection.
d. Manage the contract after award.
e. Provide technical support.
f. Accept the contractor's work and assure payment.

2. Effect on Competition. Competition is one of the principal strategies of DMRD 908. Public-private and public-public competition improves efficiency by stimulating overhead cost reduction and improved productivity.

a. Competition Pilot Program Results. In response to the FY91 congressional authority for a competition pilot program described in Chapter II, each Service opened selected depot maintenance work to competition. Some competition involved private bidders, as well as public bidders from more than one Service. Of the 18 workloads awarded with an annual value of 87 million dollars, organic depots won 14 awards. Table G-34 displays the results of FY91 competition, including projected savings resulting from the awards. In FY92, of fourteen workloads awarded, organic depots won eight. The projected savings from competition for FY91 through FY97 are 22.76 million dollars.

b. Competition Without Public Depots. The public-private pilot program demonstrated that organic depots are competitive with private industry and probably provide an incentive for private industry to improve efficiency and submit competitive bids. This alternative eliminates organic public depots and leaves only private-private competition. Without the competition of the depots to drive industry to cut costs commercialized maintenance would probably result in much lower savings than those resulting from public-private savings realized in FY91. The competitive environment that produces savings today could evolve into a sole-source environment with significantly greater costs.

**Table G-34 Depot Maintenance Competition FY91 Pilot Program Results**

| Service | Workload | Previous Work Site | Award Winner | FY91-97 Savings ($M) |
|---|---|---|---|---|
| Army | T63-700 Engine | CCAD | CCAD | 3.13 |
| | PATRIOT Launch Station | LEAD | LEAD | -0.09 |
| | M113 Engine | RRAD | Detroit Diesel | 0.42 |
| | M44 1-1/2 Ton Engine | TEAD | TEAD | 0.36 |
| | MILVANs | ANAD | Genco | -0.03 |
| | AN/TPQ-36/37 | SAAD | SAAD | -0.38 |
| | RT-524 | TOAD | TOAD | 1.49 |
| | | | | 4.90 |
| Air Force | G-5615 Gearbox | SA-ALC | Standard Aero | 6.40 |
| | F-16 Software IV&V | OO-ALC | Logicon | 0.70 |
| | TF33 Vanes & Shrouds | Contract | Chromalloy | 1.30 |
| | AN/TRC-97A | SM-ALC | SM-ALC | 0.70 |
| | AN/ARC-186-UHF | WR-ALC | WR-ALC | 1.70 |
| | | | | 10.80 |
| Marine Corps | M923 5-Ton Truck | MCLBB | TEAD | 6.89 |
| | AN/TPB-1D | MCLBA | Loral | 0.17 |
| | | | | 7.06 |
| | | | **DOD Total** | **22.76** |

Source: DDMC CBP (FY92-97)

3. **Limits of Contractor Maintenance**. This alternative will create several new limitations that are discussed in the following subparagraphs.

a. Old Technology Maintenance. Service depots maintain many weapon systems built with older technology. Such systems often require reverse engineering to produce parts no longer available from commercial vendors. This situation will become even more prevalent as lower defense procurement budgets necessitate extending weapon system life cycles. Work on older systems is often too small in volume or too difficult to be attractive to private industry. It is also very difficult to predict the scope and details of work required on older systems before the actual effort is begun, thereby resulting in costly, non-competitive contract revisions. After the attractive and high profit work is awarded to private industry, the Services can be expected to be left with essential work on older weapon systems that has traditionally been performed by the organic depots. For this reason, some GOCO facilities on cost-plus contracts will probably be essential.

b. Capacity Expansion. Commercial industries can be expected to size their capacity to peacetime requirements. It would be expensive to maintain excess capacity for short-term surges in output which are critical to meeting military contingencies.

c. Weapon System Management. Unlimited competition would substantially complicate weapon system management. Instead of dealing with one or a small number of military commands for depot maintenance of a weapon system platform, a manager may have to balance the efforts of a large number of contractors throughout the country, each of which has been awarded the maintenance of components of the platform.

d. Exposure to Unplanned Interruptions. Service depots are seldom, if ever, exposed to work stoppages caused by problems with labor, such as strikes or job actions. They are also virtually immune to bankruptcies and corporate reorganizations which can bring output of private industry to a complete and unexpected halt. At most, Service depots experience these problems when their vendor suppliers have unplanned interruptions. The depots counter these temporary delays with alternate sources of supplies or internal reconfigurations to produce components organically. Complete contractor depot maintenance exposes the entire maintenance function to these problems which can interrupt output for long periods and severely degrade readiness and warfighting abilities in a very short order.

e. Contract Flexibility. Service depots experience frequent changes to programmed output and system maintenance requirements. Modifications to contracts to support program changes could be costly and time consuming.

4. Summary.

a. Cost Savings. Cost savings for Alternative G were not computed. The cost savings from competition using the current system of public-private competition are highly variable depending on the source used. Eliminating the public element from competition will result in even greater variability which is not predictable. Contract maintenance may yield initial cost savings, but actually become more expensive as duplicate capabilities are discontinued and contracts tend to become sole-source. No dollar comparison of Alternative G can be made relative to Alternatives B thru F.

b. Capacity Reduction. Since all Service depots are closed or become GOCO, any unnecessary capacity within the Services is eliminated. Service capacity will be zero.

c. Duplication. As with capacity reduction, all Service depots are eliminated along with all duplication.

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DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR LOGISTICS
WASHINGTON, DC 20310-0500

DALO-SMM

26 OCT 1992

MEMORANDUM FOR THE CHAIRMAN, JCS DEPOT MAINTENANCE STUDY GROUP

SUBJECT: Army's Input to the JCS Depot Maintenance Study--Information Memorandum

Sir -

1. This is in response to your request that each service evaluate the seven alternatives proposed to achieve even greater depot maintenance efficiencies and prepare an issue paper on the role of Army depots at reduced service levels (Tabs A & B).

2. As you well know, we submitted an alternative to the study group, which in essence provides for single service management of a weapon system, all its components, and depot level reparables. We think this alternative creates a logical management strategy and supports the system management approach to depot maintenance. It also maximizes cost savings while maintaining responsiveness to contingency requirements, peacetime readiness, sustainment and reconstitution of our forces.

3. We are looking forward to the outcome of your study.

2 Encl

LEON E. SALOMON
Lieutenant General, GS
Deputy Chief of Staff
for Logistics

CF:
AMCCG
DAMO-ZA
ASA (I,L&E)
DALO-PLZ-A
JCS (J4)

# APPENDIX H

# ARMY ALTERNATIVE REVIEW

Alternative A Individual Service Management

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintentenance process?**

**PRO:** Proven capability to support life cycle management of materiel, peacetime readiness, sustainment and reconstitution of redeployed forces. Fully integrated approach to integrated logistics system support (ILS) management to include requirements, specifications and configuration control being centralized under a single materiel manager. Integrated with all aspects of the Army's logistics structure. Depot maintenance is a vital element of the Army's maintenance policy and doctrine, facilitating coordination between requirements, development, engineering, maintenance and financial management for improving/upgrading equipment which will be increasingly important in the future budgetary environment. Facilitates program execution with work specifications, production standards and depots centralized under a single industrial manager, Depot Systems Command, where end items and depot level reparables are rebuilt/remanufactured/ modified at Centers of Technical Excellence (CTX) providing a integrated weapon systems approach to maintenance.

**CON:** Does not allow for maximum technology transfer between services, adoption of best industrial processes across DOD or attain best depot maintenance costs for end items and DLRs.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

It is reasonable to expect some savings can be made without jeopardizing peacetime readiness, sustainment and reconstitution which are three critical factors in the depot maintenance military effectiveness equation. It is essential those factors be weighed carefully against any cost savings that will clearly reduce military effectiveness in evaluating every alternative.

**Efficiencies:** Maintenance Council (DDMC) and Army Management Review Decisions (AMRD) have initiated a wide range of actions to improve efficiency of depot maintenance and are producing positive results. It is recognized additional actions can be taken to further reduce costs, excess capacity and duplication under this alternative; however, it will not achieve maximum savings potential without degrading military effectiveness.

Alternative B Individual Service Management (Consolidation into "Centers of Excellence")

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

**PRO:** Best alternative in terms of readiness, sustainment, reconstitution and cost savings. Depot maintenance cost for end items and DLRs would decline without the negative impacts of other alternatives. Avoids system and depot management problems of splitting management of end items and DLRs as Alternatives C, D, E, F and G do. Logical management strategy based on Executive Agent/ Single Service Manager for both weapon and non-weapon systems and associated DLRs and achieves maximum effectiveness from Center of Excellence concept. Supports weapon systems management and "One face to the customer".

**CON:** Service could loose control of all depot maintenance for some systems. This loss of control is also applicable to varying degrees for Alternatives C, D, E, F, and G.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Yes, assuming Executive Agent assignment based on predominant operator eg. ships, fixed wing, rotary wing, ground commo and electronics, ground vehicles etc.

**Implementation: Is this alternative realistic?**

Management strategy is logical, supports systems management approach and maximizes cost savings while maintaining responsiveness to peacetime readiness, sustainment and reconstitution. Supports other services on a systems basis which facilitates support of PEOs/PMs and service maintenance managers in acquisition, modification, field support etc. Implementation of the depot maintenance strategy should be included in the BRAC 93 process even if this requires some delay, e.g. 30-60 days so any required closures/realignments can be initiated quickly to maximize savings potential vice waiting for the BRAC 95 window. Depot maintenance management of Executive Agent/Single Manager assignments and transfer of ownership of any depots/facilities would be phased in during FY93 and completed before/at start of FY94. Easier to manage than alternatives splitting end items and DLRs.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorties, service unique equipments, "Pop-up projects," etc?**

The Army would continue to exercise centralized command and control over organic depots through the Depot System Command; where workloading, workload priorities, facilities maintenance/modernization, funding, coordination with other services etc., would be focused. The Army, as Executive Agent, and the other services have successfully participated for a

number of years in joint staffing of the Executive Director for Conventional Ammunition (EDCA) Office. This could be a useful model in developing joint staffing at appropriate levels in the depot maintenance arena. Assignment of supported service personnel to key staff and management positions at HQ DESCOM and appropriate commodity commands, eg. Aviation Troop Support Command (ATCOM) and Tank Automotive Command (TACOM) would facilitate the coordination and cooperation required to achieve maximum potential benefits from this alternative. Such an initiative could also meet professional development requirements for military personnel. Details of this type arrangement would be worked out with each supported service and formalized in a memorandum of understanding (MOU).

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Executive Agent meet Army requirement for peacetime readiness, repair/preparation of equipment to support deploying forces, sustainment to include providing personnel/equipment to provide a forward depot capability in contingency areas and reconstitution of redeploying forces.

Input to materiel acquisition process so depot maintenance can be considered in design and depot resources (DMPE, specifications, training) can be provided.

Periodic progress/status reports.

Support Army Program Executive Officers (PEO), Project and Product Managers (PM) in the development and management of integrated logistics support for materiel throughout the life cycle management process to include research, development, testing, production, fielding, modification and disposal.

Participation in workload scheduling and prioritization.

Fabrication, manufacture and reclamation of parts and equipment.

Operation of world class industrial facilities in terms of cost, quality and schedule.

**Efficiencies: Are there near or long-term business efficiencies to be gained by this alternative?**

Will minimize depot maintenance costs for end items and DLRs via the Centers of Excellence Concept and facilitate closing depots to reduce excess capacity. Achieving this may require transferring ownership of some depots to another service. Long term benefits include minimizing operating, MILCON and new capital equipment costs to operates world class industrial facilities.

Alternative C Consolidate Weapons System Platforms into Joint Service "Centers of Excellence"

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

**PRO:** No clear contribution and it is not an improvement over Alternative A where owning service is depot maintenance manager for weapon and non weapon systems and their associated depot level reparables (DLR).

**CON:** Breaks weapons systems management approach which has a proven track record in developing, acquiring, operating, modifying, sustaining and performing depot maintenance on a systems basis. This advocates consolidating the hull/chassis/airframe of weapons under a single service but leaving weapon system DLRs with the owning service and also leaves non-weapon systems and their associated DLRs with the owning service. Unnecessarily complicates depot maintenance and its management for weapon systems and their associated DLRs. Will likely increase costs to maintain a given level of military effectiveness. The service operating the depot responsible for removable and reinstallation of DLRs has no control over anything that happens to the DLRs in between when the end item is owned by another service. This requires the service owning that end item to purchase DLRs from supply or establish repair and return DLR programs at DLR repair depots run by the other services.The results include: additional supply transactions, longer repair cycle times, increased inventory levels, and higher end item repair costs. No one in charge of weapon system depot maintenance and no clear logic to this approach.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized from this alternative?**

No, this management strategy breaks weapon system management which is central to peacetime readiness, sustainment, reconstitution, life cycle management and ILS.

**Implementation: Is this alternative realistic?**

There are no clear benefits to be gained from this alternative since it would complicate the management of depot maintenance and would likely increase costs while creating additional problems in configuration control, engineering and other linkages between the field, developer, service management and depot maintenance. In the absence of clear benefits and given obvious adverse impacts, this alternative is not considered realistic.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

The Army would continue to exercise centralized command and control over organic depots through the Depot System Command; (DESCOM) where workloading, workload priorities, facilities maintenance/modernization, funding, coordination with other services etc., would be focused. The Army, as Executive Agent, and the other services have successfully participated for a number of years in joint staffing of the Executive Director for Conventional Ammunition (EDCA) Office. This could be a useful model in developing joint staffing at appropriate levels in the depot maintenance arena. Assignment of supported service personnel to key staff and management positions at HQ DESCOM and appropriate commodity commands, eg. Aviation Troop Support Command (ATCOM) and Tank Automotive Command (TACOM) would facilitate the coordination and cooperation required to achieve maximum potential benefits from this alternative. Such an initiative could also meet professional development requirements for military personnel. Details of this type arrangement would be worked out with each supported service and formalized in a memorandum of understanding (MOU).

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from this manager?**

The Executive Agent meet Army requirements for peacetime readiness, repair/preparation of equipment to support deploying forces, sustainment to include providing personnel/equipment operating under Army control to provide a forward depot capability in contingency areas and reconstitution of redeploying forces.

Input to materiel acquisition process so depot maintenance can be considered in design and depot resources (DMPE, specifications, training) can be provided.

Periodic progress/status reports.

Support Army Program Executive Officers (PEO), Project and Product Managers (PM) in the development and management of integrated logistics support for materiel throughout the life cycle management process to include research, development, testing, production, fielding, modification and disposal.

Participation in workload scheduling and prioritization.

Operation of world class industrial facilities in terms of cost, quality and schedule.

Fabrication, manufacture and reclamation of parts and equipment.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Any overall efficiencies are unclear given the issues addressed in the (CON) paragraph. The efficiencies from weapon system end item consolidations would increase capacity utilization of some depots; however, that would not necessarily result in closing any depots since owning services would still maintain weapon system DLRs, non weapon systems and their associated DLRs. Overhauling an end item would require it be shipped to a depot where the DLRs were removed and returned to the owning service for repair in an organic depot or shipped to a contractor facility. Repairing those DLRs and then returning them to the original depot for reassembly into the end item hull/chassis/airframe would significantly increase repair cycle times and probably end item rebuild costs. If DLRs are requisitioned from the supply system to replace those shipped off to the owning service for repair, this will require more supply transactions, management overhead and procurement of additional DLRs to support the depot maintenance cycle.

Alternative D Individual Service Management of Weapon System Platforms in "Centers of Excellence" with DLRs, Components and Non-Weapon System Equipment Consolidated in Single Service "Centers of Excellence"

**Effectiveness: What are the impact of this alternative on the military effectiveness of your Services' maintenance process?**

**PRO:** Limited impact on effectiveness for weapon and non-weapon systems when end items and associated DLRs are maintained by the same service via "Centers of Excellence Concept".

**CON:** When end items and DLRs are split between services on a wholesale basis (weapon systems) there are significant adverse impacts without clear offsetting benefits. This is a limited business approach to depot maintenance overall, particularly for weapon systems, and breaks the weapon system management approach which has a proven track record in developing, acquiring, operating, modifying, sustaining and performing depot maintenance of weapon systems. Unduly complicates depot maintenance management for weapon systems and DLRs when split between multiple services and would likely increase end items rebuild costs. Nobody in charge of weapon system depot maintenance and no clear logic to this approach.

**Are you willing to accept some decrement in military effectivness if substantial savings could be realized by this alternative?**

No, this management strategy breaks weapon system management which is central to readiness, sustainment, reconstitution, life cycle management and ILS.

**Implementation: Is this alternative realistic?**

Any proposal to split depot maintenance management of systems and their associated DLRs on a wholesale basis as this does will adversely impact many elements of life cycle management, peacetime readiness, sustainment, reconstitution, etc. There is no compelling case to do this and doing so would suboptimize the overall process in order to optimize some pieces.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

The Army would continue to exercise centralized command and control over organic depots through the Depot System Command; (DESCOM) where workloading, workload priorities, facilities maintenance/modernization, funding, coordination with other services etc., would be focused. The Army, as Executive Agent, and the other services have successfully participated for a number of years in joint staffing of the Executive Director for Conventional Ammunition (EDCA) Office. This could be a useful model in developing joint staffing at appropriate

levels in the depot maintenance arena. Assignment of supported service personnel to key staff and management positions at HQ DESCOM and appropriate commodity commands, eg. Aviation Troop Support Command (ATCOM) and Tank Automotive Command (TACOM) would facilitate the coordination and cooperation required to achieve maximum potential benefits from this alternative. Such an initiative could also meet professional development requirements for military personnel. Details of this type arrangement would be worked out with each supported service and formalized in a memorandum of understanding (MOU).

**If your Service becamse a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Executive Agent meet Army requirement for peacetime readiness, repair/preparation of equipment to support deploying forces, sustainment to include providing personnel/equipment operating under Army control to provide a forward depot capability in contingency areas and reconstitution of redeploying forces.

Input to materiel acquisition process so depot maintenance can be considered in design and depot resources (DMPE, specifications, training) can be provided.

Periodic progress/status reports.

Support Army Program Executive Officers (PEO), Project and Product Managers (PM) in the development and management of integrated logistics support for materiel throughout the life cycle management process to include research, development, testing, production, fielding, modification and disposal.

Participation in workload scheduling and prioritization.

Fabrication, manufacture and reclamation of parts and equipment.

Operation of world class industrial facilities in terms of cost, quality and schedule.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Any overall efficiencies are unclear given the issues addressed in the above CON paragraph. The efficiencies from weapon system and end item consolidations would increase capacity utilization of some depots; however, that would not necessarily result in closing any depots since owning services would still maintain weapon system DLRs and non-weapon systems and their associated DLRs. Overhauling an end item would require it be shipped to a depot where the DLRs were removed and returned to the owning service for repair in an organic depot or shipped to a contractor facility. Repairing these DLRs and then returning them the original depot for reassembly into the end item hull/chassis/airframe will significantly increase repair cycle times and probably end item rebuild cost. If DLRs are requisitioned from the

supply system to replace those shipped off to the owning service for repair, this will require more supply transactions, management overhead, and procurement of additional DLRs to support the depot maintenance cycle.

Alternative E Consolidation of Similar/Common Platforms, DLRs, Components and Non-Weapon System Components Under Single Executive Service

**Effectiveness: What are the impacts of this alternative on the military effectivness of your Services' maintenance process?**

**PRO:** Impact on effectiveness would be dependent on Executive Agent assignments. Assuming assignment based on dominant user for ships, fixed wing aircraft, rotary wing aircraft, ground vehicles, ground command and electronics etc there should be limited impact when depot maintenance of systems and associated DLRs are managed by the same service.

**CON:** When end items and DLRs are split between services on a wholesale basis (weapon systems) there are significant adverse impacts without clear offsetting benefits. This is a limited business approach to depot maintenance overall, and particularly for weapon systems, and breaks the weapon system management approach which has a proven track record in developing, acquiring, operating, modifying, sustaining and performing depot maintenance of weapon systems. Unduly complicates depot maintenance management from every aspect when split between multiple services and would likely increase end item rebuild costs for those systems. Nobody in charge of weapon system depot maintenance and no clear logic to this approach.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

No, this management strategy breaks weapon systems management which is central to peacetime readiness, sustainment, reconstitution, life cycle management and ILS.

**Implementation: Is this alternative realistic?**

Any proposal to split depot maintenance management of systems and their associated DLRs on a wholesale basis breaks the weapon systems approach to management and will adversely impact many elements of life cycle management, peacetime readiness, sustainment, reconstitution etc. There is no compelling case to do this and doing so would suboptimize the overall process in an effort to optimize some portions (limited purely business approach).

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

The Army would continue to exercise centralized command and control over organic depots through the Depot System Command; (DESCOM) where workloading, workload priorities, facilities maintenance/modernization, funding, coordination with other services etc., would be focused. The Army, as Executive Agent, and the other services have successfully participated for a number of years in joint staffing of the Executive Director for Conventional Ammunition

(EDCA) Office. This could be a useful model in developing joint staffing at appropriate levels in the depot maintenance arena. Assignment of supported service personnel to key staff and management positions at HQ DESCOM and appropriate commodity commands, eg. Aviation Troop Support Command (ATCOM) and Tank Automotive Command (TACOM) would facilitate the coordination and cooperation required to achieve maximum potential benefits from this alternative. Such an initiative could also meet professional development requirements for military personnel. Details of this type arrangement would be worked out with each supported service and formalized in a memorandum of understanding (MOU).

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Executive Agent meet Army requirement for peacetime readiness, repair/preparation of equipment to support deploying forces, sustainment to include providing personnel/equipment operating under Army control to provide a forward depot capability in contingency areas and reconstitution of redeploying forces.

Input to materiel acquisition process so depot maintenance can be considered in design and depot resources (DMPE, specifications, training) can be provided.

Periodic progress/status reports.

Support Army Program Executive Officers (PEO), Project and Product Managers (PM) in the development and management of integrated logistics support for materiel throughout the life cycle management process to include research, development, testing, production, fielding, modification and disposal.

Participation in workload scheduling and prioritization.

Operation of world class industrial facilities in terms of cost, quality and schedule.

Fabrication, manufacture and reclamation of parts and equipment.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

When end items and DLRs are managed by the same service there are significant cost savings because this management approach facilitates closing depots to reduce excess capacity, duplication etc. When end items and DLRs are managed by separate services, there are numerous negative impacts to systems management, plus end item rebuild programs are greatly complicated.

Alternative F DOD Consolidation

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

**PRO:** It is difficult to rationalize how removing depot maintenance from the services will enhance effectiveness of Army maintenance either within depots or the overall maintenance process from developer to user to depot.

CON: Major impact on Title 10 responsibilities and would likely require changes to existing federal statues. Would place either a DOD staff element or the JCS in charge of an organization directly impacting readiness, sustainment, reconstitution. This would break the weapon system management approach by disrupting the linkages between field, developer, service maintenance/resource management and the depot. It would be extremely difficult for service managers to reach through the DOD or JCS to the depots and work the life cycle management process on a weapon system management basis. This would be particularly difficult when engineering, configuration management and specifications are involved which require close coordination over sustained periods of time to support new system development, fielding of new equipment, and modification of fielded end items and DLRs. It would also complicate the overall maintenance management process of services developing maintenance doctrine and policy. DOD or JCS involvement would add several additional organizational layers (DOD or JCS, some type depot command headquarters, some number of subordinates command elements, e.g., land, air and sea or regional) between service managers and supporting depots and would make the depot virtually unreachable from the field level. Centralization of critical operational functions at the very top levels of large organizations is not the most effective or efficient management methodology as Sears and Roebuck, General Motors and many other organizations have learned the hard way. Staffs at the top of such organizations tend to be overly bureaucratic, lack the proper sense of urgency, are far removed from the impact of their poor decisions and in general lack the operational level experience required. Not at all clear what the value added would be from DOD or JCS operating depots that cannot be achieved from Alternative B with far less adverse impacts.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

This alternative has potential for savings but also for significantly adversely impacting military effectiveness. Greater benefits are achievable under Alternative B with less adverse impacts; therefore, this alternative is not supportable.

**Implementation: Is this alternative realistic?**

No, this would break the systems management approach by removing the service role in depot maintenance, adding additional organizational layers to the process, centralizing and calling it increased efficiency. Implementation would be a lengthy, complex process due the

requirement to "stand up" a new command with subordinate elements, etc. and the learning curve those organizations would undergo. Any closure and realignment decisions would likely be delayed until the BRAC 95 window resulting in no significant savings or closure until the year 2000 or beyond. The objective can be achieved with far less disruption and adverse consequences, e.g., Alternative B.

**If your Service were selected as an Executive Agenct/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Not applicable.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Yes, however, they do not offset the numerous adverse impacts or achieve the efficiencies and saving potential of Alternative B. This alternative creates another massive bureaucracy that further isolates the field, developer and service manager from supporting depots. Will take longer to implement than Alternative B thereby delaying attainment of significant savings.

Alternative G Commercialize Maintenance

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

**PRO:** Theoretically at least, this type competition would result in reduced costs of depot maintenance and support peacetime readiness at lower costs; however, this has not been proven.

**CON:** Commerical industry would size capacity based solely on peacetime requirements and paying them to maintain excess capacity would be cost prohibitive. Difficulty and cost of competing and awarding depot maintenance contracts would be greatly exacerbated; for example, last year the Army had some 6,000 program changes in it's organic depot workload. Modifying, renegotiating contracts to support changes of this magnitude would be a crushing administrative/overhead cost and it would be impossible to maintain reasonable control over costs with quantities, condition of assets, etc. continually changing.

Industry is primarily interested in high volume and high dollar contracts. The Army has relatively few programs with an annual value of over $1M and industry is just not interested in bidding on small programs. For example, of 10 ea FY92 competition items awarded to date, there were no industry bids on three items. It should be noted Army organic depots won 5 each of 7 each programs competed in FY91 and 8 ea of 10 ea competed to date in FY92.

Unlimited contracting out would break the wapon system management approach for all currently fielded systems since unlimited competition would result in depot maintenace for end items and associated DLRs scattered across private industry.

Contracting for maintenance as part of weapon system acquisition costs for new systems would result in services not buying technical data packages leaving them at the mercy of original equipment contractors in regards to costs in the future. This is an extremely short-sighted and dangerous concept given that systems may be in the inventory 30-40 years or longer, especially in the current budget environment. In that period companies would go bankrupt, merge, sell off some units, be bought by foreign companies, discontinue operations in certain equuipment areas, etc., etc.

Total commercialization of depot maintenance would likely encounter strong congressional opposition and generate prohibitive legislation.

Worker strikes at commercial contractor facilities could have devastating impacts on readiness, sustainment and reconstitution. Organic depots, the "Core" maintenance workload concept and reasonable competition levels offer clear advantages over unrestricted competition.

Not at all clear what the advantages of this alternative are in regards to military effectiveness.

**Are you willing to accept some decrement in military effectivenss if substantial savings could be realized by this alternative?**

No, is a fatally flawed strategy.

**Implentation: Is this alternative realistic?**

No, it gives up a proven depot maintenance management strategy that can be restructured e.g., Alternative B to achieve reductions in capacity, duplication, overlap and rebuild costs for end items and DLRs without the adverse impacts of Alternative G.

It is likely a new command structure would need to be created for effective individual service or DoD managmenet of the numerous contracts required to accomplish this alternative. "Standing up" this command, it's learning curve and the long periods of times required to contract out significant workload would delay attainment of major savings for a lengthy period of time. Such actions could not be completed by the BRAC 95 window; thereby greatly complicating any future closure of depots. Estimate it would take 10 years or longer to actually close any significant number of depots using this trategy. An associated major problem at our multi-mission depots with major ammunition storage missions e.g., Letterkenny, Tooele, Red River and Anniston is the munitions mission remains, requiring significant ownership costs to keep the installations open and to manage and execute outload in support of major contingencies. It is noted all services are dependent on those munitions.

Any substantial savings would be purely theoretical at best, not provable, if achievable at all would take a very long time to do so (cost and time competition), would not resolve the problems with low volume/dollar programs and of support equipment originally manufactured by companies no longer in existence, etc.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Joint staffing of the contracting headquarters would be appropriate with other supported services personnel being assigned to key staff and management positions to cooridnate priorities, technical requirements, etc. Staffing dtails would be worked out with each supported service and formalized in a memorandum of understanding (MOU).

**If your Service became a customer of an Executive Agent/Single manager, what would you expect from that manager?**

The Army would expect:

The Executive Agent meet Army requirements for peacetime readiness, repair/preparation of equipment to support deploying forces, sustainment to include providing personnel/equipment operating under Army control to provide a forward depot capability in contingency areas and reconstitutuion of redoploying forces.

Input to materiel acquisition process so depot maintenance can be considered in design and depot resources (DMPE, specifications, training) can be provided.

Periodic progress/status report.

Support Army Program Executive Officers (PEO), Project and Product Manager (PM) in the development and management of integrated logistics support for materiel throughout the life cycle managmenet process to include research, development, testing, production, fielding, modification and disposal.

Participation in workload scheduling and prioritzation.

Fabrication, manufacture and reclamation of parts and equipment.

Operation of world class industrial facilities in terms of cost, quality and scheudle.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

No, it is expected the near and long term implications of totally commercializing maintenance would be increased overall costs.

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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, DC 20350-2000

IN REPLY REFER TO
4700
Ser N4/2U593855
27 Oct 92

MEMORANDUM FOR THE EXECUTIVE GROUP, JCS DEPOT MAINTENANCE CONSOLIDATION STUDY

Subj: JCS DEPOT MAINTENANCE CONSOLIDATION STUDY

1. In response to the request from Executive Group Director, General Went, Tab A is forwarded as Navy's response to the alternatives under study. Specifically, Alternative I is clearly the preferred choice because it maintains the vital command and control linkage through the life cycle between Navy depots and the operating forces they support; and retains the vital engineering and emergency support capabilities which must be available to meet fleet safety and readiness objectives. This alternative preserves Service oversight to ensure maintenance meets mission and readiness requirements.

2. A second alternative is derived from a combination of Alternative I and IV. In addition to maintaining command accountability for the mission of the Service, the establishment of Centers of Excellence for a specific commodity would offer significant opportunity for productivity improvements.

3. There is no clear consensus to other alternatives beyond I and IV.

S. F. LOFTUS
Vice Admiral, U.S. Navy
Deputy Chief of Naval
Operations (Logistics)

# APPENDIX I

## NAVY ALTERNATIVE REVIEW

Alternative A Individual Service Management

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

Continued effectiveness of the Navy's maintenance process was planned into the Navy's response to DOD's "Defense Management Review Decision-908" (DMRD-908). This alternative directs continuation of the efforts begun in response to DMRD-908. Current co-location of depot level and production facilities allows efficient utilization of expensive unique test equipment, engineering synergism, access to design and production experts, and reduced repair costs. Costs avoidance is achieved by not having to pay for retraining/resystemization costs associated with changing to a new alternative. Any impact attendant to this DMRD has been subsequently identified and resolved to the satisfaction of the Navy.

The Services' control over mission readiness requirements would be maintained as a counter balance to maintenance process sub-optimization. This alternative preserves Service oversight to ensure maintenance meets mission and readiness requirements. The Seven Step Process ensures cost effectiveness of interservicing decisions, and competition or the potential for competition will provide incentive for savings over the pre-DRMD 908 budgets.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Alternative A retains service control over total logistics support of the weapon systems and components thereby causing the least decrement. An existing plan, the "DDMC Corporate Business Plan", outlines initiatives and presupposes that each service has factored in and has developed appropriate contingencies for potential military effectiveness impacts.

**Implementation: Is this alternative realistic?**

This is considered the best alternative given the savings goals already included in DRMD 908. Cost savings goals and objectives have already been identified and implemented under DRMD 908, and their impact have not yet been fully assessed. Current operations attest to the realistic nature of this alternative.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

An Executive Agent for this alternative would be in an administrative role, coordinating the operation of such joint oversight organizations as the Defense Depot Maintenance Council, the meetings of the Joint Logistics Commanders and the supporting organizations. The infrastructure to support this alternative is already in place.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

See above.

**Efficiencies: Are there near or long-term business efficiencies to be gained by this alternative?**

The efficiencies to be gained by this alternative are defined within the "DDMC Corporate Business Plan". Each Service would use their existing expertise in performing DOD maintenance, and fine-tune existing operations.

**Comments:** Alternative A continues the progress made through the efforts of the Defense Depot Maintenance Council and demands steady and consistent business planning discipline be applied and maintained across all of the DOD depot industrial base. It maintains the link between acquisition and life cycle management within the Services for engineering, maintenance, integrated logistics support, and modernization; and provides for graceful emergency depot surge capability. It focuses Services' management attention on individual Service-unique product-line efficiency; and maintains the customer/provider, operator/maintainer direct relationship.

Alternative B Individual Service Management (Consolidation into "Centers of Excellence")

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative expands Alternative C. Including components of the weapons systems for consolidation with the platform only exacerbates the problems identified in the second alternative. A single Service enables the providing Service to control the total support posture necessary to produce the platform; however, separating the operator from the support organization may degrade military effectiveness. This alternative also disables the Navy's interdependent O/I/D (three level) maintenance program.

The same concerns expressed on Alternative C (same question) apply here; however, this would be less disruptive than Alternative E.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

The Navy is skeptical about the savings potential of this alternative. It does not appear that this alternative changes the present operating methods of the independent Services or requires continuation of the initiatives attendant to DMRD 908 any other productivity thrust.

Remarks under Alternative C, same question, apply here.

**Implementation: Is this alternative realistic?**

This alternative is highly idealistic and probably unrealistic. Transfer of logistics support to a single Service, often not the requiring Service, breaks the synergy between the operator and the repairer. Mission issues will become secondary as the responsibility to meet mission oriented priorities become more distant and disconnected from the depot. The depot optimizes the repair process, not the total weapons system employment process.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

As a designated "DOD Center of Excellence" for a specific commodity, the increased volume would offer opportunity for productivity improvements. Additionally, concentrating management visibility on reduced range of products as well as an increased depth of like and similar commodity items, overhead cost of operations would decline. This would allow for a more focused customer relationship and lead to an enhanced "Reliability/Maintainability Centered" analysis and response.

For ships, the Navy is the sole Service customer of ship depot maintenance in the DOD. As such, it would expect to be named executive agent for ship depot maintenance, and experience little change in its present role.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Performance in accordance with commodity throughput, cost and quality agreements, visibility in advance of problems, so as to allow adjustments if necessary, repair priorities maintained equally across Services and a responsive point of contact.

**Efficiencies: Are there near or long-term business efficiencies to be gained by this alternative?**

None foreseen. Near-term benefits from consolidation would be overcome by cost to implement and maintain. Long-term forecast is dependent upon unstated efficiencies by the executive agency which would have a virtual monopoly on the managed platform/commodity.

**Comments:** There appears to be no "Business Imperative" to improve or no compelling interest toward productivity. This alternative alters the commodity mix between the Services, but does nothing to alter the fundamental business precepts of the Services.

Alternative C Consolidate Weapons System Platforms into Joint Service "Centers of Excellence"

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative mandates a break in the synergy between the "weapon" and the "system" and a division of repair focus such that Service mission responsibilities would be secondary to the maintenance process and, thus, could be impaired. For example, under the alternative the Air Force maintains all missiles but does not have the knowledge of nor experience with, the unique ship-missile system integration nor with the marine environment which faces Navy equipment. The default position would be one which does not recognize the different employment of the Service systems. Conflicting priorities, relocation, and transportation costs would be significantly affected. The total logistics support integration would increase the size of the logistics "layin" in support of pipeline and thereby necessitate either reduction in military effectiveness or increased total cost of operations.

This alternative breaks the synergy between weapons and the maintenance system. It would create a division between the repair function and the overall mission responsibility of each Service. Layering between the operator and the maintainer would ensure that operational problems and needs would seldom be heard. It would be a tremendous if not expensive undertaking to maintain mission/asset readiness when systems maintenance and management are consolidated for their physical generic similarities rather than the performance and employment requirements which the individual systems must meet and which set them apart from each other.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

This alternative will not provide substantial savings. Any savings potential must first be viewed within the overall context of mission performance by the Services. It is possible to set forth the alternatives to provide least cost for a given maintenance program or organization, or the best maintenance program or organization for a given funding level. The Navy is currently pursuing the former approach in order to meet current maintenance guidance. This will ensure ship and operator safety in a highly risky operational environment.

**Implementation: Is this alternative realistic?**

This alternative is realistic, but lessons learned from the establishment of Single Manager for Conventional Ammunition in the late 1970's should be reviewed.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

The Navy presently integrates interservicing workload into the routine "Work in Process" and only applies extraordinary management visibility when there are exceptional, warranting conditions. "Executive Agency" would require extraordinary management visibility. It would require exceptional sensitivity to the other Services' mission and role within the broader context of defense priorities and unique requirements that emerge from their mission and role responsibilities.

The Navy is the sole Service customer of ship depot maintenance in the DOD. As such, it would expect to be named executive agent for ship depot maintenance, and experience little change in its present role.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Adaptation of the other Services' support posture to meet the unique mission and responsibility of the Navy, repair priorities maintained equally across Services, and a responsive point of contact. A joint service charter defining roles and responsibilities of all involved parties, prioritization, cost sharing, etc. should be established. The establishment of Single Manager for Conventional Ammunition as a baseline.

For ships, the Navy would expect to be named executive agent for ship depot maintenance, and experience little change in its present role.

**Efficiencies: Are there near or long-term business efficiencies to be gained by this alternative?**

Theoretical long-term efficiencies are possible. This, however, depends upon the extent of "Special Handling" that is required of the "Executive Agent". With a reduction in management staff, "Special Handling" could cause increased inefficiencies over time. Near-term efficiencies are not projected to offset the cost of capability relocation or any of the other "Non-recurring" attendant costs.

From the Navy ordnance perspective, there would be no near or long-term efficiencies. Tactical missile maintenance has been consolidated at Letterkenny effective FY93; Torpedoes and Mines are unique to the Navy; Air-launched Ordnance and Surface Munitions are performed jointly with the Army; TOMAHAWK is 100% commercial; Standard Missile is 65% commercial.

There are no long-term business efficiencies expected from this alternative for ship depot maintenance.

**Comments:** There is a moderate potential for increased savings - mostly aircraft. There is excess capacity at all ALCs. Efficiency would improve due to activities doing like jobs, one location (series of location) for shipment of materials and stability of workforce in a central area. However, this alternative breaks some customer/provider, operator/maintainer direct links through the life cycle. This alternative also presents conflicting priorities as well as a significant investment cost to relocate workload which may not be offset by lower recurring costs. Separation of platform and component repair will require additional cost for reduced repair turn-around time or increased inventory levels to offset shipment time for components. This alternative may require additional turn-around time for platform because of the need to ship, open, and inspect components. Fate of non-industrial support services provided by Navy depots (e.g., in-Service engineering, ILS support to Headquarters, battle damage repair teams, etc.) is in question. This alternative would eliminate concurrent repair platform sites. Site selection for the lead maintenance activity would be a "political football".

Alternative D Individual Service Management of Weapon System Platforms in "Centers of Excellence" with DLR's, Components and Non-Weapon System Equipment Consolidated in Single Service "Centers of Excellence"

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

The creation of Center of Excellence for system components could produce economies of scale, but the savings would have to offset additional facilitization, transportation/handling, scheduling, training, and associated costs. The separation of accountability is present; however, responsibility for the integrity of the platform is retained within the parent Service and therefore the command linkage to accountability for the mission of the Service is maintained. Conflicting priorities, relocation and transportation would be significantly affected.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Service management of the platform may preclude any significant decrease in military effectiveness. Adjustments within the logistics support posture of the platform manager would offset any effectiveness decrement attendant to this alternative. The little adjustments which might be made necessary would be more than offset by the cost savings potential.

Remarks under Alternative C, same question, apply here.

**Implementation: Is this alternative realistic?**

This alternative combined with the initiatives already identified in Alternative A could provide the most realistic chance of success. By selecting the most labor intensive functions to be performed at COE's, the individual Services would still maintain the necessary ownership over the weapon systems/platforms.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

As a designated "DOD Center of Excellence" for a specific commodity, the increased volume would offer significant opportunity for productivity improvements. Additionally, by concentrating management visibility on reduced range of products as well as an increased depth of like and similar commodity items, overhead cost of operations would decline. This would allow for a more focused customer relationship and lead to an enhanced "Reliability/ Maintainability Centered" analysis and response.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Customer would expect performance in accordance with commodity throughput, cost and quality agreements, visibility in advance of problems, so as to allow adjustments if necessary. Repair priorities must be maintained equally across Services and a responsive point of contact that could meet critical short-fused needs of the Fleet operators would all be expected from a single manager. The Service providing the support of components would have to provide equal or better scheduling and quality from present practice. This support includes scheduling to meet the critical short-fused needs of the Fleet operators as required.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

It is presumed that selection of "DOD Centers of Excellence" would be made utilizing competitive analysis. Therefore, the costs attendant to initial establishment of this alternative would potentially be absorbed by productivity returns. Near-term efficiencies would therefore be possible or, at very least, break even. By selecting appropriate components to be accomplished at COE's, long-term savings could be achieved, but initial investment cost will be required in the short term. There is a business advantage in reducing the range of different types of products and increasing the specialization and depth of product operations.

From the Navy ordnance perspective, there would be no near or long-term efficiencies. Tactical missile maintenance has been consolidated at Letterkenny effective FY93; Torpedoes and Mines are unique to the Navy; Air launched Ordnance and Surface Munitions are performed jointly with the Army; TOMAHAWK is 100% commercial; Standard Missile is 65% commercial.

**Comments:** Alternatives A and D offer the best opportunity to enhance the depot industrial business enterprise of the Joint Services by accelerating the tempo of the initiatives outlined in the "DDMC Corporate Business Plan".

Alternative E Consolidation of Similar/Common Platforms, DLR's, Components and Non-Weapon System Components Under Single Executive Service

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

The Navy's ability to support sustained periods of operations at sea is dependent on the interactions of three levels of maintenance operating as one. This alternative builds a disjointed process to achieve depot maintenance. It separates total and integrated logistics support. In doing so, accountability for the mission of the service is diffused. The resultant responsibility for the commodity is no substitute for the direct linkage between operations and integrated logistics which is the underpinning of the Services' mission accountability. It would increase the scheduling/logistics by an order of magnitude at a significant cost and risk. Conflicting priorities, relocation, and transportation would be significantly affected.

The same remarks as under Alternative C (same question) apply here. However, Alternative E would create an even more disjointed approach to the task of effectively managing DOD maintenance requirements. This one would probably be too difficult and too risky.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

This alternative deals with consolidation at the component level. The resultant cost would be enormous. Again, see Alternative C remarks, same question.

**Implementation: Is this alternative realistic?**

This alternative is realistic, but lessons learned from the establishment of Single Manager for Conventional Ammunition in the late 1970's should be reviewed. There is no clear benefit set forth for centralization other than centralization, itself.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

The Navy presently integrates interservicing workload into the routine "Work in Process" and only applies extraordinary management visibility when there are exceptional, warranting conditions. "Executive Agency" would require extraordinary management visibility. It would require exceptional sensitivity to the other Services' mission and role within the broader context of defense priorities and unique requirements that emerge from their mission and role responsibilities. The Navy would solicit weapon system support information from user activities, then develop support requirements. A structure capable of being responsive to requirement documents would be developed as well as an implementation plan.

For ships, the Navy is the sole Service customer of ship depot maintenance in the DOD. As such, it would expect to be named executive agent for ship depot maintenance, and experience little change in its present role.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Adaptation of the other Services' support posture to meet the unique mission and responsibility of the Navy, repair priorities maintained equally across Services, and a responsive point of contact.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Theoretically, some long-term efficiencies are possible. This, however, depends upon the extent of "Special Handling" that is required of the "Executive Agent". With a reduction in management staff, "Special Handling" could cause increased inefficiencies over time. Near-term efficiencies are not projected to offset the cost of capability relocation or any of the other "Non-recurring" attendant costs.

There are no long-term business efficiencies expected from this alternative for ship depot maintenance.

**Comments:** Separation of platform and component repair will require additional cost for reduced repair turnaround time or increased inventory levels to offset shipment time for components. See comments under Alternative C.

Alternative F DOD Consolidation

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

Establishing a new Service for depot maintenance would create a new bureaucracy and additional layer of management. It would eliminate current Service responsibility/pride of ownership, and the associated technical synergism/cost efficiency of co-located production/depot facilities. It will ultimately reduce quality by attempting to achieve cost savings and facility consolidations as a priority over logistics support of the operating forces. Separating the operator from the support organization may degrade military effectiveness and would require several layers of staffing to breakdown major systems to depot working levels. This alternative also disables the Navy's interdependent O/I/D (three level) maintenance program.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Potential for savings is somewhat unclear in this alternative.

**Implementation: Is this alternative realistic?**

This alternative is realistic; however, it would destroy the DOD material management structure for the goal of consolidation. It would be difficult to implement.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Individual Service as "Executive Agent" is not proposed in this alternative.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The "Executive Agent" (presumably DOD) would coordinate commodity production without regard to inter-conflicting and independent Service priorities. This solution eliminates Service partiality.

For ships, the Navy is the sole Service customer of ship depot maintenance in the DOD. As such, it would expect to be named executive agent for ship depot maintenance, and experience little change in its present role.

**Efficiencies: Are there near or long-term business efficiencies to be gained by this alternative?**

Many of the near-term efficiencies might be overcome by costs to implement; however, there are some long-term business efficiencies and potential savings across all of the Services.

**Comments:** If platform management responsibility is removed from the parent Services, then Alternative F would be the viable way to, at least partially, preserve the critical linkage between operator, the logistics pipeline, and the depot maintenance support structure.

Alternative G Commercialize Maintenance

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative proposes to separate the logistics support from military operations and place contract officers in line with the command and control function and between the product necessary to perform the mission. It would require a larger contracting bureaucracy to manage the private sector contracting and oversight. Contracts cannot sustain continued surge/mobilization responsibility. The alternative would reduce military effectiveness due to total reliance on the private sector and loss of expertise and capability in the Navy.

The primary issue of this alternative is the definition and quanification of what it will take to keep the private sector "in the business" during periods of low-workload, so that necessary repair capability is preserved and available when needed. The focus of the corporate Board Room is profit, whereas the focus of the public sector facilities is readiness. Once public sector capability is closed, it is essentially lost. When the private sector decides to leave the market place for economic or profitability reasons, there is no alternative of last resort except extremely high premium payments of exorbitant re-capitalization costs. The current public sector organic activities provide facilities and expertise not available in the private sector (e.g., submarine refueling, large dry docks, propeller shop, recycling, etc.). This alternative would not provide the necessary surge capability required for mobilization.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

It is possible to set forth the alternatives to provide least cost for a given maintenance program or organization, or the best maintenance program or organization for a given funding level. The Navy is currently pursuing the former approach in order to meet current maintenance guidance.

It must be pointed out, that this alternative would most likely not produce substantial savings in the long run. The fact that there would always be the threat of a lack of competition, if not the actual disappearance of competition, would make substantial savings elusive, and higher costs than experienced at present, a more likely outcome.

**Implementation: Is this alternative realistic?**

This alternative is not realistic.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Not Applicable

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Not Applicable

**Efficiencies: Are there near or long-term business efficiencies to be gained by this alternative.**

If the same contractor wins after two or more competitions, his competitors could very easily be driven out of the business, thereby creating a sole source situation. (In fact, in periods of low workload, there would not be any certainty of sufficient competition.) This would almost invariably lead to excessive profits which would offset possible savings gained from elimination of civil service personnel.

Any potential near or long-term gain would be more than offset by cost of establishing extensive Corps of Contract Officers, Negotiators, DPRO personnel, etc. There is a potential of higher overall costs without a check/balance system and higher life-cycle costs are probable. Total reliance on private sector is not acceptable.

DEPARTMENT OF THE NAVY
HEADQUARTERS UNITED STATES MARINE CORPS
WASHINGTON, D.C. 20380-0001

IN REPLY REFER TO
5000
LP
27 OCT 1992

MEMORANDUM FOR DIRECTOR EXECUTIVE WORKING GROUP FOR DEPOT MAINTENANCE CONSOLIDATION STUDY

Subj: DEPOT MAINTENANCE CONSOLIDATION STUDY

Encl: (1) Information Papers
(2) Marine Corps Assessment of Alternatives I - VII

1. Enclosures (1) and (2) are forwarded.

2. While efforts to reduce costs and eliminate excess depot maintenance capacity are supported, I am convinced that it is vital to retain an adequate capability within the Marine Corps to satisfy the National Military Strategy and to provide the Commandant with the ability to effectively exercise his Title 10 responsibilities (ie; maintenance and repair of equipment in support of amphibious missions).

3. The Marine Corps multi-commodity maintenance centers are small, effective organizations geographically positioned to reduce costs and optimize responsive support to the operational commanders. These activities, primarily in direct support of Fleet Marine Force (FMF) and Maritime Prepositioning Force (MPF) readiness commitments, devote more than 80% of their direct labor hours to a maintenance/repair workload that is an extension of FMF capabilities and is less than total rebuild. Marine Corps maintenance centers conduct only one percent of the total annual Department of Defense depot maintenance workload. Of this effort 54 percent is in support of unique Marine Corps weapons systems. The remaining workload consists of a variety of small quantity, low dollar value items which if distributed to other maintenance facilities would neither increase their utilization percentage nor decrease their overhead costs.

4. I support increased levels of competition, other productivity enhancing programs and stronger utilization of the JPCG-DM organization; however, the Marine Corps must retain the capability to satisfy our statutory "force-in-readiness" mission and be able to surge in compliance with the National Military Strategy and the Defense Planning Guidance.

R. A. TIEBOUT
LIEUTENANT GENERAL, U.S. MARINE CORPS
DEPUTY CHIEF OF STAFF
INSTALLATIONS AND LOGISTICS

# APPENDIX J

# MARINE CORPS ALTERNATIVE REVIEW

## PREFACE

The two Marine Corps Multi-Commodity Maintenance Centers (located at Marine Corps Logistics Base, Albany, Georgia, and Marine Corps Logistics Base, Barstow, California) are uniquely different from the depot maintenance facilities of the other services. They are an extension of the Fleet Marine Force (FMF) operational maintenance capabilities. As depicted below, our maintenance centers support various customers; however, 98 percent of their workload is in support of Marine Corps programs:

WORKLOAD DISTRIBUTION CHART

| CUSTOMER | PERCENT |
|---|---|
| FMF END ITEMS* | 68.8 |
| FMF SDR'S | 4.5 |
| OTHER DOD | 1.1 |
| OTHER FMF SUPPORT | 3.0 |
| SHIPMENTS | 10.2 |
| CARE-IN-STORE | 2.8 |
| OTHER CUSTOMERS | .3 |
| TECH ASSISTANCE | .4 |
| FOREIGN MILITARY SALES | .3 |
| SPECIAL PROJECTS | 8.6 |
| TOTAL | 100.0 |

* Includes an FMF repair and return program.

The maintenance centers are small, effective organizations geographically positioned to provide responsive maintenance (repair) support to active FMF components, the Marine Reserve forces, and the Maritime Prepositioning Force (MPF). The maintenance centers are geographically positioned and uniquely configured to reduce costs and optimize responsive support to operational commanders. They are considered an integral part of our overall logistics process and are key components in the Marine Corps ability to fulfill its global commitments.

The continuous reconstitution of the MPF is an example of the unique support provided by our maintenance centers. Responsiveness is the key to maintaining this capability. Based on the recent employment of MPF in Southwest Asia and the massive regeneration effort

currently underway (which will continue through April 1994), the maintenance centers are critical to supporting this global capability. It is a 60-day cycle from the moment an MPF ship docks at the leased facilities at Blount Island, Florida, to the time that ship sails. Fifteen of these days are dedicated to offload and backload of equipment and supplies. The remaining days allow for the equipment and supplies to be inspected, reworked as needed, and repaired. Without the direct support and priority given to MPF at the maintenance centers, meeting the ship's schedule would be virtually impossible. MPF has "head of the line" privilege at the maintenance centers as the Marine Corps has determined that MPF is the number one priority of our total logistics support system. All equipment removed from MPF ships can be worked at our maintenance centers except ammunition. If consolidated depots were adopted, the equipment removed from MPF ships would be parceled to various locations and, in turn, would be returned from these locations at varying times. The Marine Corps currently has sole management control over this vital program. This is extremely important; and it must be emphasized that Blount Island is not merely a customer of the maintenance centers (primarily the one at Albany), but an integral part of the Marine Corps "force in readiness" mission. This direct link enables immediate support and responsiveness to changing priorities as each of the 13 MPF ships is on a 30-month maintenance cycle. This process is one that will continue indefinitely beyond the surge augmentation effort required as a result of Desert Shield/Storm.

As demonstrated in Desert Shield/Storm, MPF provided a new dimension in mobility, readiness, and global responsiveness.
Three squadrons of maritime prepositioning ships are deployed strategically, prepared to immediately provide Marine forces with the equipment necessary to respond to regional contingencies around the globe. Provisioning and maintaining the equipment embarked aboard these ships are vital to the overall mission of these forces. At our modern and uniquely capable leased facilities at Blount Island, Florida, our maintenance centers extend their reach by providing highly trained maintenance personnel to conduct maintenance cycles that modify, rotate, and service embarked equipment.

The following capabilities and facilities of our maintenance centers insure quality support of not only unique Marine Corps equipment but also service common items:

- Capability to repair night vision devices (one of only two facilities in DoD)
- Capability in areas of fiber optics and electro-optics 4 axle chassis dynamometer unique for LAV rebuild
- 3.75 million gallon test pond for speed testing amphibious vehicles
- 1 mile oval paved test track for wheeled and tracked vehicles
- Cross drive transmission dynamometer that is capable of testing M109/M110 Self-Propelled Howitzers, M60A1 Tanks, M88A1/M578 Retrievers, and the AAV7A1 family of vehicle transmissions
- Taylor 2000 hp computer-controlled engine dynamometers
- Class 100 and class 1000 clean rooms
- Nondestructive testing capabilities

420 kV X-ray facilities
Magnetic particle
Dye penetrant
Hardness
Profilometer

- Large scale uninterrupted power capabilities
- Laser capabilities
  Indoor laser safe facility for the repair, test, and calibration of class 3 and 4 lasers and laser systems
  Outdoor laser safe boresight range for testing of class 3 and 4 lasers and laser systems
- Laser dimensional measurement capability
- Full range metrology and radiac capabilities
- Flexible computer integrated manufacturing technology
- Engineering laboratory capabilities
  Wet scanning electron microscope
  X-ray fluorescence
  Gas chromatograph
  Spectrometer
  Spectrophotometer
- High degree of expertise in the repair and rebuild of surveying and astronomic theodolites
- Automated and manual calibration of dc to 18 GHz equipment
- Alpha, Beta, Gamma test, measurement, and diagnostic equipment repair and calibration to include liquid scintillation measurements
- Semiautomated linearity rail used for test and calibration of various infrared and laser-based electronic distance measuring devices
- Special Projects Section chartered to provide design, development, prototyping, and manufacturing of ground equipment requirements when no other ready source of supply is available
- Highly skilled technicians and engineers who are experts in automated test equipment. MCLB Albany is designated as the Marine Corps central point for design/development of automatic test equipment and test program sets to test weapon systems and equipment.
- Horizontal external honing and lapping machine, a horizontal internal honing and lapping machine, mechanical gymnasticators, a vertical honing and lapping machine, and a vapor honing machine for rebuild of gun mounts for self-propelled and towed artillery
- Horizontal magnetic particle inspection machine for testing gun tubes up to 8 inches and beyond

Alternative A Individual Service Management

Each service retains its own separate depot maintenance operations with accelerated DMRD 908 actions, to include interservicing, internal streamlining of depots, reduced depot management staffs at higher headquarters, increased competition, teaming with private industry for remanufacturing/manufacture, increasing productivity of the direct labor work force, etc. Additional depot closures and realignments would be accomplished through the base realignment and closure process. The Defense Depot Maintenance Council will provide management oversight.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative would retain the Marine Corps proven capability.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

While some small degradation in materiel readiness may be acceptable, the ability to support two major regional contingencies requiring total Marine Corps commitment must be retained.

This alternative will allow the Marine Corps to maintain command and control of the maintenance centers, satisfy the National Military Strategy requirements, and provide the Commandant the capability to exercise his Title 10 responsibilities.

**Implementation: Is this alternative realistic?**

This alternative is realistic and preferred by the Marine Corps. It will allow us to realize or exceed our current DMRD 908 targets in all categories by increasing public/private competition interservicing, and total quality leadership (TQL) improvements which will ensure efficiency and the capabilty to satisfy a surge wartime environment in support of the National Military Strategy.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-Up projects," etc.?**

Although not applicable to this alternative, the Marine Corps has a streamlined, centralized logistics command structure that provides the flexibility to quickly realign resources to satisfy the National Military Strategy. Our weapon system/equipment management concept centralizes control of logistics elements to eliminate redundancy while providing a single point of contact for operational commanders.

We would apply our management expertise and concepts to meet other service depot maintenance requirements and provide the responsiveness and flexibility for which the Marine Corps is noted. Achieving the highest state of peacetime combat readiness, within fiscal constraints, and quickly adapting to changing requirements during times of conflict are proven capabilities of the Marine Corps logistics system. Our focus continues to be on optimizing the entire logistics process, vice optimization of any single element.

Some additional resources would be required to provide maintenance management for any areas where the Marine Corps is selected as executive agent. Our philosophy of pushing the responsibility and authority down to the lowest level allows us to minimize Headquarters' overhead. Our current Headquarters' overhead ratio to the maintenance centers is the lowest in DoD. We would attempt to apply this same ratio to any additional maintenance management responsibilities for which we would be selected.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Although not applicable in this option, the Marine Corps would expect to receive the same or better responsiveness from any maintenance manager as we currently receive from our own organization. A single manager must guarantee that surge capabilities exist to meet the Marine Corps mobilization and MPF requirements. A single manager would be required to provide rapid turnaround to continuously changing requirements as demonstrated by the Marine Corps maintenance centers during Desert Shield/Storm. This flexibility would require the single manager to concurrently support unique Marine Corps-configured equipment in small quantities with short turnaround times and at the same time continue to provide the assembly line support of common items. Also, the ability to accept reprioritization of requirements and resources in order to adapt to quickly changing environments is mandatory. Total costs must not exceed current expenditures and must include areas such as repair, transportation, overhead, and inventory requirements.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Yes. The Marine Corps has exceeded DMRD 908 targets in all categories and continues to realize significant savings as TQL principles are implemented. Increased public/private competition, interservicing, and TQL improvements will ensure that we are militarily effective and operationally efficient.

**PROS**

- Allows the Commandant to fulfill his Title 10 responsibilities
- Marine Corps retains its centralized logistics command structure
- Ensures a Marine Corps depot maintenance "core" capability

- Retains organic surge capabilities as utilized during Desert Shield/Storm as well as continuously supporting the MPF
- Retains reconstitution capabilities as demonstrated during post-Desert Shield/ Storm
- Accelerates and increases savings
- Necessitates increased competition and interservicing
- No loss of direct support to FMF operational requirements
- Realistic implementation without increased cost
- Allows tailoring of equipment and concepts to suit Marine Corps mission
- No degradation to readiness
- No additional investment in inventories to fill the pipeline
- Minimal transportation costs
- Minimizes equipment maintenance turnaround time
- Supports Marine Corps Base Force
- Supports National Military Strategy
- Least disruptive to the work force
- Minimizes overhead costs

CONS

- Savings resulting from the efficiencies achieved through this alternative will be taken away from the service and will not be available for utilization to increase service readiness
- Slight personnel increases in support of competition

Alternative B Individiual Service Management (Consolidation into "Centers of Excellence")

In conjunction with single service maintenance management of weapon systems platforms (Alternative C), depot maintenance of depot level reparables (DLRs) and components installed in these weapon system platforms would be managed by the same service that manages the weapon system. This provides single service management of a weapon system platform and all its components. Maintenance facilities for weapon system platforms and DLRs and components as well as for nonweapon system equipment would be consolidated into "centers of excellence" within the managing service to the maximum extent possible but could be also performed at a contractor's plant or, in exceptional cases, in other services' facilities.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Service's maintenance process?**

The Marine Corps maintenance process would be disrupted at all levels. Our maintenance centers provide total weapon system repair of principal end items and their associated components. The maintenance centers support not only depot level requirements but also enhance the Marine Corps intermediate level maintenance effort by accepting FMF workload which exceeds the capacity of the lower echelons of maintenance. Any reduction to this maintenance capability will directly impact the readiness of our FMF operating forces. Maintenance centers support the majority of Marine Corps ground combat equipment and do not specialize in support of specific commodities. This has proven to be the most effective means of support, given the diversity of weapon systems and the small numbers of each type repaired annually. We have also embraced the inspect and repair only as necessary maintenance concept vice the traditional total overhaul focus of depot maintenance. To further maximize efficiencies, maintenance center personnel are cross-trained to work on a variety of equipment in different commodities. Cross-training provides the flexibility to rapidly realign the work force to meet changing FMF requirements.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

While some small degradation in readiness could be accepted, our worldwide commitments continue; and surge capabilities in support of the National Military Strategy must be retained. Predicting the time, place, and circumstances where the Marine Corps will be committed will continue to be difficult as was demonstrated in our recent involvement in Liberia, Kuwait, Somalia, and Iraq, as well as humanitarian assistance operations for natural disasters in Florida, Hawaii, Bangladesh, and the Philippines.

As was proven in an April 1990 Defense Depot Maintenance Council (DDMC) workload consolidation study, the Marine Corps would not gain any savings by moving workload out of Marine Corps depots and spreading it to other service facilities. Furthermore, this approach could also potentially jeopardize our military effectiveness.

Materiel readiness is a responsibility of command, and this alternative does not allow the Commandant to satisfy National Military Strategy requirements or effectively exercise his Title 10 responsibilities.

**Implementation: Is this alternative realistic?**

This alternative may be realistic for the other Services; however, if the Marine Corps had to depend entirely on exteral maintenance support, the program would be cost prohibitive, ineffective, and unmanageable due to the large number of low density multicommodity items which would require interservicing.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-Up projects," etc.?**

The Marine Corps has a streamlined, centralized logistics command structure that provides the flexibility to quickly realign resources to satisfy the National Military Strategy. Our weapon system/equipment management concept centralizes control of logistics elements to eliminate redundancy while providing a single point of contact for operationals commanders. Although small in comparison to the other services, the Marine Corps currently provides executive agent management for weapons systems, such as amphibious assault vehicles, light armored vehicles, SB-3614 Switchboards, and AN/TPB-1D, Radar Sets.

We would apply effective management expertise and concepts to meet other service depot maintenance requirements and provide the responsiveness and flexibility for which the Marine Corps is noted. Achieving the highest state of peacetime combat readiness, within fiscal constraints, and quickly adapting to changing requirements during times of conflict are proven capabilities of the Marine Corps logistics system. Our focus would continue to be on optimizing the entire logistics process, vice optimization of any single element.

Some additional resources would be required to provide maintenance management for those areas where the Marine Corps is selected as executive agent. Our philosophy of pushing the responsibility and authority down to the lowest level allows us to minimize Headquarters' overhead. Our current Headquarters' overhead ratio to the maintenance centers is the lowest in DoD. We would attempt to apply this same ratio to any additional maintenance management responsibilities for which we would be selected.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Marine Corps would expect to receive the same or better responsiveness from any maintenance manager as we currently receive from our own organization. A single manager must guarantee that surge capabilities exist to meet the Marine Corps mobilization and MPF requirements. A single manager would be required to provide rapid turnaround to

continuously changing requirements as demonstrated by the Marine Corps maintenance centers during Desert Shield/Storm. This flexibility would require the single manager to concurrently support unique Marine Corps-configured equipment in small quantities and short turnaround times and at the same time continue to provide the assembly line support of common items. Also, the ability to accept reprioritization requirements and resources in order to adapt to quickly changing environments is mandatory. Total costs must not exceed current expenditures and must include areas such as repair, transportation, overhead, and inventory requirements.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Realignment of the relatively small amount of workload performed at the Maintenance Centers (less than 1 percent of the total FY 91 DoD depot maintenance workload) would not have a significant impact on overall DoD depot maintenance capacity utilization or significanlty reduce the overhead within the Marine Corps. However, such a realignment would have a serious negative impact on the Marine Corps ability to meet its operational commitments within current fiscal constraints.

As proven in a April 1990 DDMC workload consolidation study, as depicted below, there would be a net cost of $195 million over a 5 year period and a recurring cost of $25 million per year if workload (68.8 percent major equipment, 4.5 percent secondary depot level reparables, and 27.7 percent all other) was realigned from Marine Corps depots and spread among other service facilities. Therefore, realignment or consolidation is impractical from a business perspective. We will continue to assess the requirement for, and effectiveness of the two Marine Corps Maintenance Centers and will propose changes and realignments as appropriate.

SUMMARY OF
COST ANALYSIS OF PROPOSAL TO CLOSE
DMA'S ALBANY AND BARSTOW
($000)

COSTS:

| | YEAR CLOSED | | | | | |
|---|---|---|---|---|---|---|
| ELEMENTS | FY-91 | FY-92 | FY-93 | FY-94 | FY-95 | TOTAL |
| Move IPE | 9,930 | | | | | 9,930 |
| Move/Sever People | 19,802 | | | | | 19,802 |
| Facilities | 8,775 | | | | | 8,775 |
| Weapon System Management | 1,225 | 1,262 | 1,300 | 1,339 | 1,379 | 6,504 |
| Transportation | 7,306 | 7,525 | 7,751 | 7,983 | 8,223 | 38,789 |
| Inventory | 35,623 | 3,562 | 3,672 | 3,786 | 3,903 | 50,546 |
| New Hires | 5,652 | | | | | 5,652 |
| Production | 11,911 | 12,268 | 12,636 | 13,015 | 13,406 | 63,237 |
| Alt. Training | 1,149 | 1,183 | 1,219 | 1,255 | 1,293 | 6,099 |
| Totals | 101,373 | 25,800 | 25,578 | 27,378 | 28,204 | 209,334 |

SAVINGS:

| ELEMENTS | FY-91 | FY-92 | FY-93 | FY-94 | FY-95 | TOTAL |
|---|---|---|---|---|---|---|
| MILCON | 5,910 | | | | | 5,910 |
| BOS | 1,600 | 1,648 | 1,697 | 1,747 | 1,799 | 8,491 |
| Totals | 7,510 | 1,648 | 1,697 | 1,747 | 1,799 | 14,401 |
| NET SAVINGS: | (93,863) | (24,152) | (24,881) | (25,631) | (26,405) | (194,932) |

Notes: 1. Multiyear costs escalated at 3 percent per year.
2. Numbers may not add due to rounding.

**PROS**

- Enhances interservicing
- Consolidates workload

**CONS**

- Would not satisfy the Defense Planning Guidance
- Could prohibit the Commandant from fulfilling Title 10 requirements
- Marine Corps could lose its centralized logistics command structure
- Jeopardizes Marine Corps depot maintenance "core" capability
- Could lose organic surge capabilities
- Could lose reconstitution capabilities
- Savings questionable
- Could eliminate competition
- Loss of direct support to FMF operational requirements
- Unrealistic implementation with increased cost
- Could inhibit tailoring of equipment and concepts to suit Marine Corps mission
- Could degrade readiness if the single manager was not responsive to requirements
- Additional investment required in wholesale and retailinventories to fill pipeline
- Environmental regulations at center of excellence sites would result in increased turnaround times
- Loss of a center of excellence could result in total DoD loss of capability
- Increased production costs
- Increased transportation costs
- Disrupts the concurrent repair of components and principal end items
- Could eliminate up to 75 percent of total current workload
- Increases equipment rebuild turnaround time
- Disruptive to work force
- Saving resulting from the efficiencies achieved through this alternative will be taken away from the Service and will not be available for utilization to increase Service readiness

Alternative C Consolidate Weapons System Platforms into Joint Service "Centers of Excellence"

Maintenance management of common or similar weapon system platforms (e.g., ships, large missiles, fixed wing aircraft, and rotary wing aircraft) would be accomplished by a single service. depot level reparables (DLRs) and components (e.g., hydraulic actuators, gas turbine engines, aircraft landing gear, and inertial navigation systems), depot maintenance responsibilities, as well as depot maintenance of nonweapon system equipment (e.g., automatic test equipment, ground support equipment, and general purpose vehicles) would continue to be individual using services' responsibilities.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

The Marine Corps maintenance process would be disrupted at all levels. Our maintenance centers provide total weapon system repair of the principal end items and their associated components. The maintenance centers support not only depot level requirements but also enhance the Marine Corps intermediate level maintenance effort by accepting FMF workload which exceeds the capacity of the lower echelons of maintenance (overflow). Any reduction to this maintenance capability will directly impact the readiness of our FMF operating forces. Maintenance centers support the majority of Marine Corps ground combat equipment and do not specialize in support of specific commodities. This has proven to be the most effective means of support, given the diversity of weapon systems and the small numbers of each type repaired annually. We have also embraced the inspect and repair only as necessary maintenance concept vice the total overhaul focus of traditional depot maintenance. To further maximize efficiencies, maintenance center personnel are cross-trained to work on a variety of equipment in different commodities. Cross-training provides the flexibility to rapidly realign the work force to meet changing FMF requirements.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

While some small degradation in readiness could be accepted, our worldwide commitments continue; and surge capabilities in support of the National Military Strategy must be retained. Predicting the time, place, and circumstances where the Marine Corps will be committed will continue to be difficult as was demonstrated in our recent involvement in Liberia, Kuwait, Somalia, and Iraq, as well as humanitarian assistance operations for natural disasters in Florida, Hawaii, Bangladesh, and the Philippines.

As was proven in an April 1990 Defense Depot Maintenance Council (DDMC) workload consolidation study, the Marine Corps would not gain any savings by moving workload out of Marine Corps depots and spreading it to other service facilities. Furthermore, this approach could jeopardize our military effectiveness.

Maintaining command and control of the Marine Corps maintenance centers allows the Commandant to satisfy the National Military Strategy requirements while effectively exercising his Title 10 responsibilities.

**Implementation: Is this alternative realistic?**

This alternative would be inefficient, ineffective, and unmanageable.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-Up projects," etc.?**

The Marine Corps has a streamlined, centralized logistics command structure that provides the flexibility to quickly realign resources to satisfy the National Military Strategy. Our weapon system/equipment management concept centralizes control of logistics elements to eliminate redundancy while providing a single point of contact for operationals commanders. Although small in comparison to the other services, the Marine Corps currently provides executive agent management for weapons systems, such as amphibious assault vehicles, light armored vehicles, SB-3614 Switchboards, and AN/TPB-1D, Radar Sets.

We would apply effective management expertise and concepts to meet other service depot maintenance requirements and provide the responsiveness and flexibility for which the Marine Corps is noted. Achieving the highest state of peacetime combat readiness, within fiscal constraints, and quickly adapting to changing requirements during times of conflict are proven capabilities of the Marine Corps logistics system. Our focus would continue to be on optimizing the entire logistics process, vice optimization of any single element.

Some additional resources would be required to provide maintenance management for those areas where the Marine Corps is selected as executive agent. Our philosophy of pushing the responsibility and authority down to the lowest level allows us to minimize Headquarters' overhead. Our current Headquarters' overhead ratio to the maintenance centers is the lowest in DoD. We would attempt to apply this same ratio to any additional maintenance management responsibilities for which we would be selected.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Marine Corps would expect to receive the same or better responsiveness from any maintenance manager as we currently receive from our own organization. A single manager must guarantee that surge capabilities exist to meet the Marine Corps mobilization and MPF requirements. A single manager would be required to provide rapid turnaround to continuously changing requirements as demonstrated by the Marine Corps maintenance centers during Desert Shield/Storm. This flexibility would require the single manager to concurrently support unique Marine Corps-configured equipment in small quantities and short turnaround times and at the

same time continue to provide the assembly line support of common items. Also, the ability to accept reprioritization requirements and resources in order to adapt to quickly changing environments is mandatory. Total costs must not exceed current expenditures and must include areas such as repair, transportation, overhead, and inventory requirements.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Realignment of the relatively small amount of workload performed at the maintenance centers (less than one percent of the total FY-91 DoD depot maintenance workload) would not have a substantial impact on overall DoD-depot maintenance capacity utilization or significantly reduce the overhead within the Marine Corps. However, such a realignment would have a serious negative impact on the Marine Corps ability to meet its operational commitments within current fiscal constraints.

As proven in an April 1990 DDMC workload consolidation study, as depicted below, there would be a net cost of $195 million over a 5-year period and recurring costs of $25 million per year if workload (68.8 percent major equipment, 4.5 percent secondary depot level reparables, and 27.7 percent all other) were realigned from Marine Corps depots and spread among other service facilities. Therefore, realignment or consolidation is impractical from a business perspective. We will continue to assess the requirement for and effectiveness of, the two Marine Corps maintenance centers and will propose changes and realignments as appropriate.

SUMMARY OF
COST ANALYSIS OF PROPOSAL TO CLOSE
DMA'S ALBANY AND BARSTOW
($000)

COSTS:

| ELEMENTS | YEAR CLOSED FY-91 | FY-92 | FY-93 | FY-94 | FY-95 | TOTAL |
|---|---|---|---|---|---|---|
| Move IPE | 9,930 | | | | | 9,930 |
| Move/Sever | 19,802 | | | | | 19,802 |
| People | | | | | | |
| Facilities | 8,775 | | | | | 8,775 |
| Weapon System | 1,225 | 1,262 | 1,300 | 1,339 | 1,379 | 6,504 |
| Management | | | | | | |
| Transportation | 7,306 | 7,525 | 7,751 | 7,983 | 8,223 | 38,789 |
| Inventory | 35,623 | 3,562 | 3,672 | 3,786 | 3,903 | 50,546 |
| New Hires | 5,652 | | | | | 5,652 |
| Production | 11,911 | 12,268 | 12,636 | 13,015 | 13,406 | 63,237 |
| Alt. Training | 1,149 | 1,183 | 1,219 | 1,255 | 1,293 | 6,099 |
| Totals | 101,373 | 25,800 | 25,578 | 27,378 | 28,204 | 209,334 |

SAVINGS:

| ELEMENTS | FY-91 | FY-92 | FY-93 | FY-94 | FY-95 | TOTAL |
|---|---|---|---|---|---|---|
| MILCON | 5,910 | | | | | 5,910 |
| BOS | 1,600 | 1,648 | 1,697 | 1,747 | 1,799 | 8,491 |
| Totals | 7,510 | 1,648 | 1,697 | 1,747 | 1,799 | 14,401 |
| NET SAVINGS: | (93,863) | (24,152) | (24,881) | (25,631) | (26,405) | (194,932) |

Notes: 1. Multiyear costs escalated at 3 percent per year.
2. Numbers may not add due to rounding.

**PROS**

- Enhances interservicing

**CONS**

- Would prohibit the Commandant from fulfilling his Title 10 responsibilities
- Marine Corps could lose its centralized logistics command structure
- Jeopardizes Marine Corps depot maintenance "core" capability
- Could lose organic surge capabilities
- Could lose reconstitution capabilities
- Savings questionable
- Could eliminate competition for major end items
- Loss of direct support to FMF operational requirements
- Unrealistic implementation with increased cost
- Inhibits task organizing of equipment and concepts to suit Marine Corps mission
- Could degrade readiness if the single manager were not responsive to requirements
- Additional investment required in wholesale and retail inventories to fill the pipeline
- Increases transportation costs
- Increases equipment maintenance turnaround time
- Disruptive to work force
- Increases overhead costs
- Disrupts the concurrent repair of components and principal end items
- Could eliminate up to 60 percent of the total current workload
- Savings resulting from the efficiencies achieved through this alternative will be withdrawn from the service and will not be available for utilization to increase service readiness

**Alternative D Individual Service Management of Weapon System Platforms in "Centers of Excellence" with DLR's, Components and Non-Weapon System Equipment Consolidated in Single Service "Centers of Excellence"**

In conjunction with individual using services depot maintenance management of weapon system platforms (as in Alternative A), depot level reparables (DLRs) and components and nonweapon system equipment will be consolidated via a "center of excellence" concept, in most cases in a single service.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Service's maintenance process?**

After Alternative A, this alternative has the least disruptive impact on the Marine Corps maintenance process. Our maintenance centers provide total weapon system repair of the principal end items and their associated components. The maintenance centers support not only depot level requirements but also enhance the Marine Corps intermediate level maintenance effort by accepting FMF workload which exceeds the capacity of the lower echelons of maintenance (overflow). Any reduction to this maintenance capability will directly impact the readiness of our FMF operating forces. Maintenance centers support the majority of Marine Corps ground combat equipment and do not specialize in support of specific commodities. This has proven to be the most effective means of support, given the diversity of weapon systems and the small numbers of each type repaired annually. We have also embraced the inspect and repair only as necessary maintenance concept vice the traditional total overhaul focus of depot maintenance. To further maximize efficiencies, maintenance center personnel are cross-trained to work on a variety of equipment in different commodities. Cross-training provides the flexibility to rapidly realign the work force to meet changing FMF requirements.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

While some small degradation in readiness could be accepted, our worldwide commitments continue; and surge capabilities in support of the National Military Strategy must be retained. Predicting the time, place, and circumstances where the Marine Corps will be committed will continue to be difficult as was demonstrated in our recent involvement in Liberia, Kuwait, Somalia, and Iraq, as well as humanitarian assistance operations for natural disasters in Florida, Hawaii, Bangladesh, and the Philippines.

As was proven in an April 1990 Defense Depot Maintenance Council (DDMC) workload consolidation study, the Marine Corps would not sustain any savings by moving workload out of Marine Corps depots and spreading it to other service facilities. Furthermore, this approach could jeopardize our military effectiveness.

Maintaining command and control of the Marine Corps maintenance centers allows the Commandant to satisfy National Military Strategy requirements while effectively exercise his Title 10 responsibilities.

**Implementation: Is this alternative realistic?**

Although not the most desirable alternative for the Marine Corps, this is a viable alternative.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-Up projects," etc.?**

The Marine Corps has a streamlined, centralized logistics command structure that provides the flexibility to quickly realign resources to satisfy the National Military Strategy. Our weapon system/equipment management concept centralizes control of logistics elements to eliminate redundancy while providing a single point of contact for operationals commanders. Although small in comparison to the other services, the Marine Corps currently provides executive agent management for weapons systems, such as amphibious assault vehicles, light armored vehicles, SB-3614 Switchboards, and AN/TPB-1D, Radar Sets.

We would apply effective management expertise and concepts to meet other service depot maintenance requirements and provide the responsiveness and flexibility for which the Marine Corps is noted. Achieving the highest state of peacetime combat readiness, within fiscal constraints, and quickly adapting to changing requirements during times of conflict are proven capabilities of the Marine Corps logistics system. Our focus would continue to be on optimizing the entire logistics process, vice optimization of any single element.

Some additional resources would be required to provide maintenance management for those areas where the Marine Corps is selected as executive agent. Our philosophy of pushing the responsibility and authority down to the lowest level allows us to minimize Headquarters' overhead. Our current Headquarters' overhead ratio to the maintenance centers is the lowest in DoD. We would attempt to apply this same ratio to any additional maintenance management responsibilities for which we would be selected.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Marine Corps would expect to receive the same or better responsiveness from any maintenance manager as we currently receive from our own organization. A single manager must guarantee that surge capabilities exist to meet the Marine Corps mobilization and MPF requirements. A single manager would be required to provide rapid turnaround to continuously changing requirements as demonstrated by the Marine Corps maintenance centers during Desert Shield/Storm. This flexibility would require the single manager to concurrently support unique Marine Corps-configured equipment in small quantities and short turnaround times and at the

same time continue to provide the assembly line support of common items. Also, the ability to accept reprioritization requirements and resources in order to adapt to quickly changing environments is mandatory. Total costs must not exceed current expenditures and must include areas such as repair, transportation, overhead, and inventory requirements.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Realignment of the relatively small amount of workload (4.5 percent secondary depot level reparables) performed at the maintenance centers would not have a substantial impact on overall DoD depot maintenance capacity utilization or significantly reduce the overhead within the Marine Corps. We will continue to assess the requirement for, and effectiveness of, the two Marine Corps maintenance centers and will propose changes and realignments as appropriate.

**PROS**

- Enhances interservicing
- Allows the Commandant to fulfill his Title 10 responsibilities
- Marine Corps retains its centralized logistics command structure
- Marine Corps retains depot maintenance "core" capability for principal end items
- Retains organic surge capabilities as demonstrated during Desert Shield/Storm and in continuous support of MPF
- Retains reconstitution capabilities as demonstrated during post-Desert Shield/Storm
- Retains competition for principal end items
- Least disruptive to work force

**CONS**

- Reduces direct support to FMF operational requirements
- Could degrade readiness if the single manager were not responsive to requirements
- Some additional investment required in wholesale and retail inventories to fill the pipeline
- Some increased transportation costs
- Savings resulting from the efficiencies achieved through this alternative will be withdrawn from the service and will be available for utilization to increase readiness
- Loss of a center of excellence would result in the total loss of total DoD capabilty
- Enviromental regulations at center of excellence sites could result in increased maintenance turn around time

Alternative E Consolidation of Similar/Common Platforms, DLR's, Components and Non-Weapon System Components Under Single Executive Service

In conjunction with single service maintenance management of common or similar weapon system platforms (as in Alternative C ), depot level reparable (DLRs) and components and nonweapon system equipment will be consolidated via a "center of excellence" concept. In most cases, this will be a single service but not necessarily the same single service that manages the weapon system.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Service's maintenance process?**

The Marine Corps maintenance process would be disrupted at all levels of maintenance by segregating the maintenance management of principal end items and secondary depot reparable (see Marine Corps issue paper on maintenance policy and procedures). Our maintenance centers provide total weapon system repair of the principal end items and their associated components. The maintenance centers support not only depot level requirements but also enhance the Marine Corps intermediate level maintenance by accepting FMF workload which exceeds the capacity of the lower echelons of maintenance (overflow). Any reduction to maintenance capability will directly impact the readiness of our FMF operating forces. Maintenance centers support the majority of Marine Corps ground combat equipment and do not specialize in support of specific commodities. This has proven to be the most effective means of support, given the diversity of weapon systems and the small numbers of each type repaired annually. We have also embraced the inspect and repair only as necessary (IROAN) maintenance concept vice the traditional total overhaul focus of depot maintenance. To further maximize efficiencies, maintenance center personnel are cross-trained to work on a variety of equipment in different commodities. Cross-training provides the flexibility to rapidly realign the work force to meet changing FMF requirements.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

While some small degradation in readiness could be accepted, our worldwide commitments continue; and surge capabilities in support of the National Military Strategy must be retained. Predicting the time, place, and circumstances where the Marine Corps will be committed will continue to be difficult as was demonstrated in are recent involvement in Liberia, Kuwait, Somalia, and Iraq, as well as humanitarian assistance operations for natural disasters in Florida, Hawaii, Bangladesh, and the Philippines.

As was proven in an April 1990 Defense Depot Maintenance Council (DDMC) workload consolidation study, the Marine Corps would not gain any savings by moving workload out of Marine Corps depots and spreading it to other service facilities. Furthermore, this approach of the Marine Corps jeopardize our military effectiveness.

Maintaining command and control maintenance centers allows the Commandant to satisfy National Military Strategy requirements while effectively exercise his Title 10 responsibilities.

**Implementation: Is this alternative realistic?**

This alternative would be cost prohibitive, ineffective, and unmanageable due to the large number of low density multi-commodity items which would require interservicing.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-Up projects," etc.?**

The Marine Corps has a streamlined, centralized logistics command structure that provides the flexibility to quickly realign resources to satisfy the National Military Strategy. Our weapon system/equipment management concept centralizes control of logistics elements to eliminate redundancy while providing a single point of contact for operational commanders. Although small in comparison to the other services, the Marine Corps currently provides executive agent management for weapons systems, such as amphibious assault vehicles, light armored vehicles, SB-3614 Switchboards, and AN/TPB-1D, Radar Sets.

We would apply effective management expertise and concepts to meet other service depot maintenance requirements and provide the responsiveness and flexibility for which the Marine Corps is noted. Achieving the highest state of peacetime combat readiness, within fiscal constraints, and quickly adapting to changing requirements during times of conflict are proven capabilities of the Marine Corps logistics system. Our focus would continue to be on optimizing the entire logistics process, vice optimization of any single element.

Some additional resources would be required to provide maintenance management for those areas where the Marine Corps is selected as executive agent. Our philosophy of pushing the responsibility and authority down to the lowest level allows us to minimize Headquarters' overhead. Our current Headquarters' overhead ratio to the maintenance centers is the lowest in DoD. We would attempt to apply this same ratio to any additional maintenance management responsibilities for which we would be selected.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Marine Corps would expect to receive the same or better responsiveness from any maintenance manager as we currently receive from our own organization. A single manager must guarantee that surge capabilities exist to meet the Marine Corps mobilization and MPF requirements. A single manager would be required to provide rapid turnaround to continuously changing requirements as demonstrated by the Marine Corps maintenance centers during Desert Shield/Storm. This flexibility would require the single manager to concurrently support unique Marine Corps-configured equipment in small quantities and short turnaround times and at the

same time continue to provide the assembly line support of common items. Also, the ability to accept reprioritization requirements and resources in order to adapt to quickly changing environments is mandatory. Total costs must not exceed current expenditures and must include areas such as repair, transportation, overhead, and inventory requirements.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Realignment of the relatively small amount of workload performed at the maintenance centers (less than 1 percent of the total FY 91 DoD depot maintenance workload) would not have a substantial impact on overall DoD depot maintenance capacity utilization or significantly reduce the overhead within the Marine Corps. However, such a realignment would have a serious negative impact on the Marine Corps ability to meet its operational commitments within current fiscal constraints.

As proven in an April 1990 DDMC workload consolidation study, as depicted below, there would be a net cost of $195 million over a 5 year period and recurring costs of $25 million per year if workload (68.8 percent major equipment, 4.5 percent secondary depot level reparable, and 27.7 percent all other) were realigned from Marine Corps depots and spread among other service facilities. Therefore, realignment or consolidation is impractical from a business perspective. We will continue to assess the requirement for, and effectiveness of, the two Marine Corps maintenance centers and will propose changes and realignments as appropriate.

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COST ANALYSIS OF PROPOSAL TO CLOSE
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($000)

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| ELEMENTS | YEAR CLOSED FY-91 | FY-92 | FY-93 | FY-94 | FY-95 | TOTAL |
|---|---|---|---|---|---|---|
| Move IPE | 9,930 | | | | | 9,930 |
| Move/Sever People | 19,802 | | | | | 19,802 |
| Facilities | 8,775 | | | | | 8,775 |
| Weapon System Management | 1,225 | 1,262 | 1,300 | 1,339 | 1,379 | 6,504 |
| Transportation | 7,306 | 7,525 | 7,751 | 7,983 | 8,223 | 38,789 |
| Inventory | 35,623 | 3,562 | 3,672 | 3,786 | 3,903 | 50,546 |
| New Hires | 5,652 | | | | | 5,652 |
| Production | 11,911 | 12,268 | 12,636 | 13,015 | 13,406 | 63,237 |
| Alt. Training | 1,149 | 1,183 | 1,219 | 1,255 | 1,293 | 6,099 |
| Totals | 101,373 | 25,800 | 25,578 | 27,378 | 28,204 | 209,334 |

SAVINGS:

| ELEMENTS | FY-91 | FY-92 | FY-93 | FY-94 | FY-95 | TOTAL |
|---|---|---|---|---|---|---|
| MILCON | 5,910 | | | | | 5,910 |
| BOS | 1,600 | 1,648 | 1,697 | 1,747 | 1,799 | 8,491 |
| Totals | 7,510 | 1,648 | 1,697 | 1,747 | 1,799 | 14,401 |
| NET SAVINGS: | (93,863) | (24,152) | (24,881) | (25,631) | (26,405) | (194,932) |

Notes: 1. Multiyear costs escalated at 3 percent per year.
2. Numbers may not add due to rounding.

**PROS**

- Enhances interservicing

**CONS**

- Would prohibit the Commandant from fulfilling his Title 10 responsibilities
- Marine Corps could lose its centralized logistics command structure
- Jeopardizes Marine Corps depot maintenance "core" capability
- Could lose organic surge capabilities
- Could lose reconstitution capabilities
- Could eliminate competition for major end items and depot level reparable
- Loss of direct support to FMF operational requirements
- Unrealistic implementation with increased costs
- Inhibits task organizing of equipment and concepts to suit Marine Corps mission
- Could degrade readiness if the single manager were not responsive to requirements
- No cost savings would be realized
- Additional investment required in wholesale and retail inventories to fill the pipeline
- Increases transportation costs
- Increases overhead costs
- Increases personnel costs
- Increases production costs
- Increases facilities costs
- Disrupts the concurrent repair of components and principal end items
- Could eliminate up to 75 percent of total current workload
- Increases equipment rebuild turnaround time
- Disruptive to the work force
- Savings resulting from the efficiencies achieved through this alternative will be withdrawn from the service and will not be available for utilization to increase service readiness
- Environmental regulations at "center of excellence" facilities will result in increased maintenance turnaround time for customers
- Loss of a center of excellence could result in the loss of a total DoD capability

Alternative F DOD Consolidation

Consolidate all depot maintenance functions under one organization external to the Services. This alternative would eliminate Service ownership of depot maintenance. Individual weapon systems, DLRs and components, and non weapon system equipment could be maintained organically, contracted out, or a combination of both. Individual depots could be organic or government owned, contractor operated (GOCO).

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Service's maintenance process?**

The measurement of effectiveness for the Marine Corps cannot be determined without defining the organizational structure of the DoD controlled depot maintenance agency and their vision of the future of maintenance within the Marine Corps.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

While some small degradation in readiness could be accepted, our worldwide commitments continue; and surge capabilities in support of the National Military Strategy must be retained. Predicting the time, place, and circumstances where the Marine Corps will be committed will continue to be difficult as has been demonstrated in our recent involvement in Liberia, Kuwait, Somalia, and Iraq, as well as humanitarian assistance operations for natural disasters in Florida, Hawaii, Bangladesh, and the Philippines.

Maintaining command and control of the Marine Corps maintenance centers allows the Commandant to satisfy the National Military Strategy requirements while effectively exercising his Title 10 responsibilities.

**Implementation: Is this alternative realistic?**

This alternative may be realistic from a centralized management point of view; but, in fact, with the distinctive missions of each service, it becomes unrealistic to implement. It adds layering and decreases the ability of service chiefs to maintain control of their resources as well as to and influence their services' readiness.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-Up projects," etc.?**

The Marine Corps has a streamlined, centralized logistics command structure that provides the flexibility to quickly realign resources to satisfy the National Military Strategy. Our weapon system/equipment management concept centralizes control of logistics elements to eliminate redundancy while providing a single point of contact for operationals commanders. Although

small in comparison to the other services, the Marine Corps currently provides executive agent management for weapons systems, such as amphibious assault vehicles, light armored vehicles, SB-3614 Switchboards, and AN/TPB-1D, Radar Sets.

We would apply effective management expertise and concepts to meet other service depot maintenance requirements and provide the responsiveness and flexibility for which the Marine Corps is noted. Achieving the highest state of peacetime combat readiness, within fiscal constraints, and quickly adapting to changing requirements during times of conflict are proven capabilities of the Marine Corps logistics system. Our focus would continue to be on optimizing the entire logistics process, vice optimization of any single element.

Some additional resources would be required to provide maintenance management for those areas where the Marine Corps is selected as executive agent. Our philosophy of pushing the responsibility and authority down to the lowest level allows us to minimize Headquarters' overhead. Our current Headquarters' overhead ratio to the maintenance centers is the lowest in DoD. We would attempt to apply this same ratio to any additional maintenance management responsibilities for which we would be selected.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Marine Corps would expect to receive the same or better responsiveness from any maintenance manager as we currently receive from our own organization. A single manager must guarantee that surge capabilities exist to meet the Marine Corps mobilization and MPF requirements. A single manager would be required to provide rapid turnaround to continuously changing requirements as demonstrated by the Marine Corps maintenance centers during Desert Shield/Storm. This flexibility would require the single manager to concurrently support unique Marine Corps-configured equipment in small quantities and short turnaround times and at the same time continue to provide the assembly line support of common items. Also, the ability to accept reprioritization requirements and resources in order to adapt to quickly changing environments is mandatory. Total costs must not exceed current expenditures and must include areas such as repair, transportation, overhead, and inventory requirements.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

From a purely business perspective, this appears to be an efficiency based on centralized management concepts. But, from a user's perspective, this is creating additional management layers which will cause inefficiencies through layering. Any savings which may be realized through the reduction in individual service headquarters management overhead will, in fact, increase costs in other overhead areas such as materiel management. It is questionable that the Marine Corps would realize a reduction in headquarters management overhead due to the fact that we are extremely streamlined in the management of our maintenance facilities.

**PROS**

- Centralizes DoD management
- On the DoD level it may produce savings at the headquarters organizational level for some services

CONS

- Would prohibit the Commandant from fulfilling his Title 10 responsibilities
- Marine Corps could lose its centralized logistics command structure
- Could jeopardize Marine Corps depot maintenance "core" capability
- Could lose organic surge capabilities
- Could lose reconstitution capabilities
- Could eliminate competition for major end items and DLRs
- Loss of direct support to FMF operational requirements
- Unrealistic implementation with increased costs
- Could increase overhead costs

Alternative G Commercialize Maintenance

Contract out all depot maintenance requirements. Contract management would be maintained at either the Service or DoD level. The ultimate goal would be to include contract maintenance as part of the weapon system acquisition costs of new systems throughout its life cycle.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Service's maintenance process?**

Reliance on private industry to support the Marine Corps total maintenance workload would jeopardize our ability to retain readiness at the level which must be maintained to support the "force-in-readiness" mission. The uncertainties of private industry to support our dynamic workload changes, as we are able to do today, will drastically affect our mission and readiness. We see only the decrease in military effectiveness with this alternative.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

While some small degradation in readiness could be accepted, our worldwide commitments continue; and surge capabilities in support of the National Military Strategy must be retained. Predicting the time, place, and circumstances where the Marine Corps will be committed will continue to be difficult as has been demonstrated in our recent involvement in Liberia, Kuwait, Somalia, and Iraq, as well as humanitarian assistance operations for natural disasters in Florida, Hawaii, Bangladesh, and the Philippines.

Maintaining command and control of Marine Corps maintenance centers allows the Commandant to satisfy National Military Strategy requirements and effectively exercise his Title 10 responsibilities.

**Implementation: Is this alternative realistic?**

Implementation of this alternative is not realistic. Private industry has neither the industrial base nor the desire to support maintenance for the Marine Corps. Our small portion of the total DoD workload requirement consists of small quantities of low dollar value items. Contracting out costs would be excessive as compared to the current organic costs. Also, contracting of workload does not accommodate the frequent instantaneous requirement changes required to support our mission. Any amendment to the contract would increase the cost. This alternative is totally unacceptable due to cost and nonavailability of the industrial base capability.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-Up projects," etc.?**

The Marine Corps has a streamlined, centralized logistics command structure that provides the flexibility to quickly realign resources to satisfy the National Military Strategy. Our weapon system/equipment management concept centralizes control of logistics elements to eliminate redundancy while providing a single point of contact for operationals commanders. Although small in comparison to the other services, the Marine Corps currently provides executive agent management for weapons systems, such as amphibious assault vehicles, light armored vehicles, SB-3614 Switchboards, and AN/TPB-1D, Radar Sets.

We would apply effective management expertise and concepts to meet other service depot maintenance requirements and provide the responsiveness and flexibility for which the Marine Corps is noted. Achieving the highest state of peacetime combat readiness, within fiscal constraints, and quickly adapting to changing requirements during times of conflict are proven capabilities of the Marine Corps logistics system. Our focus would continue to be on optimizing the entire logistics process, vice optimization of any single element.

Some additional resources would be required to provide maintenance management for those areas where the Marine Corps is selected as executive agent. Our philosophy of pushing the responsibility and authority down to the lowest level allows us to minimize Headquarters' overhead. Our current Headquarters' overhead ratio to the maintenance centers is the lowest in DoD. We would attempt to apply this same ratio to any additional maintenance management responsibilities for which we would be selected.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Marine Corps would expect to receive the same or better responsiveness from any maintenance manager as we currently receive from our own organization. A single manager must guarantee that surge capabilities exist to meet the Marine Corps mobilization and MPF requirements. A single manager would be required to provide rapid turnaround to continuously changing requirements as demonstrated by the Marine Corps maintenance centers during Desert Shield/Storm. This flexibility would require the single manager to concurrently support unique Marine Corps-configured equipment in small quantities and short turnaround times and at the same time continue to provide the assembly line support of common items. Also, the ability to accept reprioritization requirements and resources in order to adapt to quickly changing environments is mandatory. Total costs must not exceed current expenditures and must include areas such as repair, transportation, overhead, and inventory requirements.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

The Marine Corps does not see any near or long term business efficiencies to be gained from the implementation of this alternative.

**PROS**

- Increases contracting out of workload to private industry

**CONS**

- Industrial base is not sufficient to support the DoD maintenance requirements
- Could prohibit the Commandant from fulfilling his Title 10 responsibilities
- Eliminates Marine Corps depot maintenance "core" capability
- Would lose organic surge capabilities
- Could eliminate competition for major end items and DLRs
- Loss of direct support to FMF operational requirements
- Unrealistic implementation with increased costs
- No cost savings would be realized
- Additional investment required in wholesale and retail inventories to fill the pipeline
- Increases transportation costs
- Increases overhead costs
- Increases personnel costs
- Increases equipment rebuild turnaround time
- Disruptive to the work force
- Materiel readiness would probably decrease

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C. 20330

30 OCT 1992

MEMORANDUM FOR JCS/J-4 (Depot Consolidation Study)

SUBJECT: USAF Assessments of the JCS Depot Consolidation Alternatives

The attached documents are provided as requested. My POC is Lt Col Morrill (AF/LGMM, 73523).

TREVOR A. HAMMOND, Lt Gen, USAF
Deputy Chief of Staff/Logistics

2 Atch
1. USAF Asmt of Dep Alts
2. AF Depot Maint Summary

# APPENDIX K

# AIR FORCE ALTERNATIVE REVIEW

## PREFACE

As the world evolves, the DOD's organic depot maintenance structure must evolve so it will continue to best support military readiness, sustainability, and regeneration--all of which are key Service roles most directly supporting the Services' core missions.

Some of the alternatives below reflect conservative responses to this need for evolution. While the Services are rightfully conservative or evolutionary entities, they must also be progressive if not revolutionary in anticipating and responding to change. For this reason, alternatives that reflect any variation on the status quo are unacceptable.

In selecting an alternative in response to this change, the Services must serve three masters: national security, economics, and politics. Foremost, the nation's organic Service depot maintenance system must support its customers--the Base Force collectively--in peacetime, contingencies, and war.

Within constraints imposed by this appropriately preeminent national security focus, the Service depot system must be economically viable and progressive such that Service depot operating costs are continually reduced relative to production. Two points are key.

First, the difference between private and public sector "business" is often misunderstood or underappreciated. Private sector business activities are profit and market share oriented. They depend on having production capabilities which duplicate but improve upon a competitor's capabilities--thereby permitting them to gain market share and dominance over another. Conversely, public sector "business" activities are not typically profit oriented. Their object is to break even, reduce costs, and increase quality and throughput--while providing "products" ranging from aircraft landing gear to "national security." In short, they seek to avoid duplicate capabilities.

Second, in deciding to close a Service depot, environmental costs are not considered. These costs are neither included in this study nor a factor in the Base Realignment And Closure (BRAC) process--even though such costs are often of a magnitude that would make an installation's closure fiscally imprudent. For example, the environmental clean up costs associated with closing the Sacramento Air Logistics Center range from $2-10 billion.

In addition to military and economic factors, those restructuring the Service depot system must also be responsive to the concerns and interests of Members of Congress, especially as they relate to the impact installation closures, facility and equipment divestiture, streamlining, and workload consolidation and transfer have on jobs in a Member's state or district.

The DOD Service depot system restructuring alternatives below reflect a range of approaches. Some are variations on a status quo. Others--one in particular--is disturbing in that it continues the unfortunate trend of divesting the Services of their ability to provide for their own readiness, sustainability, and regeneration. Since the inception of the military departments, these were key Service roles in support of core Service missions. This disturbing trend is manifest in Alternative "F"--the so-called "Defense Depot Maintenance Agency." This alternative reflects a lack of appreciation of the critical differences between private and public sector business processes, and a lack of appreciation of the military necessity for the Services to field and support a total force structure that is combat ready, sustainable, and capable of regeneration. This alternative is one more example of an increasing number of Defense agencies, agencies whose unconstrained growth has resulted in the *de facto* creation of a "fifth Service."

With the JCS-sponsored Defense Depot Maintenance Consolidation Study, the Department of Defense and its component Services have an opportunity to posture themselves to best support national security needs via increasingly efficient means as they achieve increasingly economical defense operations. Given the rapidly evolving political-military-economic environment, the status quo is clearly too little too late. However, the "Defense Depot Maintenance Agency" reflects the opposite extreme--the trend toward extreme centralization, the inappropriate division of the integrated responsibilities concerned with fielding and sustaining ready forces, and the continued unconstrained growth of defense agencies in size and number--witness the Defense Logistics Agency.

Given these factors, it is likely most appropriate to continue to vest in the Services the responsibilities and resources they need to organize, train, and equip ready, sustainable forces capable of responding to any situation affecting the national security of the United States. These roles and responsibilities must be carried out in a progressive and aggressive manner pursuing business economies and efficiencies appropriate to public sector defense production activities. In this regard, Alternative "E" clearly offers the greatest short and long term opportunities and benefits.

Alternative A Individual Service Management

Each service retains its own separate depot maintenance operations with DMRD 908 actions to include interservicing, internal streamlining of depots, reducing depot maintenance staffs at higher headquarters, increasing competition, teaming with private industry for remanufacturing/manufacture, increasing productivity of direct labor work force, etc. Additional depot closures and realignments would be accomplished through the Base Realignment And Closure (BRAC) process. Defense Depot Maintenance Council (DDMC) will provide management oversight.

**Effectiveness: What are the impacts on the military effectiveness of your Services' maintenance process?**

This alternative results in few progressive improvements to the effectiveness of the Air Force's maintenance process since it essentially preserves the status quo. Capabilities and facilities remain within the current maintenance management structure. However, using Service-controlled reductions and continued rightsizing will result in some evolutionary improvements and constant turbulence across the spectrum of activities. This status quo alternative continues current depot maintenance practices and philosophies, e.g., the Integrated Weapons System Management (IWSM) and the Technology Repair Center (TRC) concepts.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Not if such savings prevent the Air Force's full implementation of the aerospace doctrine associated with the "Global Reach, Global Power" concept, which in turn supports the Base Force. So-called "savings" that impair the Services' readiness, sustainability, and reconstitution reflect a false economy, as was evident in the "Hollow Force of the 1970s."

**Implementation: Is this alternative realistic?**

No. Since this alternative essentially continues status quo, and given national security, economic, and political realities, this alternative is no longer viable.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, Service unique equipment, "Pop-up projects," etc.?**

The Air Force currently performs maintenance for eighty-one foreign nations and other Services. This would not change, i.e., the customer would continue to be supported in accordance with their wishes (work package specifications).

**Are there near or long term efficiencies to be gained by this alternative?**

Short term efficiencies result from competition, and the banking of facilities and equipment. No significant, sustained efficiencies will be realized without major depot workload consolidations and installation closures.

**Military Effectiveness: Pro.**

This alternative retains individual Service control of the readiness, sustainability, and reconstitution of its forces, i.e., production capabilities and priorities supporting the Air Force's contribution to the Base Force. It also satisfies the individual Services' unique maintenance requirements by preserving a Service's existing maintenance concept. From the Air Force perspective only, it supports the Integrated Weapon System Management (IWSM) and the Technology Repair Center (TRC), i.e., the "Center of Excellence," concepts. Moreover, it permits each Service to continue to determine its own priorities, and fund its own modernization and technology requirements. With respect to facilities and equipment, this alternative gives the Services flexibility to absorb critical workloads available due to contract and competition shortfalls or defaults. It also retains billets and critical skills due to non-competed core workloads, while fostering Service-specific depot management staff reductions resulting from DMRD competition.

**Military Effectiveness: Con.**

By essentially continuing the status quo, known inefficiencies and uneconomical processes are continued. This increases force support (readiness and sustainability) costs--which detracts from funds that can be made available for combatant forces (weapon systems/platforms) or other segments of the Federal government. Management of DOD's depot maintenance capability, facilities, and technologies remains fragmented and redundant.

**Business Efficiency: Pro.**

This alternative results in reduced maintenance costs on facilities and equipment due to banking and divestiture. Over the long term, competition promotes savings, which reduces costs. In the production and surge arenas, depots may improve processes and become more competitive. Multiple sources of repair can help sustain the civilian defense industrial base. Competition promotes improvements in business and production practices.

**Business Efficiency: Con.**

Continued redundancy, with its requisite inefficiency and reduced economies, occur. Manpower turbulence resulting from shifted workloads and personnel realignments will occur. Workload that is contracted will result in continued government vulnerability to labor disputes and contractors' demonstrated difficulty in responding to surge requirements--as was seen in Desert Storm. Multiple sourcing of depot maintenance capabilities is expensive. Competitions are manpower intensive, costly, and time consuming, and do not guarantee any return on investment for the depot(s) competing.

Alternative B Individual Service Management (Consolidation into "Centers of Excellence")

Under individual using Service management, weapon systems/platforms, DLRs, components, and non-weapon system equipment would be consolidated into "Centers of Excellence" within the using Service to the maximum extent possible, but could be also performed by a contractor or, in exceptional cases, in an other Service's facility.

**Effectiveness: What are the impacts on the military effectiveness of your Services' maintenance process?**

This alternative results in few significant improvements to the effectiveness of the Air Force's maintenance process since it essentially preserves the status quo. Capabilities and facilities remain within the current maintenance management structure. However, using Service-controlled reductions and continued rightsizing will result in some evolutionary improvements and constant turbulence across the spectrum of activities. This alternative continues current depot maintenance practices and philosophies, e.g., the Integrated Weapons System Management (IWSM) and the Technology Repair Center (TRC) concepts.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Not if such savings prevent the Air Force's full implementation of the aerospace doctrine associated with the "Global Reach, Global Power" concept, which in turn supports the Base Force. So-called "savings" that impair the Services' readiness, sustainability, and reconstitution reflect a false economy, as was evident in the "Hollow Force of the 1970s."

**Implementation: Is this alternative realistic?**

No. Since this alternative is essentially a modified status quo, and given national security, economic, and political realities, this alternative is no longer viable.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, Service unique equipment, "Pop-up projects," etc.?**

The Air Force currently performs maintenance for eighty-one foreign nations and other Services. This would not change, i.e., the customer would continue to be supported in accordance with their wishes (work package specifications).

**Are there near or long term efficiencies to be gained by this alternative?**

Short term efficiencies result from the competition, the banking of facilities and equipment. No significant, sustained efficiencies will be realized without major depot workload consolidations and installation closures.

**Military Effectiveness: Pro.**

This alternative appropriately retains individual Service control of the readiness, sustainability, and reconstitution of its forces, i.e., production capabilities and priorities supporting the Air Force's contribution to the Base Force. It also satisfies the individual Services' unique maintenance requirements by preserving a Service's existing maintenance concept. From the Air Force perspective only, it supports the Integrated Weapon System Management (IWSM) and the Technology Repair Center (TRC), i.e., the "Center of Excellence," concepts. Moreover, it permits each Service to continue to determine its own priorities, and fund its own modernization and technology requirements. With respect to facilities and equipment, this alternative gives the Services flexibility to absorb critical workloads available due to contract and competition shortfalls or defaults. It also retains billets and critical skills due to non-competed workloads, while fostering Service-specific depot management staff reductions resulting from DMRD competition.

**Military Effectiveness: Con.**

By essentially continuing the status quo, known inefficiencies and uneconomical processes are continued. This increases force support (readiness and sustainability) costs--which detracts from funds that can be made available for combatant forces (weapon systems/platforms) or other segments of the Federal government. Management of DOD's depot maintenance capability, facilities, and technologies remains fragmented and redundant.

**Business Efficiency: Pro.**

This alternative results in reduced maintenance costs on facilities and equipment due to banking and divestiture. Over the long term, competition promotes savings, which can reduce costs. In the production and surge arenas, depots improve processes--thereby becoming more competitive. Multiple sources of repair can help sustain the civilian defense industrial base. Competition promotes improvements in business and production practices.

**Business Efficiency: Con.**

Continued redundancy, with its requisite inefficiency and reduced economies, occurs. Manpower turbulence resulting from shifted workload and personnel movement and realignment will occur. Workload that is contracted will result in increased government vulnerability to labor disputes and contractors' demonstrated difficultly in responding to surge requirements--as was seen in Desert Storm. Multiple sourcing of depot maintenance

capabilities is expensive. Competitions are manpower intensive, costly, and time consuming--without guaranteeing any return on investment for the depot(s) competing.

**Alternative C Consolidate Weapons System Platforms into Joint Service "Centers of Excellence"**

Depot maintenance management of common or similar weapon system platforms, (e.g., ships, large missiles, fixed wing aircraft, rotary wing aircraft) would be accomplished by single Services. Depot maintenance responsibility for Depot Level Reparables (DLR) and components (e.g. hydraulic actuators, gas turbine engines, aircraft landing gear, inertial navigation systems) as well as depot maintenance of non-weapon system equipment (e.g. automatic test equipment (ATE), ground support equipment, general purpose vehicles) would continue to be the individual using Services' responsibilities.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative has no clear military advantage. The potential of dividing the responsibility for the maintenance of weapon systems/platforms and exchangeables between single and using Services allows the status quo to continue at component repair depot maintenance activities. However, it creates opportunities for enhanced support in the weapon system/platform areas. Since sustainment of the Base Force would only be improved on the margins, this alternative has minimal military value.

**Are you willing to accept some decrement in military effectiveness if substantial saving could be realized by this alternative?**

Not if such savings prevent the Air Force's full implementation of the aerospace doctrine associated with the "Global Reach, Global Power" concept, which in turn supports the Base Force. So-called "savings" that impair the Services' readiness, sustainability, and reconstitution reflect a false economy, as was evident in the "Hollow Force of the 1970s."

**Implementation: Is this alternative realistic?**

No. The implementation of this alternative produces no substantial enhancements to military readiness or increases in fiscal benefit. Moreover, it unnecessarily complicates the depot repair priority process.

**If your Service were selected as the Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipment, "Pop-up projects," etc.?**

The Air Force Materiel Command (AFMC) is dedicated to total quality management principles and continuous process improvement in support of its customers' missions. These philosophies focus on total and complete customer satisfaction. Selected applications of our existing management relationship between weapon systems and TRCs, i.e., "Centers of Excellence" (COE), would continue to be used. This customer service relationship would be

facilitated through clear work specification/packages that are agreed upon by all parties and detailed customer knowledge as demonstrated in proven quality principles. Priorities and the needs associated with special projects would be of great interest, and would be fully supported via well-defined work packages, memoranda of agreement, and customer liaison officers at weapon system/platform depot repair facilities.

**If your service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Measures of value for depot support would be calculated by the depot maintenance system's ability to increase product throughput and quality on a sustained or surge basis, reduced operating costs, and compliance with agreed-upon work packages. These metrics must support the customer Service's readiness, sustainability, reconstitution, priorities, lifecycle data, and product quality.

**Are there near or long term business efficiencies to be gained by this alternative?**

Potentially some near term efficiencies could be gained by consolidating weapon system/platform depot maintenance activities. However, such gains would be offset by the continued existence of redundant Service component depot maintenance activities.

**Military Effectiveness: Pro.**

This alternative promotes a single focal point for weapon system/platform maintenance to customers while it allows the Services to retain mission control of the maintenance of their exchangeables. The retention of critical depot maintenance skills at weapon system/platform facilities is a vital ingredient in the surge capability of the facility and thus, the Services. Expertise is not lost and is concentrated for contingency production (mission) needs.

**Military Effectiveness: Con.**

This alternative divides maintenance management responsibilities, which impairs the Services' ability to sustain and reconstitute ready forces. This divided management responsibility exacerbates data system interface problems between the Services--resulting in multiple inquiries as to the status of a total weapon system's readiness. At non-consolidated component repair sites, support equipment, DLRs, and component inventories, remain unchanged. Since this alternative does not combine all elements of maintenance management, the cost-benefits resulting from technology insertion initiatives (capability enhancements) are reduced at the non-consolidated component depot maintenance facilities. Thus, overall implementation is more difficult due to this divided responsibility.

**Business Efficiency: Pro.**

Consolidation of weapon systems/platforms under an Executive/Single Service reduces the weapon system/platform management structure at the losing (supported) Service, thus reducing the latter's overhead expenses. Duplication of personnel skills for weapon system/platform depot maintenance are minimized DOD-wide, thereby reducing direct labor required. Additionally, consolidation minimizes the duplication of ATE and support equipment required at weapon system/platform depot maintenance activities. Capital investments necessary for weapon system/platform facilities and equipment are reduced due to the elimination of redundant facilities and equipment. However, since this consolidation does not totally eliminate duplicate functions at losing facilities, savings are diminished. This same rationale applies to facilities and equipment maintenance at the losing site. These factors promote increased efficiencies and economies of scale at remaining weapon system/platform depots, which result in reduced customer costs.

**Business Efficiency: Con.**

This alternative impairs mission accomplishment in that a divided management chain of responsibility is not effective from a business perspective. This is true since such an approach does not confer a uniform level of responsibility with either maintenance agent. Consequently, duplicate equipment purchases between Services for components maintained by using Services continue an uneconomical business practice.

**Alternative D Individual Service Management of Weapon System Platforms in "Centers of Excellence" with DLR's, Components and Non-Weapon System Equipment Consolidated in Single Service "Centers of Excellence"**

In conjunction with individual using Services' depot maintenance management of weapon system/platforms (as in Alternative B), Depot Level Reparables (DLR), components, and non-weapon system equipment will be consolidated via a "Center of Excellence" concept, in most cases a single Service.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Service's maintenance process?**

This alternative has no clear military advantage. The potential of dividing responsibility for the maintenance of weapon systems/platforms and exchangeables between single and using Services allows the status quo to continue at weapon system/platform depot maintenance activities. However, it creates opportunities for enhanced support in the component repair areas. Since sustainment of the Base Force would only be improved on the margins, this alternative has minimal military value.

**Are you willing to accept some decrement in military effectiveness if substantial saving could be realized by this alternative?**

Not if such savings prevent the Air Force's full implementation of the aerospace doctrine associated with the "Global Reach, Global Power" concept, which in turn supports the Base Force. So-called "savings" that impair the Services' readiness, sustainability, and reconstitution reflect a false economy, as was evident in the "Hollow Force of the 1970s."

**Implementation: Is this alternative realistic?**

No. The implementation of this alternative produces no substantial enhancements to military readiness or increases in fiscal benefit. Moreover, it unnecessarily complicates the depot repair priority process.

**If your Service were selected as the Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipment, "Pop-up projects," etc.?**

The Air Force Materiel Command (AFMC) is dedicated to total quality management principles and continuous process improvement in support of its customer's missions. These philosophies focus on total and complete customer satisfaction. Selected applications of our existing management relationship between weapon systems and TRCs, i.e., "Centers of Excellence" (COE), would continue to be used. This customer service relationship would be facilitated through clear work specifications/packages that are agreed upon by all parties, and detailed customer knowledge as demonstrated in proven quality principles. Priorities and the

needs associated with special projects would be of great interest, and would be fully supported via well-defined work packages, memoranda of agreement, and customer liaison offices at TRC/COE repair facilities.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Measures of value for depot support would be calculated by the depot maintenance system's ability to increase product throughput and quality on a sustained or surge basis, reduced operating costs, and compliance with agreed-upon work packages. These metrics must support the customer Service's readiness, sustainability, reconstitution, priorities, life cycle data, and product quality.

**Are there near or long term business efficiencies to be gained by this alternative?**

Potentially some near term efficiencies could be gained by consolidating component depot maintenance at TRC/COE locations. However, such gains would be offset by the continued existence of redundant Service weapon system/platform depot maintenance activities.

**Military Effectiveness: Pro.**

This alternative promotes a single focal point for component maintenance to customers while it allows the Services to retain mission control of the maintenance of their weapon systems/platform. The retention of critical maintenance skills at component TRC/COE facilities is a vital ingredient in the surge capability of the facility and thus, the Services. Expertise is not lost and is concentrated for contingency production (mission) needs.

**Military Effectiveness: Con.**

This alternative divides maintenance management responsibilities, which impairs the Services' ability to sustain and reconstitute ready forces. This divided management responsibility exacerbates data system interface problems between the Services--resulting in multiple inquiries as to the status of a total weapon system's readiness. At non-consolidated weapon system/platform repair sites, support equipment, DLRs, and component inventories remain unchanged. Since this alternative does not combine all elements of maintenance management, the cost-benefits resulting from technology insertion (capability enhancement) initiatives are reduced at the non-consolidated weapon system/platform depot maintenance facilities. Thus, overall implementation is more difficult due to this divided responsibility.

**Business Efficiency: Pro.**

Consolidation of component repair under an Executive/Single Service reduces the management structure at the losing (supported) Service, thus reducing the latter's overhead expenses. Duplication of personnel skills for component depot maintenance are minimized DOD-wide,

thereby reducing direct labor required. Additionally, consolidation minimizes the duplication of ATE and support equipment required at component TRCs/COEs. Capital investments necessary for component depot maintenance facilities and equipment are reduced due to the elimination of redundant facilities and equipment. However, since this consolidation does not totally eliminate duplicate functions at losing facilities, savings are diminished. This same rationale applies to facilities and equipment maintenance at the losing sites. These factors promote increased efficiencies and economies of scale at remaining component TRC/COE facilities, thereby reducing customer costs.

**Business Efficiency: Con.**

This alternative impairs mission accomplishment in that a divided management chain of responsibility is not considered effective from a business perspective. This is true since such an approach does not confer a uniform level of responsibility with either maintenance agent. Consequently, duplicative equipment purchases between Services for weapon systems/platforms maintained by using Services continue an uneconomical business practice.

Alternative E Consolidation of Similar/Common Platforms, DLR's, Components and Non-Weapon System Components Under Single Executive Service

In conjunction with single Service maintenance management of common or similar weapon systems/platforms (as in Alternative "C"), Depot Level Reparables (DLRs) and components, and non-weapon system equipment will be consolidated via a "Center of Excellence" concept. In most cases, this will be a single Service, but not necessarily the same single Service that manages the weapon system. Total weapon system management will continue to be the responsibility of the using Service.

**Effectivness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative has clear military advantage. It unites responsibility for the maintenance of weapon systems/platforms and exchangeables under a unified management structure. This significantly enhances the readiness, sustainment, and reconstitution of the Base Force on all levels. This approach preserves a proven Service capability to organically support its combatant forces in peace and in war. This alternative also maintains the basic tenets of command and control, with responsibility and execution authority for depot level maintenance vested in a single manager. Just as today's interservicing does not alter or restrict a supported Service's maintenance process or philosophy, neither will this alternative. Rather, work specifications/packages will continue to be used regularly by supported and supporting Services. For the same reason, this alternative does not place at risk any critical mission item for the customer Service--since the single manager functions only as a provider of a depot maintenance service (product).

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Not if such savings prevent the Air Force's full implementation of the aerospace doctrine associated with the "Global Reach, Global Power" concept, which in turn supports the Base Force. So-called "savings" that impair the Services' readiness, sustainability, and reconstitution reflect a false economy, as was evident in the "Hollow Force of the 1970s."

**Implementation: Is this alternative realistic?**

Yes, as this alternative combines the best elements of military effectiveness enhancements and public sector business efficiencies. Since it does not include the unnecessarily extreme, conservative, or incomplete constructs found in several of the other alternatives under consideration, it is easier to understand, implement, and support from public (uniformed) and private (contractor) sector perspectives. This alternative also has rapid implementation potential with the greatest probability for near and long term savings.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipment, "Pop-up, projects," etc.?**

The Air Force (AFMC) is dedicated to total quality management principles and continuous process improvement in support of its customers' missions. These philosophies focus on total and complete customer satisfaction. Our practice of Air Force weapon system single siting and commodity repair at TRC's duplicate elements of this approach in our system now. Selected applications of our existing management relationship between weapon systems/platforms and TRCs, i.e., "Centers of Excellence" (COE), would continue to be used. This customer Service relationship would be facilitated through clear work specification/packages that are agreed upon by all parties and detailed customer knowledge as demonstrated in proven quality principles. Priorities and the needs associated with special projects would be of great interest, and would be fully supported by well-defined work packages, memoranda of agreement, *dominant supported-Service representation in selected command and key staff billets proportionate to that Service's workload*, and customer liaison officers at weapon system/platform and component depot maintenance facilities.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from the manager?**

Measures of value for depot support would be calculated by the depot maintenance system's ability to increase product throughput and quality on a sustained or surge basis, reduced operating costs, and compliance with agreed-upon work packages. These metrics must support a customer Service's readiness, sustainability, reconstitution, priorities, life cycle data, and product quality.

**Are there near or long term business efficiencies to be gained by this alternative?**

Yes. This alternative best support current and anticipated DMRD initiatives. It also reduces investments in duplicate facilities and equipment, maximizes Executive/Single Service flexibility in using existing resources, and reduces facility and equipment maintenance through consolidation. Moreover, it reduces overhead and direct labor costs, and it reduces customer costs based on centralized weapon system/platform maintenance, consolidation of like workloads under a Technology Repair Center (TRC)/Center of Excellence (COE) focus, and workload volume. Additionally, this alternative facilitates seamless technology insertions and integrations within the Services. It also reduces costs by providing a larger workload base over which to distribute expenses. This alternative promotes economies and efficiencies by unifying command by commodity and centralizing maintenance management to the component level--thus easing integration. Moreover, this alternative standardizes aviation depot maintenance production metrics, and promotes harmonized depot maintenance support of several Services' aircraft. Finally, it reduces the workforce yet retains an expert skills base.

**Military Effectiveness: Pro.**

This alternative appropriately retains support of combatant forces within and by the Services vice relinquishing the key Service roles of readiness, sustainability, and reconstitution to non-Service staff or contractor activities, or rather than piecemealing such responsibilities to disparate organizations. This alternative promotes a single, uniformed focal point for the customer, thereby reducing support response times--an especially critical benefit during contingencies or war. As important, it reduces Service parochialism because representatives from the supported Services are assigned to co-manage the Executive/Single Service structure as outlined above. This structure maximizes the flexibility of resources while enhancing process control. It also satisfies unique Service requirements for quality by keeping workloads aligned with expertise within TRCs/COEs. During production/surge scenarios, it allows more flexibility in workload response, it retains a vital surge capability, and it increases throughput of under-utilized facilities.

**Military Effectiveness: Con.**

Initially, a Service may fear that it may lose control over workloading and priorities. A Service may also fear that another Service cannot meet its "unique" depot maintenance/modification needs, and that another Service will end up "managing" its total weapon system/platform, Finally, a Service may be concerned that its optempo and maintenance philosophy will be unacceptably altered, and that it will lose command billets.

**Business Efficiency: Pro.**

This alternative meets the test of current and likely DMRDs. From a national objective perspective, this alternative clearly maximizes DOD flexibility in using its resources. It also provides a single, uniformed customer focal point, lowers overhead cost, and minimizes proliferation of support equipment and facilities. From an economic perspective, it reduces customer costs based on volume/economies of scale, reduces expenditures for duplicate equipment, maximizes cost-benefits from technology insertion, and it lowers facilities/equipment maintenance cost. While achieving infrastructure-related benefits, it also retains critical skills, reduces the overhead to direct labor ratio, provides more opportunities for productivity and efficiency initiatives, and increases throughput to meet surge and mobilization requirements of customers. It also provides a unified source of depot maintenance support by major weapons system/platform, DLRs, etc. In doing so, it centralizes weapons system management of maintenance production to the component level, thereby improving the DOD's ability to deal with integration issues.

**Business Efficiency: Con.**

Divestiture of DOD industrial installations may be difficult (a Base Realignment And Closure task). Moreover, morale and productivity problems result from Reductions in Force (RIF), which follow from workload consolidation and transfer.

## ALTERNATIVE F DOD Consolidation

Consolidate all depot maintenance functions under one organization external to the Services. This alternative would eliminate Service ownership of depot maintenance. Individual weapons systems, Depot Level Reparables (DLRs) and components, and non-weapon system equipment could be maintained organically, contracted out, or a combination of both. Individual depots could be organic or government-owned/ contractor-operated (GOCO).

**Effectivness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative has no clear military advantage in the readiness, sustainment or reconstitution of military forces. This approach removes the Services' ability to organically support their combatant forces and instead vests this core Service role to an external, non-military agency. Significantly, this concept violates basic tenets of command and control, and inappropriately divides responsibility and execution authority.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Not if such savings prevent the Air Force's full implementation of the aerospace doctrine associated with the "Global Reach, Global Power" concept, which in turn supports the Base Force. So-called "savings" that impair the Services' readiness, sustainability, and reconstitution reflect a false economy, as was evident in the "Hollow Force of the 1970s."

**Implementation: Is this alternative realistic?**

While this alternative can be implemented, it is not realistic in that this approach inhibits the Services' from organically supporting their own combatant forces' logistics requirements. This alternative puts the safety and success of fielded forces in jeopardy by separating the responsibility for executing the mission from the responsibility (capability) to sustain forces supporting the mission.

**If your Service were selected as the Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipment, "Pop-up projects", etc.?**

Since this alternative assumes none of the military departments would be the Executive Agent/Single Manager for this alternative, this question is not applicable.

**If your service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Measures of value for depot support would be calculated by the depot maintenance system's ability to increase product throughput and quality on a sustained or surge basis, reduce operating costs, and comply with agreed-upon work packages. These metrics must support a customer Service's readiness, sustainability, reconstitution, priorities, life cycle data, and product quality.

**Are there near or long term business efficiencies to be gained by this alternative?**

No long term efficiencies are involved beyond the ability to consolidate depots as per Alternatives D or E. Actually, it decrements any efficiencies due to the likely vertical nature of this organization and the likely dramatic increases in overhead labor that would result from its implementation--if the Defense Logistics Agency can be used as a model.

**Military Effectiveness: Pro.**

This alternative promotes single focal point for the customer. It potentially can result in the standardization of processes and data management systems which, in turn, can result in expedited support of fielded forces.

**Military Effectiveness: Con.**

This alternative has no clear military advantage in the readiness, sustainment or reconstitution of military forces. This approach removes the Services' ability to organically support their combatant forces and instead vests this core Service role to an external, non-military agency. Significantly, this concept violates basic tenets of command and control, and inappropriately divides responsibility and execution authority. The addition of a depot maintenance management agency external to the Services creates an overhead function that further complicates an already complex OSD-JCS-DLA-Service-Major Command relationship. This unnecessary overhead layer could prompt bureaucratic responses to Service priority changes and directly impact (impair) readiness. Further, while economic considerations are key, this alternative presupposes that they should consistently prevail over military effectiveness and support of the Base Force.

**Business Efficiency: Pro.**

This alternative provides no clear business advantage that could not be achieved through an Executive/Single Service approach.

**Business Efficiency: Con.**

No long term economies and efficiencies are involved beyond the ability to consolidate depots as per Alternative E. In fact, this alternative decrements any economies and efficiencies due to the likely vertical nature of this organization and the likely dramatic increases in overhead labor that would result from its implementation--if the Defense Logistics Agency can be used as a model. In the management area, oversight of this central agency is ambiguous. Potential increases in contract oversight requirements would occur if GOCO/contractors were selected as the consolidated facilities. This alternative in no way reflects the lean/flat business organization concepts that have proven to be most competitive and efficient--compare a General Motors with a far leaner and more profitable Ford Motor Company.

## ALTERNATIVE G Commercialize Maintenance

Contract out all depot maintenance requirements. Contract management would be maintained at either the Service or DOD level. The ultimate goal would be to include contract maintenance as part of the weapon system/platform acquisition costs of new systems throughout its life cycle.

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

Implementation of this alternative puts at risk the military effectiveness of the United States. This alternative offers no clear military advantage in the readiness, sustainment or reconstitution of military forces. Similarly, this approach removes the Services' ability to organically support their combatant forces and instead vests this core Service role to an external, non-military agency. As is the case with Alternative F, this concept violates basic tenets of command and control, and inappropriately divides responsibility and execution authority.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Not if such savings prevent the Air Force's full implementation of the aerospace doctrine associated with the "Global Reach, Global Power" concept, which in turn supports the Base Force. So-called "savings" that impair the Services' readiness, sustainability, and reconstitution reflect a false economy, as was evident in the "Hollow Force of the 1970s."

**Implementation: Is this alternative realistic?**

While this alternative can be implemented, it further distances the Services' combatant forces from its combat service support. This untenable military support structure is not realistic in that it inhibits the Services' from organically supporting combatant forces' logistics requirements. This alternative clearly puts the safety and success of fielded forces in jeopardy by separating the responsibility for executing the mission (Services) from the responsibility (capability) to sustain forces supporting the mission (disparate commercial activities).

**If your Service were selected as the Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipment, "Pop-up projects", etc.?**

Since this alternative assumes none of the military departments would be the Executive Agent/Single Manager for this alternative, this question is not applicable.

**If your service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Measures of value for depot support would be calculated by the depot maintenance system's ability to increase product throughput and quality on a sustained or surge basis, reduced operating costs, and compliance with agreed-upon work packages. These metrics must support a customer Service's readiness, sustainability, reconstitution, priorities, life cycle data, and product quality.

**Are there near or long term business efficiencies to be gained by this alternative?**

No long term efficiencies are anticipated. In fact, efficiency decrements are likely due to the public-private contractual ("arms length") relationship, increased organizational distance between the contractor(s) and the customers (supported Services), and the likely dramatic increases in overhead labor that would result from requirements preparation, proposal evaluation, contract oversight, and potential litigation.

**Military Effectiveness: Pro.**

This alternative does not enhance military effectiveness.

**Military Effectiveness: Con.**

This alternative has no clear military advantage in the readiness, sustainment or reconstitution of military forces. This approach removes the Department of Defense's ability to organically support its combatant forces and instead solely vests this core Service role to private sector contractors. The structure implied by this alternative is less flexible in response to dynamic mission requirements and is not responsive to mobilization. There is significant potential for mission impact if the overhaul contractor(s) is owned or purchased by foreign interests. Significantly, this concept violates basic tenets of command and control, and inappropriately divides responsibility and execution authority. In addition, it is not axiomatic that solely by transferring individual organic depot maintenance capability to contractors, DOD/Service effectiveness and *USAF* efficiency will be increased. Moreover, the addition of a contractor management agency external to the Services creates an additional overhead function largely responsible for contract "monitorship" further complicating an already complex OSD-JCS-DLA-Service-Major Command relationship. This unnecessary overhead layer could prompt a bureaucratic response to Service priority changes and directly impact (impair) readiness. Further, while economic considerations are key, this alternative is based on the notion that private sector depot maintenance activities are more cost effective than are their organic Service counterparts--witness recent aviation depot maintenance contracts won by Service depots over their private sector competitors.

**Business Efficiency: Pro.**

This alternative provides no clear business advantage that could not be achieved through an Executive/Single Service approach.

**Business Efficiency: Con.**

No long term economies and efficiencies are involved. In fact, this alternative decrements any economies and efficiencies due to the likely convoluted organizational structure of the resulting oversight ("monitorship") organization. Moreover, dramatic increases in overhead labor would potentially result from its implementation. This alternative in no way reflects the lean/flat business organization concepts proven to be most competitive and efficient--compare General Motors with a leaner and profitable Ford Motor Company. Additionally, if this approach were to fail, the expense necessary to reconstitute the DOD depot maintenance infrastructure would be prohibitively expensive, and the schedule to accomplish the same would extend far beyond any potential conflict-driven response time.

U.S. Department of Transportation

**United States Coast Guard**

Commandant
US Coast Guard

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Phone: (202)267-0184

0 3 NOV 1992

From: Commandant
To: Chairman, Executive Working Group, JCS Depot Maintenance Consolidation Study

Subj: COAST GUARD ANALYSIS OF THE DEPOT MAINTENANCE CONSOLIDATION ALTERNATIVES

1. Provided as enclosure (1) is the Executive Summary of the Coast Guard's position on the seven alternatives for consolidating service depot maintenance. Enclosure (2) is our detailed analysis of each alternative.

2. Our role in a future shared maintenance scheme is driven by two basic realities. First, we want to continue and possibly to expand our interservice role. Second, because we are small it is virtually impossible for us to absorb large portions of selected depot level maintenance along single platform or component lines. The danger of becoming overextended would threaten quality and our ability to meet interservice commitments on time and within budget.

3. I see the Coast Guard's part in the resultant alignment as a willing participant but measured by our capabilities. I also believe that the resultant structure will ultimately reflect the special expertise resident in the various services. There are three areas where I believe the Coast Guard can make a comfortable and realistic fit. As a customer, we would like to see more aviation components interserviced and believe that the Navy shipyards have the capacity to provide depot level repair of our 378 High Endurance Cutters and our Polar Class Icebreakers. As a provider, the Coast Guard Yard can provide depot level repairs for a community of interservice watercraft under 3000 tons and 200 feet LOA in the range from Hatteras to New York. In all three the advantage of price must be demonstrated.

4. The Coast Guard looks forward to a successful outcome of this most important effort.

u/r

P. A. BUNCH
Chief, Office of Engineering,
Logistics and Development

Encl: (1) Executive Summary
(2) Analysis of Seven Alternatives

# APPENDIX L

# COAST GUARD ALTERNATIVE REVIEW

Alternative A Individual Service Management

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative assumes an accelerated DMRD 908 process. The Coast Guard, an agency within the Department of Transportation, is not within the scope of DMRD 908. Conceptually, the Coast Guard has long relied upon actions that DMRD 908 directs DOD services to implement. Coast Guard depot maintenance is dependent upon commercial and DOD activities. Coast Guard organic depot maintenance cannot meet the needs of our service without commercial and DOD support.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Any attempt to increase the Coast Guard depot infrastructure to meet all Coast Guard depot maintenance requirements would reduce our operational effectiveness. The total Coast Guard depot maintenance requirements are not large enough to justify the capital investment necessary for total organic depot repair. This investment would suboptimize resource allocation within the Coast Guard.

**Implementation: Is this alternative realistic?**

Yes, but greater savings are possible if Centers of Excellence among the services were created, and if DOD cost competitiveness and pricing models for agencies external to DOD were improved.

**If your service was selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Not applicable to this alternative.

**If your service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Not applicable to this alternative.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Yes, but more economies and responsive support to the Coast Guard are possible under other alternatives.

**Comment**

The Coast Guard has moved beyond internal depot maintenance. A large percentage of our workload, including HC-130H aircraft Programmed Depot Maintenance, most of our aviation component depot level repair, most of our boat depot level repair and major cutter shipyard availabilities, is conduced in DOD and commercial activities. We seek improvements that make DOD depots a more competitive source of depot repair.

Alternative B Individual Service Management (Consolidation into "Centers of Excellence")

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

The Coast Guard's operational effectiveness would be greatly reduced if this alternative was implemented. While the Coast Guard already has consolidated depots, one for aviation maintenance and one for vessel maintenance, we rely upon external commercial and DOD sources for most of our depot maintenance. Coast Guard facilities are optimized for the workload that they can best execute, and to mesh with our heavy use of external depot maintenance. Production that requires heavy capital investment or high levels of throughput is outsourced.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

The Coast Guard cannot afford the investment necessary for this alternative.

**Implementation: Is this alternative realistic?**

No.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements, e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Not applicable for this alternative.

**If your service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Not applicable for this alternative.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

No, this alternative does not allow the Coast Guard to optimize what we do best, and consolidate our workload with external sources where appropriate.

**Comment**

This alternative would provide benefits to an organization that is much larger than the Coast Guard, and that had an existing depot system with duplicative capabilities and excess capacity.

Alternative C Consolidate Weapons System Platforms into Joint Service "Centers of Excellence"

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative, if fully implemented, would degrade Coast Guard operational effectiveness. Full implementation would require Navy support of our High Endurance Cutters and Icebreakers, Air Force support of our fixed wing aircraft, Army support of our rotary wing aircraft, and possible Coast Guard support of all small (less than 3000 tons) vessels for all services. The Coast Guard workload gained from DOD would dominate our internal vessel workload and overwhelm our shipyard and infrastructure. The result would be an improper focus of our maintenance community on service to DOD rather than supporting Coast Guard operations. The Coast Guard HC-130H fleet is already supported by the Air Force. Coast Guard HU-25A/B/Cs and HH-65As, which comprise most of Coast Guard aviation, are commercial derivative, foreign sourced aircraft unique to the Coast Guard. We have built a depot system to support these two platforms that has progressed upon the learning curve for these midlife systems. HH-60J support via a Center of Excellence is possible, but a recent Coast Guard study concluded that component and airframe crash repair should be conducted in DOD facilities, while the labor intensive basic airframe depot maintenance is most economically conducted organically. Our experience in seeking DOD depot maintenance for our platforms is that we cannot afford to pay DOD depot costs.

A partial implementation of this alternative may be desired. The Coast Guard would continue to seek the lowest cost source of depot maintenance for our platforms (High Endurance Cutters, Icebreakers and aircraft) from all sources including DOD Center of Excellence. Vessel depot maintenance would need to be consistent with the Coast Guard's Homeport Policy. The Coast Guard could become the Center of Excellence for repair of DOD watercraft under 3000 tons and 200 feet LOA at the Coast Guard Yard. Repair candidates would be limited to those within the geographic range from Hatteras north to New York. The vessel owning service would continue to provide program oversight, planning, specification and work package development, etc. The Coast Guard Yard would provide repair services under an interservice agreement with the service customer as part of the Yard's normal depot maintenance support for the Coast Guard fleet. The total combined interservice repair and Coast Guard fleet depot level maintenance support would be constrained by the capacity of the Coast Guard Yard.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

The Coast Guard is willing to accept the decrement inherent in the partial implementation described above. We are not willing to accept the large decrement inherent in full implementation.

**Implementation: Is this alternative realistic?**

Only for the partial implementation described above. Full implementation of a Coast Guard Center of Excellence for small vessels would overwhelm our Naval Engineering program. Coast Guard platforms should only receive platform depot maintenance at DOD Centers of Excellence when these facilities are cost competitive.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Workload for the Coast Guard Yard is scheduled at capacity through 1995. After that, interservice workload could be phased in. Total workload mix of Coast Guard and interservice repairs would be negotiated and set in advance. The Yard plans its workload in detail in the near term (12 months) based on long term customer commitments. A five year long term workload plan assures individual project flow, prioritization and preparation. Overall platform management would remain with the customer service. The Yard would work with all its customers to assure that total needs are met within its facility and staffing constraints.

The Yard has a good record in managing emergencies and special requirements both within the Coast Guard and with other government agencies. These are addressed on an individual basis; and if there is a fit with existing workload, workforce, trade mix, and facilities, the work is accepted.

There are several limitations on the Yard. First, the capacity of its two floating drydocks is fixed. Although they came from the Navy, these WWII vintage assets are no longer Navy certified. Technically, they cannot handle Navy vessels without a waiver. The Yard plans to replace both drydocks in 1996 with a shiplift which will transfer ships ashore to an upland area close to the industrial ship complex. Since repair work will not have to compete for available floating drydock space, emergencies will be more readily accommodated. Capacity at the Yard would then be constrained only by workforce unless the Coast Guard can obtain relief from existing personnel ceilings.

**If your service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

More than any other element, the Coast Guard is sensitive to cost. Budget constraints would make it difficult for the Coast Guard to participate in support that is more expensive than our current system of organic, commercial and interservice depot maintenance. Coast Guard cutters and aircraft do not need, nor can we afford, the expensive technical infrastructure necessary to support nuclear ships and high performance tactical aircraft. If Coast Guard platforms were transferred to DOD Centers of Excellence for depot maintenance, processes would need to be established to ensure appropriate resource allocation, especially during

mobilization. The Coast Guard, and other customers, should have the opportunity to place joint staff at the facilities conducting their work. These positions should have management, rather than liaison, responsibilities over joint workload. Overall platform management should remain with the Coast Guard and other customers.

Coast Guard High Endurance Cutters and Icebreakers currently receive commercial shipyard support. Except for two High Endurance Cutters, all operate on the U.S. West Coast. However, all cutters are subject to the Coast Guard's geographic restrictions which could limit the Naval shipyards under consideration for support. There are 12 High Endurance Cutters and 2 Icebreakers. In terms of each class' depot maintenance cycle, the number of cutters undergoing repairs annually averages about five. As with Navy ships, schedules are set well in advance. Because all work is performed commercially, the windows of opportunity for docking becomes part of the bid criteria in our selection process. As a customer, the Coast Guard would expect the same consideration in scheduling repairs for these cutters as Navy vessels. Since we are dealing with a small number of Naval shipyards and five ships per year, the scheduling process should be better than commercial sources. This would however, require close coordination with the Navy in setting our priorities. Except for the Icebreakers which are Coast Guard unique, the needs for special or peculiar technical support are largely non existent. Emergencies always present problems, but as a steady customer, the Coast Guard would expect the same consideration and concern in fitting such a need into existing schedules as would occur in the private sector or for a Navy vessel.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Yes, but significant disruptions of all parties' business practices would occur in transition.

**Comments**

The Coast Guard believes that our mix of platform and component workload is better served by Alternative D.

Alternative D Individual Service Management of Weapon System Platforms in "Centers of Excellence" with DLR's, Components and Non-Weapon System Equipment Consolidated in Single Service "Centers of Excellence"

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

This alternative would maximize Coast Guard operational effectiveness for a given level of resources. The most opportune target for increased interservice support of Coast Guard requirements is in increasing DOD depot level repair of Coast Guard aviation reparable components. Coast Guard aviation platforms consist of rotary wing and maritime patrol aircraft. These type aircraft generate most of their depot maintenance workload in component repair versus the greater expense of performing depot level maintenance on the exotic, highly stressed structures of tactical jet aircraft. Component rework is most efficiently accomplished in facilities with high throughput and capital investment. The Coast Guard's total component repair requirements do not justify such facilities. In FY92, DOD facilities accomplished $14.5M of Coast Guard aviation component maintenance, another $75.6M was accomplished at commercial facilities. A consolidated depot maintenance system, with efficient, full capacity Centers of Excellence that specialize in classes of components, could capture and execute Coast Guard component workload at a savings compared to current commercial costs.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Properly implemented, this alternative will increase Coast Guard operational effectiveness.

**Implementation: Is this alternative realistic?**

Yes. The Coast Guard would shift aviation component depot level repair from commercial to DOD facilities as the DOD facilities became competitive with the commercial sector in terms of cost, quality and reliability of supply.

**If your service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

The Coast Guard would not become a provider under this alternative, we would be a customer.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Coast Guard needs a process to insure that our workload can compete for a proper allocation of depot resources. Based on our experience interservice support functions well in peacetime, but during mobilization executive agents tend to allocate resources towards their own requirements. We would expect that a properly functioning consolidated system would have an established process to both allocate resources and address appeals from customers. Centers of Excellence should have staffing in significant managerial roles from all customers. Liaison officers do not have the ability to effect proper resource allocation, joint managers do.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

This alternative offers the greatest long term improvement in efficiency for the Coast Guard. Our depots would focus on what they do best, execution of basic labor intensive depot maintenance on airframes and vessels. Our costs and quality of performing platform maintenance are competitive. Capital investment component repair would migrate to DOD Centers of Excellence as these activities prove competitive with the private sector.

**Comments**

DOD depot labor rates, as billed to the Coast Guard on FY93 Depot Maintenance Interservice Support Agreements (DMISAs), range from $66.49/hr to $107.25/hr with a median of $85/hr. Commercial rates are typically $60+/hr. The internal Coast Guard rate at our aviation depot is $43/hr, although our depot is not well suited for component repair. Removing excess depot capacity and concentrating component workload should make DOD depots the provider of choice for aviation component rework.

Alternative E Consolidation of Similar/Common Platforms, DLR's, Components and Non-Weapon System Components Under Single Executive Service

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

The Coast Guard position on consolidation by platforms is discussed in our analysis of Alternative C. Our position on consolidation by components is discussed in our analysis of Alternative D.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

The Coast Guard believes that consolidation of components, subject to cost of repair, will improve operational effectiveness. Consolidation of platforms, as proposed in Alternative C, may degrade operational effectiveness by an unacceptable decrement. Our position is discussed in detail in our analysis of Alternatives C and D.

**Implementation: Is this alternative realistic?**

Not for the Coast Guard. A detailed discussion is available in our analysis of Alternatives C and D.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Refer to the Coast Guard analysis of Alternatives C and D.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Refer to the Coast Guard analysis of Alternatives C and D.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Refer to the Coast Guard analysis of Alternatives C and D.

**Comment**

The Coast Guard believes that our platforms, with their mix of platform and component workload, are best served by Alternative D.

Alternative F DOD Consolidation

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

The two Coast Guard depots fall under the Department of Transportation. This makes it impractical, and probably unlikely, that they would be consolidated into a civilian Department of Defense agency. Our analysis assumes that this alternative would require the Coast Guard to interact with a Defense Depot Maintenance Agency built from the individual DOD services' depot infrastructure. Our comments regarding consolidation at a platform and component level as expressed in our analysis of the other alternatives apply to this alternative as well. In general, the Coast Guard favors consolidating component depot repair, but not platform depot repair. This alternative offers different organizational opportunities and challenges. A new organization might be free of individual service bias tend thus more likely to conduct appropriate asset allocation, but a civilian defense agency would likely present another layer of management over existing organizational structures. The new management would also, by concept, be farther removed from operations and mission requirements. The issue seems to be whether a defense agency is necessary to implement consolidation. If not, why create additional management overhead that is farther removed from its customers?

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

If this alternative was the necessary means to implement DOD depot maintenance consolidation, the Coast Guard would seek support for aviation components and selected platforms when, and if, the organization was competitive in terms of cost and reliability of supply.

**Implementation: Is this alternative realistic?**

Yes, but only if depot consolidation cannot occur within and between the services.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

This alternative assumes than an executive agent other than the Coast Guard is created. The Coast Guard would be a customer.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

The Coast Guard comments from Alternative D apply.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Production efficiencies should result from depot consolidation. Management would be farther removed from its customers, possibly with additional layers relative to other alternatives.

**Comments**

This alternative should be reserved for use only if depot consolidation is not possible within the services.

Alternative G Commercialize Maintenance

**Effectiveness: What are the impacts of this alternative on the military effectiveness of your Services' maintenance process?**

Total commercial depot maintenance of all Coast Guard platforms and components would be difficult to execute with enough economy and responsiveness to meet our operational requirements. Most of the Coast Guard's current depot maintenance is conducted at commercial activities including over 80% of our shipyard availabilities. Our HC-130H fleet receives aircraft depot maintenance at a commercial facility under an Air Force contract, and most of our aviation components get commercial depot level repair. Commercial support works well when workload is steady state or has an ample planning horizon, it does not respond well, nor is it economical, for emergent requirements. A large portion of the Coast Guard aviation inventory is commercial derivative and foreign sourced. These aircraft, the HH-65A and the HU-25A/B/C, do not have a mature domestic support infrastructure, especially the HH-65A. Thus, the Coast Guard has been forced to create an organic infrastructure, and act as the catalyst for the creation of commercial infrastructure to support these aircraft. Without organic Coast Guard support, these aircraft would not receive adequate support.

**Are you willing to accept some decrement in military effectiveness if substantial savings could be realized by this alternative?**

Despite the Coast Guard's heavy use of commercial depot maintenance, total commercial support is not advisable. The decrement to Coast Guard operational effectiveness would be where we cannot afford it, to economic and responsible changes in support for changes in missions or operational requirements. This has restricted the Coast Guard from an even greater use of commercial depot maintenance.

**Implementation: Is this alternative realistic?**

No.

**If your Service were selected as an Executive Agent/Single Manager for this alternative, how would you handle special requirements; e.g., setting priorities, service unique equipments, "Pop-up projects," etc?**

Not applicable for this alternative.

**If your Service became a customer of an Executive Agent/Single Manager, what would you expect from that manager?**

Not applicable for this alternative.

**Efficiencies: Are there near or long term business efficiencies to be gained by this alternative?**

Yes. Where responsive commercial support exists, it tends to be less expensive than DOD support for a non-DOD agency. Some DOD pricing models for Coast Guard support have resulted in our use of commercial depot maintenance. High throughput that justify heavy capital investment in plant and process are common among the best sources of commercial (and DOD) support. But all workload is not capital intensive, and barriers to responsive commercial support exist.

**Comment**

Excellent alternative for supplementary use. Small production run, specialized platforms should be acquired with system lifecycle commercial support.

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# APPENDIX M

## CONUS Facilities With Weapons and Munitions Depot Maintenance Missions

Army CONUS Facilities With a Munitions Depot Maintenance Mission

| Depot | Acronym | Location |
|---|---|---|
| Seneca Army Depot | SEAD | Romulus, NY |
| Lexington Blue Grass Army Depot | LBAD | Lexington, KY |
| Savanna Army Depot | SVAD | Savanna, IL |
| Sierra Army Depot | SIAD | Herlong, CA |
| Crane Army Ammunition Plant | CAAP | Crane, IN |
| McAlester Army Ammunition Plant | MCAAP | McAlester, OK |
| Pine Bluff Arsenal | PBA | Pine Bluff, AR |
| Pueblo Depot Activity | PDA | Pueblo, CO |
| Navajo Depot Activity | NDA | Flagstaff, AZ |
| Fort Wingate Depot Activity | FWDA | Gallup, NM |
| Umatilla Depot Activity | UDA | Umatilla, OR |
| Iowa Army Ammunition Plant | IAAP | Burlington, IA |
| Milan Army Ammunition Plant | MAAP | Milan, TN |
| Hawthorne Army Ammuntion Plant | HAAP | Hawthorne, NJ |
| Newport Army Ammuntion Plant | NAAP | Newport, IN |
| Aberdeen Proving Ground | APG | Aberdeen Proving Ground, MD |

Army CONUS Multipurpose Depots With a Munitions Depot Maintenance Mission

| Depot | | Location |
|---|---|---|
| Anniston Army Depot | ANAD | Anniston, AL |
| Letterkenny Army Depot | LEAD | Chambersburg, PA |
| Red River Army Depot | RRAD | Texarkana, TX |
| Tooele Army Depot | TEAD | Tooele, UT |

Navy CONUS Facilities With a Weapons or Munitions Depot Maintenance Mission

| Depot | | Location |
|---|---|---|
| Naval Weapons Station Earle | NWSEL | Earle, NJ |
| Naval Weapons Station Yorktown | NWSYK | Yorktown, VA |
| Naval Weapons Station Charleston | NWSCH | Charleston, SC |
| Naval Weapons Station Concord | NWSCO | Concord, CA |
| Naval Weapons Station Seal Beach | NWSSB | Seal Beach, CA |
| Naval Undersea Warfare Center Keyport | NUWCK | Keyport, WA |
| Naval Surface Warfare Center Louisville | NSWCL | Louisville, KY |
| Naval Surface Warfare Center Crane | NSWCC | Crane, IN |
| Naval Surface Warfare Center Indian Head | NSWCIH | Indian Head, MD |

# APPENDIX M

## CONUS Facilities With Weapons and Munitions Depot Maintenance Missions

### Army CONUS Facilities With a Munitions Depot Maintenance Mission

| Depot | Acronym | Location |
|---|---|---|
| Anniston Army Depot | ANAD | Anniston, AL |
| Letterkenny Army Depot | LEAD | Chambersburg, PA |
| Red River Army Depot | RRAD | Texarkana, TX |
| Tooele Army Depot | TEAD | Tooele, UT |

### Navy CONUS Facilities With a Weapons or Munitions Depot Maintenance Mission

| Depot | Acronym | Location |
|---|---|---|
| Naval Weapons Station Earle | NWSEA | Earle, NJ |
| Naval Weapons Station Yorktown | NWSYK | Yorktown, VA |
| Naval Weapons Station Charleston | NWSCH | Charleston, SC |
| Naval Weapons Station Concord | NWSCO | Concord, CA |
| Naval Weapons Station Seal Beach | NWSSB | Seal Beach, CA |
| Naval Undersea Warfare Center Keyport | NUWCK | Keyport, WA |
| Naval Surface Warfare Center Louisville | NSWCL | Louisville, KY |
| Naval Surface Warfare Center Crane | NSWCC | Crane, IN |
| Naval Surface Warfare Center Indian Head | NSWCIH | Indian Head, MD |

### Army CONUS Facilities With a Munitions Depot Maintenance Mission

| Depot | Acronym | Location |
|---|---|---|
| Adelphi Army Depot | ADAD | Adelphi, MD |
| Lexington Blue Grass Army Depot | LBAD | Lexington, KY |
| Savanna Army Depot | SVAD | Savanna, IL |
| Sierra Army Depot | SIAD | Herlong, CA |
| Crane Army Ammunition Plant | CAAP | Crane, IN |
| McAlester Army Ammunition Plant | MCAAP | McAlester, OK |
| Pine Bluff Arsenal | PBA | Pine Bluff, AR |
| Pueblo Depot Activity | PUA | Pueblo, CO |
| Navajo Depot Activity | NDA | Flagstaff, AZ |
| Fort Wingate Depot Activity | FWDA | Gallup, NM |
| Umatilla Depot Activity | UDA | Umatilla, OR |
| Iowa Army Ammunition Plant | IAAP | Burlington, IA |
| Milan Army Ammunition Plant | MAAP | Milan, TN |
| Hawthorne Army Ammunition Plant | HAAP | Hawthorne, NV |
| Newport Army Ammunition Plant | NAAP | Newport, IN |
| Aberdeen Proving Ground | APG | Aberdeen Proving Ground, MD |

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### Army CONUS Multipurpose Depots With a Munitions Depot Maintenance Mission

| Depot | Acronym | Location |
|---|---|---|
| Anniston Army Depot | ANAD | Anniston, AL |
| Letterkenny Army Depot | LEAD | Chambersburg, PA |
| Red River Army Depot | RRAD | Texarkana, TX |
| Tooele Army Depot | TEAD | Tooele, UT |

### Navy CONUS Facilities With a Weapons or Munitions Depot Maintenance Mission

| Depot | Acronym | Location |
|---|---|---|
| Naval Weapons Station Earle | NWSEA | Earle, NJ |
| Naval Weapons Station Yorktown | NWSYK | Yorktown, VA |
| Naval Weapons Station Charleston | NWSCH | Charleston, SC |
| Naval Weapons Station Concord | NWSCO | Concord, CA |
| Naval Weapons Station Seal Beach | NWSSB | Seal Beach, CA |
| Naval Undersea Warfare Center Keyport | NUWCK | Keyport, WA |
| Naval Surface Warfare Center Louisville | NSWCL | Louisville, KY |
| Naval Surface Warfare Center Crane | NSWCC | Crane, IN |
| Naval Surface Warfare Center Indian Head | NSWCIH | Indian Head, MD |

# APPENDIX N

## Open Meeting Attendees

## 1300, 26 January 1993

| Name | Organization | Phone Number |
|---|---|---|
| Gen J. J. Went, USMC(Ret) | Depot Consolidation Study | |
| Gen B. Poe II, USAF(Ret) | Depot Consolidation Study | |
| Gen L.J. Wagner, USA(Ret) | Depot Consolidation Study | |
| VADM E.A. Grinstead, SC, USN(Ret) | Depot Consolidation Study | |
| Mr. J. McCarthy | Depot Consolidation Study | |
| Col T.B. Slade, USAF | Joint Staff/J-4/SCAD | 1-703-695-9212 |
| COL J.T. Burton, USA | OJCS/Legal Counsel | 1-703-697-1137 |
| CDR J. Fink, USN | Joint Staff/J-4/SCAD | 1-703-695-9234 |
| Lt Col T. Wegemer, USAF | Joint Staff/J-4/SCAD | 1-703-695-9234 |
| CDR J. Barrett, SC, USN | Joint Staff/J-4/SCAD | 1-703-695-9234 |
| Mr. Enemencio Sanchez | GAO | 1-210-521-7960 |
| Mr. Larry Junek | GAO | 1-210-521-7960 |
| Mr. Al Barbero | Sondstrano/AIA | 1-703-276-1626 |
| Mr. Alex Yellin | Defense Base Closure Commission(A/F) | 1-703-696-0504 |
| Mr. Frank Cirillo | Defense Base Closure Commission(USN) | 1-703-696-0504 |
| Mr. Bill Egen | McDonnell Douglas | 1-703-412-3877 |
| Mr. Bill Carrier | McDonnell Douglas | 1-314-234-6549 |

| Name | Organization | Phone Number |
|---|---|---|
| Mr. Bob Mason | OASD(P&L) L/MD | 1-703-697-7980 |
| Capt Tom Hancock, USN | OPNAV Aviation Maint Policy | 1-703-697-5507 |
| Ms. Pat Dalton | U.S. Marine Corps (LPP) | 1-703-696-1057/8 |
| Col Mark Roddy, USAF | HQ, USAF/LGMM | 1-703-697-8775 |
| LTCOL Clarence Newby, USA | HQ, DA(DALO-SMM) | 1-703-614-6752 |
| Mr. Barry Steinberg | Jordan, Coyne, Savits & Lopata | 1-202-371-6392 |
| Mr. Henry Schultz | Lockheed | 1-703-413-5750 |
| Mr. Wimpy Pybus | OASD(P&L) MD | 1-703-614-0862 |
| Ms. Genevieve Meyer | DoD Comptroller (MS/DMI) | 1-703-697-8630 |
| Ms. Linda Peter | General Dynamics | 1-703-876-3337 |
| Mr. JoNathan Tyson | General Dynamics (consultant) | 1-301-604-2243 |
| Lt Col Ron Coleman | HQMC (I&L) | 1-703-696-1059 |
| Capt L. C. Mitchell, SC, USN | OPNAV (N-43) | 1-703-695-6256 |
| Mr. Jeffrey Dodson | Boeing | 1-703-558-9648 |
| Mr. Jack Nunn | Office of Technological Affairs | 1-202-228-6446 |
| Mr. Joel Marsh | United Technology Corporation | 1-202-336-7406 |
| Mr. Robert Earl | General Dynamics | 1-703-876-3485 |
| Mr. Michael Mitchell | Lockheed | 1-703-413-5613 |
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