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Workforce Requirements and Related Issues Affecting Depots and Arsenals

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The Honorable Herbert H. Bateman
Chairman, Subcommittee on Military Readiness
Committee on National Security
House of Representatives

The Honorable Lane Evans
House of Representatives

In response to your requests, we reviewed workforce issues at the Army's maintenance depots and arsenals. This report focuses on the need for and progress in implementing improvements and efficiencies to the Army's depot maintenance and manufacturing arsenal programs.

We are sending copies of this report to the Ranking Minority Member, Subcommittee on Military Readiness, House Committee on National Security; the Chairmen and Ranking Minority Members, Senate Committee on Armed Services, the Subcommittee on Defense, Senate Committee on Appropriations; and the Chairman and Ranking Minority Members, Subcommittee on National Security, House Committee on Appropriations; the Secretaries of Defense and the Army; and the Director, Office of Management and Budget. We will make copies available to others upon request.

If you or your staff have any questions concerning this report, please contact me on (202) 512-8412. Major contributors to this report are listed in appendix II.

David R. Warren, Director
Defense Management Issues

Executive Summary

Purpose

Due to reductions in personnel and workloads, the Army's depots and arsenals, which reported fiscal year 1998 employment at about 13,600 and revenues of about $1,620 million, have faced increased uncertainty regarding workloads, funding, and personnel levels.

The Chairman of the Subcommittee on Readiness, House Committee on National Security asked GAO to examine selected workforce issues pertaining to the Army's maintenance depots, focusing particularly on the depot in Corpus Christi, Texas. Subsequently, Congressman Lane Evans requested that GAO examine workforce issues at the Army's manufacturing arsenals. This report addresses (1) the Army's basis for personnel reductions planned at its depots during fiscal years 1998-99; (2) the Army's progress in developing an automated system for making maintenance depot staffing decisions based on workload estimates; (3) factors that may impact the Army's ability to improve the cost-effectiveness of its maintenance depot's programs and operations; and (4) workload trends, staffing, and productivity issues at the Army's manufacturing arsenals.

Background

Both Army maintenance depots and manufacturing arsenals are part of the combined public and private sector industrial base that supports the requirements of Army forces. Over the years, the number of public depots and arsenals has been reduced as the Army's requirements were reduced and/or the Army increasingly placed greater reliance on the private sector to meet its industrial needs. In 1964, there were nine maintenance depots, and by September 1995, the last of the closures directed by the Base Realignment and Closure (BRAC) Commission had been completed, and five maintenance depots remained.[1] At the end of World War II, the Army operated six manufacturing arsenals; two are in operation today.[2]

The operation of the depots and arsenals is affected and governed by a variety of laws, including the Arsenal Act, which set forth the policies governing the manufacture of supplies in the arsenals, a statute which provides for a Department of Defense (DOD)-maintained core logistics capability to include the operation of government-owned and -operated

[1]The Army had proposed reducing the number of government-owned and operated maintenance depots to three, but the 1995 BRAC Commission recommendations and implementation actions left five depots. The remaining depots are Anniston (combat vehicles and small arms), Corpus Christi (helicopters and engines), Letterkenny (tactical missile maintenance), Red River (Bradley Fighting Vehicle), and Tobyhanna (communications, electronics, and avionics).

[2]The remaining arsenals are Rock Island (artillery material, gun carriages, and small arms) and Watervliet (Seacoast gun carriages, railway mounts, artillery and tank gun tubes, mortars, and gun breeches).

maintenance depots,[3] and the so-called 50/50 provision which requires that the services use at least half of the funds made available for depot-level maintenance for performance by federal personnel. Also, section 364 of the National Defense Authorization Act for Fiscal Year 1998 precludes reductions in force of depot personnel, other than those directed by a BRAC Commission, until the Secretary of the Army certifies to the Congress that the Army has a fully operational software system to estimate depot personnel requirements.

Results in Brief

Our examination shows the Army did not have a sound basis for identifying the number of positions to be eliminated from the Corpus Christi depot. This was particularly the case in determining the number of direct labor personnel needed to support depot workload requirements. Army efforts to develop an automated workload and performance system for use in its depots have proceeded to the point that required certification to the Congress of the system's operational capability is expected soon. However, system improvements that are currently underway would enhance the system's capabilities for determining indirect and overhead personnel requirements in Army depots. Other issues and factors affecting the Army's basis for workload forecasting or the cost-effectiveness of its depot maintenance programs and activities are (1) an increased reliance on the use of regional repair activities and private sector contractors for work that otherwise might be done in maintenance depots, (2) declining productivity, (3) difficulties in effectively using depot personnel, and (4) nonavailability of repair parts.

Use of the arsenals has declined significantly over the years as the private sector has assumed an increasingly larger share of their work. According to Army officials, as of mid-1998, the Army's two weapons manufacturing arsenals used less than 24 percent of their industrial capacity, compared to more than 80 percent 10 years ago. The Army's depots and arsenals face multiple challenges and uncertainties, and the Army has inadequate long-range plans to guide its actions regarding its industrial infrastructure.

[3] 10 U.S.C. 2464 states that the DOD must maintain logistic capability sufficient to ensure the technical competence and resources necessary for an effective and timely response to a national defense emergency. This core logistics capability is required to be owned and operated by the government.

Principal Findings

Questionable Basis for Planned Reductions at Corpus Christi

In determining needed staff reductions at the Corpus Christi depot, the Army considered direct labor and indirect labor requirements and estimates of employee productivity. However, GAO found a number of weaknesses in the Army's methodology for considering these factors. For example, direct labor requirements were based on unproven productivity assumptions, overhead personnel requirements were based on a faulty and imprecise analysis concerning the ratio of indirect (overhead) to direct workers, and questionable overtime requirements estimates were used.

Efforts to implement the planned reductions proved to be poorly managed at the Corpus Christi depot and had unintended consequences: fewer indirect and more direct labor employees were reduced than intended. This adversely affected the depot's productivity. With the reduction of direct labor employees, the use of overtime increased and contractor workers were hired to offset the labor loss. The Corpus Christi depot has had major problems meeting its production schedules and may lose one source of its repair work from another military service.

Progress Made in Automating Personnel Requirements Process, but Needed System Enhancements Yet to Be Completed

In May 1996, the Army began to develop an automated process for analyzing and documenting personnel requirements that are linked to specific workload requirements. The system, which is now operational at all five Army maintenance depots, has been evaluated by the Army Audit Agency and required certification to the Congress of the system's operational capability is expected soon. According to Army Audit Agency the programming logic is reasonably sound, and performance satisfies the Army's acceptance criteria. While the basic system is in place, additional system enhancements were not yet completed that would help overcome the kinds of problems the Army recently encountered in clarifying workforce requirements at the Corpus Christi depot. For example, the Army now plans to add an automated model for predicting indirect and overhead personnel requirements before it certifies the system as operational at Army depots.

Improving Workload Forecasting Essential to Improving Personnel Requirements Determination

In the past, Army depot maintenance workload requirements have fluctuated to such an extent that they contributed to significant reported financial losses to the depots. This situation, if it continued, would limit the usefulness of workload data that are a critical input to the automated system for analyzing and determining personnel requirements.

One of the factors that had adversely affected the Army's ability to project depot maintenance work is the significant amount of depot maintenance work being done at regional repair activities at Army active installations and Army National Guard activities. This was being done even though the Army depot system was already underutilized and had excess plant capacity. The continuing reliance and expanded use of these regional repair facilities for depot-level workloads could have a substantial impact on the future viability and efficiency of operations at the Army's public sector depot operations.

Another factor affecting future workload requirements for the Army depot system was the amount of work shifted to the private sector. While recognizing the need to allocate work levels within the existing legislative framework, DOD's Logistics Strategic Plan expresses a preference for performing depot maintenance work in the private sector. The Army is planning to shift significant new workloads to the private sector, particularly maintenance workloads for new systems. This could be accomplished under a program referred to as prime vendor support. Under this program the private sector contractor is responsible for the maintenance and repair of the system at all repair levels.[4]

The depots' productivity was also declining. Reported productive labor hours at various depot facilities are about 6 percent below DOD's standard rate: two depots reported productivity rates 10 percent below the standard. Various factors contributed to lower-than-expected worker productivity. For example, GAO's work shows that Army depot managers generally lacked effective systems and procedures to facilitate movement of workers between different organizational units and skill areas. Additionally, worker productivity at Army depots has been at times adversely affected by a lack of needed repair parts. GAO previously reported that one depot took an average of 525 days to complete repair work on weapon system components: 18 of those days were needed to conduct maintenance tasks; the rest of the time was spent ordering,

[4]The Army supports four levels of repair—unit, direct support, general support, and depot. At the unit and direct support levels, repairs of weapon systems and component parts are done and repaired items are returned to the user. At the general support and depot levels, repairs of weapon systems and components are done and repaired items are returned to the supply system.

transporting, and storing repair parts or waiting due to other unanticipated delays.[5]

Arsenals Face Challenges and Uncertainties About Their Future Viability

The Army planned to implement its automated workload and performance system in its manufacturing arsenals in December 1998. However, these facilities have broader problems that will not be solved by the automated system. Given the reductions in workload that have occurred over time, the Army arsenals' future is uncertain. The Army is considering conversion of its two arsenals to government-owned, contractor-operated facilities. Army personnel planning documents show the elimination of all arsenal personnel from the government's employment rolls by 2002. However, key questions remain unanswered, such as the cost-effectiveness and efficiency of this option.

Army Has Not Reached Consensus on a Long-term Strategy for Its Industrial Activities

Uncertainties exist about the future of the Army's depots and arsenals and the extent to which the functions they perform should be retained as government-owned and -operated facilities or performed by private sector contractors. Overall, recent experiences at the Army's manufacturing arsenals and maintenance depots indicate that the Army faces multiple, difficult challenges and uncertainties in determining staffing requirements and improving the efficiency and effectiveness of its industrial activities. The issues become more problematic for the depots due to the expanded capabilities of regional repair facilities' work that appears to overlap the work being done in the depots. The Army has no comprehensive plan for managing its overall depot maintenance and manufacturing arsenals, including excess capacity, workload planning, personnel requirements, and productivity.

Recommendations

GAO makes recommendations to the Secretaries of Defense and the Army concerning the need for (1) improvements to the automated workforce performance system before certifying it operational, (2) improving workload management and downsizing, (3) determining the extent to which the Army's logistics and manufacturing capabilities are of such importance that they need to be retained as government-owned and -operated facilities, and (4) developing a strategic plan to guide the future operations of the Army's industrial activities.

[5]Inventory Management: The Army Could Reduce Logistics Costs for Aviation Parts by Adopting Best Practices (GAO/NSIAD-97-82, Apr. 15, 1997).

Agency Comments and GAO's Evaluation

In written comments on a draft of this report, DOD concurred with GAO's recommendations and stated that appropriate corrective actions would be taken. The following are actions the Army has taken, or is planning to take:

- incorporating procedures for determining indirect personnel requirements before certifying the automated workforce performance system as operational;
- reemphasizing the importance of conservative, realistic, and stabilized workload estimates and establishing a board of directors to evaluate and monitor depot maintenance requirements to ensure compliance with applicable regulatory requirements;
- studying the regional repair capabilities and evaluating total maintenance requirements to determine the most efficient workload allocations; and
- developing a 5-year plan to provide a strategic framework to direct future operations of Army maintenance depots and manufacturing arsenals.

Contents

Abbreviations

AMC	Army Materiel Command
AWPS	Army Workload Performance System
BRAC	Base Realignment and Closure
DOD	Department of Defense
GAO	General Accounting Office
GOCO	Government-Owned/Contractor-Operated
IOC	Industrial Operations Command
ISM	Integrated Sustainment Maintenance

Introduction

Army maintenance depots and arsenals were established to support Army fighting units by providing repair and manufacturing capability, in concert with the private sector, to meet peacetime and contingency operational requirements. In recent years, the Army has taken steps to operate these facilities in a more business-like manner, including generating revenues from their output to support their operations. The number of these facilities has been reduced and the size of their workloads and staffs have declined significantly. This reflects the downsizing that began in the late 1980s following the end of the Cold War and the trend toward greater reliance on the private sector to meet many of the Army's needs.

Army Depots and Arsenals

The Army relies on both the public and the private sectors to meet its maintenance, overhaul, repair, and ordnance manufacturing needs. Army depots and arsenals have a long history of service, and they are subject to various legislative provisions that affect the work they do as well as how it is allocated between the public and private sectors.

Depots

Army maintenance depots were established between 1941 and 1961 to support overhauls, repairs, and upgrades to nearly all of the Army's ground and air combat systems. Before the depots were established, some maintenance and repair work was performed at the Army's supply depots and arsenals and some was performed by the private sector. However, before 1941 much of the equipment in use was either repaired in the field or discarded. Depot workload can be classified into two major categories: end items and reparable secondary items. End items are the Army's ground combat systems, communications systems, and helicopters. Secondary items include various assemblies and subassemblies of major end items, including helicopter rotor blades, circuit cards, pumps, and transmissions. Several depots, particularly Tobyhanna, also do some manufacturing, but generally for small quantities of individual items needed in support of depot overhaul and repair programs.

In 1976, 10 depots performed depot maintenance in the continental United States. By 1988 that number had been reduced to eight as a result of downsizing following the Vietnam War. Between 1989 and 1995, Base Realignment and Closure (BRAC) Commission decisions resulted in the closure of three more depots and the ongoing realignment of two others. At the end of fiscal year 1998, the 5 Army depots[1] employed about 11,200

[1]The five depots are Anniston, Alabama; Corpus Christi, Texas; Letterkenny, Pennsylvania; Red River, Texas; and Tobyhanna, Pennsylvania.

civilians, a 48-percent reduction from the 21,500 in fiscal year 1989. In fiscal year 1998, the depots received revenues of about $1.4 billion. Since the mid-1980s, depots have generally not been able to hire new government civilian employees because of personnel ceilings and, therefore, have used contractor personnel to supplement their workforce as necessary to meet workload requirements.

Like the other services, operations of the Army depots are guided by legislative requirements. Section 2464 of title 10 provides for a Department of Defense (DOD)-maintained core logistics capability that is to be government-owned and -operated and that is sufficient to ensure the technical competence and resources necessary for an effective and timely response to a mobilization or other national emergency. Section 2466 prohibits the use of more than 50 percent of the funds made available in a fiscal year for depot-level maintenance and repair to contract for the performance of the work by nonfederal personnel. Section 2460 defines depot-level maintenance and repair. Section 2469 provides that DOD-performed depot-level maintenance and repair workloads valued at $3 million or more cannot be changed to contractor performance without the use of competitive procedures for competitions among public and private sector entities. A related provision in section 2470 provides that depot-level activities are eligible to compete for depot-level maintenance and repair workloads.

Arsenals

The Army's two remaining manufacturing arsenals were established in the 1800s to provide a primary manufacturing source for the military's guns and other war-fighting equipment. Subsequently, in 1920, the Congress enacted the Arsenal Act, codified in its current form at 10 U.S.C. 4532. It requires that the Army have its supplies made in U.S. factories or arsenals provided they can produce the supplies on an economic basis. It also provides that the Secretary of the Army may abolish an arsenal considered unnecessary. It appears that the act was intended to keep government-owned arsenals from becoming idle and to preserve their existing capabilities to the extent the capabilities are considered necessary for the national defense. The Army implements the act by determining, prior to issuing a solicitation to industry, whether it is more economical to make a particular item using the manufacturing capacity of a U.S. factory or arsenal or to buy the item from a private sector source. Only if the Army decides to acquire the item from the private sector is a solicitation issued.

As the domestic arms industry has developed, the Army has acquired from industry a greater portion of the supplies that in earlier years had been furnished by arsenals. Following World War II, the Army operated six major manufacturing arsenals. Since 1977, only two remain in operation.[2] Table 1.1 provides information on the six post-World War II arsenals, including operating periods and major product lines.

Table 1.1: Post-World War II "Old Line" Manufacturing Arsenals

Arsenal	Date established	Date closed	Major product lines
Rock Island Arsenal, Rock Island, Illinois	1862	Operational today	Artillery material, gun carriages, limbers, caissons, tanks, tractors, machine guns, and small arms
Watervliet Arsenal, Watervliet, New York	1813	Operational today	Seacoast gun carriages, railway mounts, high explosives and armor-piercing projectiles, artillery and tank gun tubes, mortars, and gun breeches
Picatinny Arsenal, Dover, New Jersey	1880	1976	Powders and high explosives, and metal components
Frankford Arsenal, Philadelphia, Pennsylvania	1816	1977	Small arms, fire-control and range-finding instruments, and gauges
Springfield Armory, Springfield, Massachusetts	1794	1967-68	Rifles, bayonets, automatic rifles, machine guns, and revolvers
Watertown Arsenal, Watertown, Massachusetts	1816	1967	Seacoast gun carriages and guns

Source: Industrial Operations Command Historical Office.

Today the two arsenals manufacture or remanufacture a variety of weapons and weapon component parts, including towed howitzers, gun mounts, and gun tubes. At the end of fiscal year 1998, the Rock Island and Watervliet facilities employed a total of about 2,430 civilians, a 46-percent reduction from a total of about 4,500 employees at the end of fiscal year 1989. In fiscal year 1998, the two arsenals received about $199 million in revenues.

[2]In addition, the Army operates three facilities that are predominantly devoted to ammunition production. These facilities are located in Pine Bluff, Arkansas; Crane, Indiana; and McAlester, Oklahoma. These facilities were not included in the scope of our review.

Industrial Funds Used to Support Depots and Arsenals

Funding for day-to-day operations of Army depots and arsenals is provided primarily through the Army Working Capital Fund.[3] The services reimburse the working capital fund with revenues earned by the depots and arsenals for completed work based on hourly labor rates that are intended to recover operating costs, including material, labor, and overhead expenses. While Army depots and arsenals are primarily focused on providing the fighting forces with required equipment to support readiness objectives, the industrial fund was intended to optimize productivity and operational efficiencies. Army industrial activities are supposed to operate in a business-like manner, but they are expected to break even and to generate neither profits nor losses.[4] Nonetheless, these military facilities may sometimes find it difficult to follow business like practices. For example, Army requirements may make it necessary to maintain capability to perform certain industrial operations even though it would not seem economical—from a business perspective—to do so. Systems with older technology must be maintained even though acquiring repair parts becomes more difficult and expensive. If military customers need products that are inefficient to produce, the depots and arsenals must produce them anyway.

To compensate the depots and arsenals for the cost of maintaining underutilized capacity that might be needed in the future, these activities receive supplemental funding in the operations and maintenance appropriation under an account entitled "underutilized plant capacity." As shown in table 1.2, funding of this account has been reduced in recent years. Army officials stated that the reduction was made to fund other higher priority programs; however, they stated that in future years, this trend would likely be reversed.

[3]Under this industrial funding arrangement, applicable to a variety of business activities such as depot maintenance and manufacturing arsenals, the Army sells goods and services to the military services based on predetermined rates designed to recoup operating costs. Working capital fund customers pay for the goods and services, primarily, with operations and maintenance funds appropriated by the Congress.

[4]We have previously reported on difficulties DOD faces in attempting to fully capture its operating costs. For example, in our May 1997 testimony Defense Depot Maintenance: Challenges Facing DOD in Managing Working Capital Funds (GAO/T-NSIAD-97-152, May 7, 1997), we noted that DOD has consistently experienced losses in the operations of various working capital funds, including the depot maintenance activity group, and has had to request additional funding to support their operations.

Table 1.2: Army Underutilized Plant Capacity Funding

Dollars in millions

FY	Arsenals	Depots	Total
1996	$56.1	$73.8	**$129.9**
1997	22.0	24.1	**46.1**
1998	20.6	24.2	**44.8**

Source: Army Budget Office.

The Army Materiel Command (AMC) and its subordinate commands hold semiannual workload conferences to review, analyze, document, and assign work to the five depots. In contrast, the arsenals actively market their capabilities to DOD program management offices to identify potential customers. Despite differences in how they obtain their work, depots and arsenals are alike in how they set rates for their work. The process they use begins about 18 months prior to the start of the fiscal year in which maintenance and manufacturing will be performed. Depot and arsenal managers propose hourly rates to recover operating costs based on the anticipated level of future workload requirements, but rates are ultimately determined at the Department of Army and DOD levels.

Rate setting is an iterative process that begins with the industrial activities and the Industrial Operations Command (IOC), a subordinate command under AMC. After they reach agreement, the proposed rates, which are included in consolidated depot and arsenal budgets, are forwarded for review up the chain of command. These commands frequently revise the rates initially requested by IOC based on past performance and other evolving workload and staffing information. When rates are reduced, the industrial activities must find ways to cut costs or increase workload to end the year with the desired financial outcome, which is usually to have a cumulative zero net operating result.[5] However, even if the proposed rates are approved without modification, the performing industrial activity can end the year in better or worse financial shape than originally anticipated, depending on whether or not actual costs and workload are as anticipated. This can necessitate a rate increase in a subsequent year to offset the losses of a prior year, or a rate reduction to offset profits.

Depots and arsenals employ direct labor workers who charge time to finite job taskings, earning revenue for the business. In addition, they employ a number of indirect workers, such as shop supervisors and parts

[5]That is, if the total of all prior years' profits and losses was a profit, the plan will be to reduce rates, thus returning the accumulated profit to the customers. Returning an accumulated profit is achieved by setting rates sufficiently low to plan for a loss for the current year.

expediters, whose time cannot be related to a finite job order but nevertheless support the depot maintenance and arsenal manufacturing process. Likewise, the industrial facilities also employ a variety of general and administrative overhead personnel such as production managers, technical specialists, financial managers, personnel officers, logisticians, contracting officers, computer programmers, and computer operators.[6] While the time spent by these two categories of overhead personnel is difficult to relate to a finite job order, their costs are nevertheless reflected in the overall rates charged by the industrial activities.

Depot Command and Management Structures

AMC is responsible for management control and oversight of the Army's industrial facilities. The Army's IOC—a subordinate command under AMC—had management responsibility for both arsenals and depots. That began to change in November 1997, when under a pilot program, management responsibility for workloading and overseeing work at the Tobyhanna Army Depot was transferred to the Communications-Electronics Command, the depot's major customer.[7] The Army completed the transfer of operational command and control for the Tobyhanna depot in October 1998 and plans to complete transfer of management responsibilities for the other depots in October 1999. Each depot will be aligned with its major customer, which is also the coordinating inventory control point for the depot's products. Table 1.3 summarizes the upcoming management relationship for each Army depot and lists its principal workloads.

[6]Hereafter, unless a distinction is required, indirect and overhead personnel will be collectively referred to as overhead personnel.

[7]The Communications-Electronics Command, a major subordinate command under AMC, serves as an inventory control point for the Army's electronics and communications systems and component parts. Since November 1997, the Communications-Electronics Command has been responsible for determining requirements and providing management oversight for repair programs assigned to the Tobyhanna depot.

Table 1.3: Army Depots and Management Commands and Principal Work

Depot	Major customer	Principal work
Anniston Army Depot, Alabama	Tank-Automotive and Armaments Command	Combat vehicles, small arms
Corpus Christi Army Depot, Texas	Aviation and Missile Command	Helicopters, engines
Letterkenny Army Depot, Pennsylvania	Aviation and Missile Command	Tactical missile maintenance, towed and self-propelled artillery[a]
Red River Army Depot, Texas	Tank-Automotive and Armaments Command	Bradley Fighting Vehicle
Tobyhanna Army Depot, Pennsylvania	Communications-Electronics Command	Communications and electronics, avionics

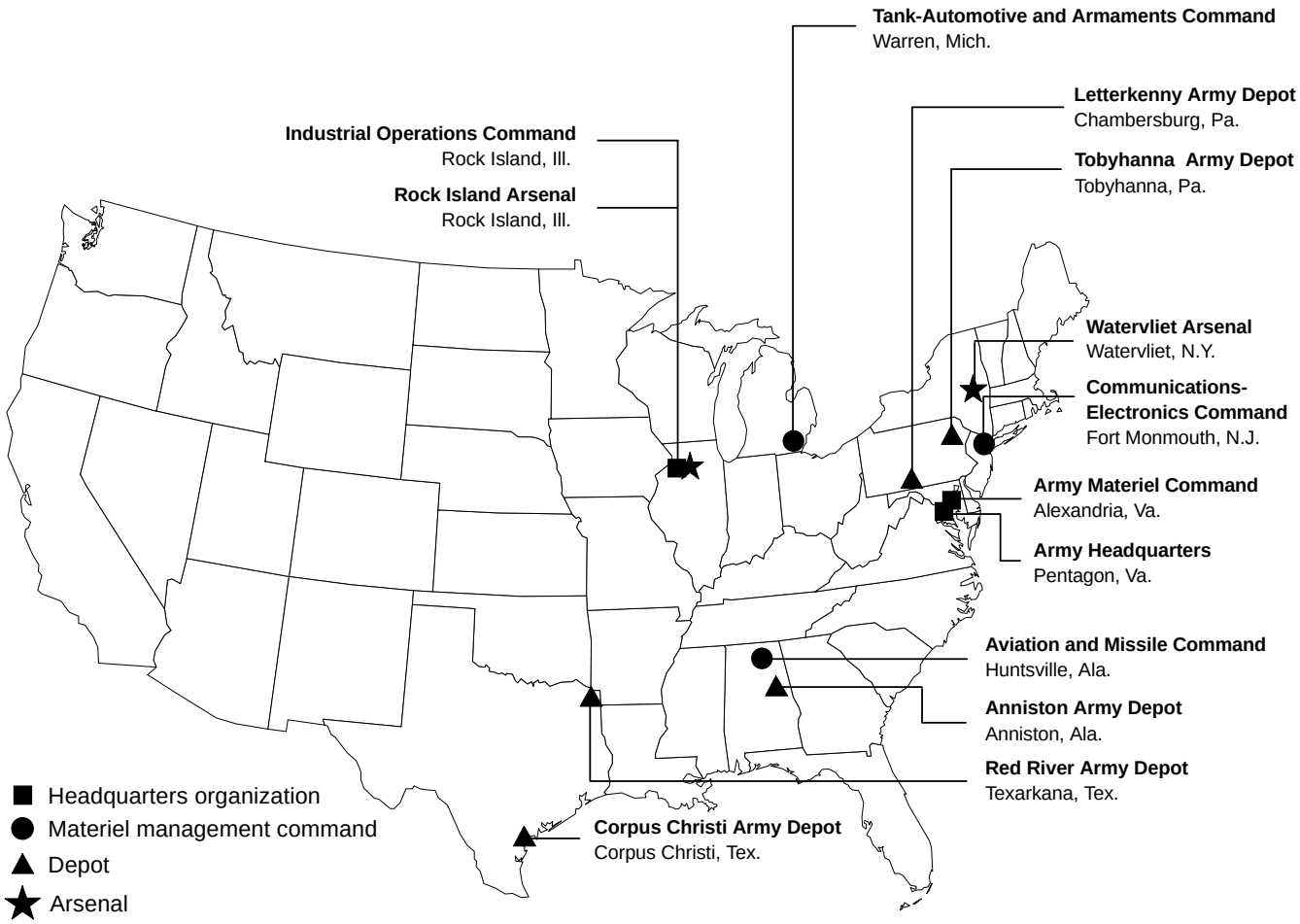
[a]Letterkenny's artillery maintenance mission will be transferred to Anniston in 1999 as a result of a 1995 BRAC decision. Also, as a result of that decision, a portion of its tactical missile workload will be realigned to the Tobyhanna depot.

Upon completion of the transfers of management responsibilities for depots, the IOC workforce will be reduced by about 280 positions out of a current staff level of about 1,400 personnel at the end of fiscal year 1998. The gaining commands will not get additional manpower positions. AMC is assuming that the gaining commands will be able to take on these added responsibilities with no increase in staff. These reductions are in addition to the 1,720 personnel reductions that IOC previously planned to make within the individual depots during fiscal years 1998 and 1999—many of which were put on hold because of section 364 of the National Defense Authorization Act for Fiscal Year 1998. Section 364 prohibits the Army from initiating a reduction in force at five Army depots participating in the demonstration and testing of the Army Workload and Performance System (AWPS) until after the Secretary of the Army certifies to the Congress that AWPS is fully operational. It exempts reductions undertaken to implement 1995 BRAC decisions.

Current plans call for the arsenals to remain under the management and control of IOC. Also, the arsenals are not currently precluded by section 364 from reducing their workforce. Accordingly, to adjust the workforce to more accurately reflect the current workload, the two arsenals are in the process of reducing their workforce by a total of over 300 positions out of 2,700.

Figure 1.1 shows the locations of the Army's industrial facilities and each major command to be responsible for management control and oversight.

Figure 1.1: Army Depots and Arsenals and Corresponding Management Commands



Assessment of Changes in Staffing Requirements

In recent years, several audit reports have highlighted the Army's inability to support its personnel requirements on the basis of analytically based workload forecasts. For example, the Army Audit Agency reported in 1992 and 1994 that the Army did not know its workload and thus could not justify personnel needs or budgets.[8] In several more recent audits, the Army Audit Agency recommended declaration of a material weakness in relating personnel requirements to workload and budget. In DOD's fiscal year 1997 Annual Statement of Assurance on Management Controls, DOD

[8]Managing Workload, Organizations and Staffing, Army Audit Agency (HQ 94-751, June 23, 1994) and Management of Army Workload of Tables of Distribution and Allowances Organizations, Army Audit Agency (HQ 92-T2, Jan. 21, 1992).

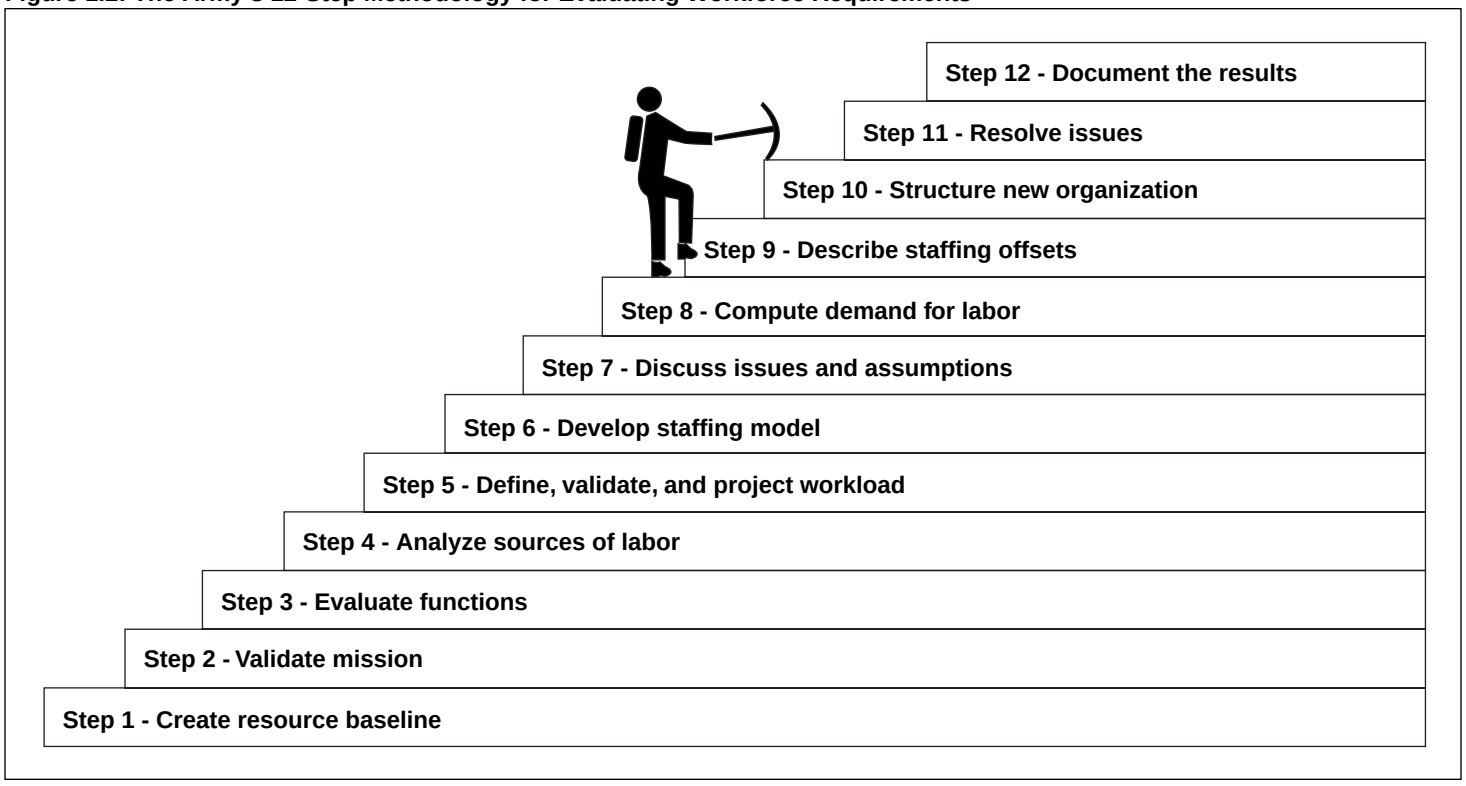
noted a material weakness in its manpower requirements determination system. It noted that the current system for manpower requirements determination lacked the ability to link workload, manpower requirements, and dollars. Thus, the Army was not capable of rationally predicting future civilian manpower requirements based on workload. As a result, managers at all levels did not have the information they needed to improve work performance, improve organizational efficiency, and determine and support staffing needs, manpower budgets, and personnel reductions.

In response to concerns about its workforce planning, the Army has sought to implement a two-pronged approach to evaluating its workforce requirements. This includes implementing a 12-step methodology analysis and developing an automated system for depots, arsenals, and ammunition plants that is referred to as AWPS. In February 1998, we reported that the Army had developed this corrective action plan to resolve its material weakness but that it might have difficulty achieving the expected completion date.[9]

The 12-step methodology, adopted by the Army in April 1996, is a largely manual process that provides a snapshot of personnel requirements designed to link personnel requirements to workload at various headquarters commands and organizations. The methodology includes analyses of missions and functions, opportunities to improve processes, workload drivers, workforce options (including civilian versus using military personnel and contracting versus using in-house personnel), and organizational structure. It also looks for ways to consolidate and create more effective use of indirect and overhead personnel assigned to Army industrial activities. Figure 1.2 shows the components of the 12-step method.

[9]Force Structure: Army's Effort to Improve Efficiency of Institutional Forces Have Produced Few Results (GAO/NSIAD-98-65, Feb. 26, 1998).

Figure 1.2: The Army's 12-Step Methodology for Evaluating Workforce Requirements



The development of AWPS resulted from an Army effort initiated in July 1995 to have a contractor survey leading edge commercial and public sector entities to identify their "best practices" for determining personnel requirements based on a detailed analysis of work to be performed. The contractor concluded that a computer-based system developed by the Naval Sea Logistics Center, Pacific, for use in naval shipyards provided the greatest potential for documenting personnel requirements at Army industrial activities. Consequently, in March 1996, the Army provided funding to a support contractor and the Navy to develop and implement a modified version of the Navy's computer-based process at Army maintenance depots to support the maintenance function.

The AWPS system is designed to facilitate evaluation of what-if questions, including workload and personnel requirements analyses. The evolving system currently consists of three modules—performance measurement control, workload forecasting, and workforce forecasting—to integrate

workload and workforce information to determine personnel requirements for various levels of work. The system provides two primary management information products—information concerning the production status on specific project orders and information concerning workload forecasts and related workforce requirements.

Objectives, Scope, and Methodology

The Chairman of the Subcommittee on Readiness, House Committee on National Security, asked us to examine selected workforce issues pertaining to the Army's depots, focusing particularly on the Corpus Christi depot, where significant difficulties were encountered in implementing a planned personnel reduction during 1997. Subsequently, Congressman Lane Evans requested that we examine workforce issues at the Army's manufacturing arsenals. Accordingly, this report focuses on (1) whether the Army had a sound basis for personnel reductions planned at its depots during a 2-year period ending in fiscal year 1999; (2) progress the Army has made in developing an automated system for making depot staffing decisions based on workload estimates; (3) other factors that may adversely impact the Army's ability to improve the cost-effectiveness of its depot maintenance programs and operations; and (4) workload trends, staffing, and productivity issues at the Army's manufacturing arsenals. This is one of a series of reports (see related GAO products at the end of this report) addressing DOD's industrial policies, outsourcing plans, activity closures, and the allocation of industrial work between the public and private sectors.

To determine whether the Army had a sound basis for personnel reductions, we reviewed the rationale, support, status, and resulting impact of the Army's proposal to reduce staffing at its depots. We interviewed resource management personnel at Army headquarters, Army Materiel Command, the Army Industrial Operations Command, the Army Aviation and Missile Command, and the Corpus Christi Army Depot where we obtained information on the Army's reasons for proposed staffing reductions, and reviewed documentation supporting the Army's proposed staff reduction plan. We discussed staff reduction and related issues with Army Audit Agency officials. To ascertain the Army's progress in developing workload-based staffing estimates, we met with officials from the Naval Sea Logistics Center, Pacific, which is modifying previously existing Navy programs to fit the Army depot and arsenal scenarios. We also interviewed key Norfolk Naval Shipyard and Navy headquarters personnel who have used the Navy's automated workforce planning system. We visited Corpus Christi, Letterkenny, and Tobyhanna depots to

obtain information on the implementation of AWPS and to observe depot employees' use of AWPS-generated data. We also reviewed the results of the Army Audit Agency's audit work regarding the implementation of personnel downsizing and regarding the development and testing of the AWPS system.

To identify factors that may adversely impact the Army's ability to improve the cost-effectiveness of its depot maintenance operations, we analyzed financial and productivity data for each of the depots and discussed emerging issues with Headquarters IOC, depot, and commodity command officials. We also visited the Corpus Christi, Letterkenny, and Tobyhanna depots to obtain information on various aspects of their operation and management. We visited the Naval Air Systems Command, Patuxent River, Maryland to follow up on Corpus Christi Army Depot problems associated with performing Navy workload. During subsequent depot and arsenal visits, we asked questions about the scheduling of work, parts availability, overtime, movement of personnel, and related topics. We also visited selected Army repair facilities that perform depot-level tasks but are not recognized as traditional depot-level maintenance providers. We also conducted literature and internet searches of appropriate topics.

To review workload, staffing, and productivity issues at Army arsenals, we interviewed personnel at the Army Industrial Operations Command, which provides management control and oversight for the manufacturing arsenals. We reviewed back-up documentation supporting proposed staffing reductions and the reasonableness and support assumptions on which staff reduction proposals were based. We visited the two arsenals and met with a variety of key management personnel to discuss and obtain their views on various workload and staffing issues.

We performed work at the following activities:

- Department of Army Headquarters, Washington, D.C.
- Army Materiel Command, Alexandria, Va.
- Army Industrial Operations Command, Rock Island, Ill.
- Army Aviation and Missile Command, Huntsville, Ala.
- Corpus Christi Army Depot, Corpus Christi, Tex.
- Letterkenny Army Depot, Chambersburg, Pa.
- Tobyhanna Army Depot, Tobyhanna, Pa.
- Rock Island Arsenal, Rock Island, Ill.
- Watervliet Arsenal, Watervliet, N.Y.

- Aviation Classification Repair Activities Depot (Army National Guard), Groton, Conn.
- Fort Campbell, Fort Campbell, Ky.
- Fort Hood, Killeen, Tex.
- Management Engineering Activity, Chambersburg, Pa.
- Naval Air Systems Command, Patuxent River, Md.
- Naval Sea Systems Command, Arlington, Va.
- Commander in Chief, U.S. Atlantic Fleet, Norfolk, Va.
- Norfolk Naval Shipyard, Portsmouth, Va.
- Army Audit Agency, Alexandria, Va.

We conducted our work between September 1997 and August 1998 in accordance with generally accepted government auditing standards and generally relied upon Army provided data. While reviewing AWPS generated data, we noted significant errors, particularly early in the audit, and did not utilize that information other than to note its occurrence.

Questionable Analysis Supporting Planned Depot Reductions Accentuated Need to Improve Workforce Planning

A variety of weaknesses were contained in IOC's analysis supporting its plan to eliminate about 1,720 depot jobs over a 2-year period ending in fiscal year 1999. Those weaknesses accentuated previously existing concerns about the adequacy of the Army's workforce planning. The lack of an effective manpower requirements determination process has been an Army declared internal control weakness, for which several corrective actions are in process, including the development and implementation of an automated workload and workforce planning system. An initial attempt to implement the planned reductions at the Corpus Christi Army Depot proved chaotic and resulted in unintended consequences from the termination of direct labor employees who were needed to support depot maintenance production requirements. While the Army was proceeding with efforts to strengthen its workforce planning capabilities during this time, those capabilities were not sufficiently developed to be used to support the IOC's analysis. The Army has made progress in establishing AWPS—its means for analyzing and documenting personnel requirements for the maintenance function—and is approaching the point of certifying its operational status to the Congress. However, while the current version of the system addresses direct labor requirements, it does not address requirements for overhead personnel—an important issue in the ill-planned 1997 reduction of personnel at the depot in Corpus Christi, Texas.

Weaknesses in the Army's Workforce Reduction Process

The Army's plan for reducing the workforce at its depots had a number of weaknesses and did not appear to be consistent with its own policy guidance. Army Regulation 570-4 (Manpower Management: Manpower and Equipment Control) states that staffing levels are to be based on workloads to be performed. However, our work indicates that the Army's plan for reducing staff levels at its depots was developed primarily in response to affordability concerns and was intended to lower the hourly rates depots charge their customers. The plan was not supported by a detailed comparison of planned workload and related personnel requirements. Army officials stated that incorporation of the 12-step process into AWPS will help the Army address affordability while directly linking manpower to funded workload, assuming that the Army ensures accuracy and reliability of AWPS data input, both by the planners and via the shop floor.

In July 1996, as part of its review of proposed rates, AMC headquarters determined that the hourly rates proposed by the Army depots for maintenance work in fiscal year 1998 were generally unaffordable. It

concluded that depot customers could not afford to purchase the work they needed. The Army's depot composite rate for fiscal year 1998 was over 11 percent higher than the composite rate for fiscal year 1996. Table 2.1 provides a comparison of the initial rates requested by each Army depot for fiscal year 1998, the final rates approved for that year by Headquarters AMC and the Army staff, and the percentage difference.

Table 2.1: Fiscal Year 1998 Depot Composite Hourly Rates Requested by Depots and Approved by Headquarters

Depot	Composite requested rate	Composite final rate	Percentage change
Anniston	$105.78	$92.40	–12.6
Corpus Christi	148.19	125.44	–15.4
Letterkenny	111.93	84.50	–24.5
Red River	100.53	108.74	+8.2
Tobyhanna	83.46	69.41	–16.8
Composite rate[a]	$107.03	$93.71	–12.4

Note: The rates shown are average composites. Actual rates paid by depot customers vary based on the specific type of services rendered. Information on rates was provided by AMC.

[a]Composite rates are weighted figures and not numeric averages.

AMC Headquarters officials stated that in recent years the depot rates had increased to the point that, in some cases, they were not affordable.[1] IOC officials stated that since they had to reduce the rates quickly, they had little choice but to require staff reductions.

Reported personnel costs in fiscal year 1997 comprise about 46 percent, material and supplies about 29 percent, and other miscellaneous costs about 25 percent of depots' operating costs.

As shown in table 2.1, the rate reduction varied by depot. Unlike the other depots where IOC set a lower rate, IOC set the rate at the Red River depot higher than depot officials requested. However, the rate set was still not high enough to cover estimated costs at that depot. An IOC official stated that if the Red River depot had charged its customers based on the estimated costs of operations at that facility, including recovery of

[1]In a prior report, Army Depot Maintenance: Privatization Without Further Downsizing Increases Costly Excess Capacity (GAO/NSIAD-96-201, Sept. 18, 1996), we noted that inefficiencies resulting from large amounts of excess capacity is a significant factor. More specifically, we said that declining workload and the failure to eliminate excess capacity have resulted in an increased share of relatively fixed overhead that must be allocated to each depot maintenance workload. Additionally, we cited other factors such as declining workload and production inefficiencies in a 1997 testimony, Defense Depot Maintenance: Challenges Facing DOD in Managing Working Capital Funds (GAO/T-NSIAD/AIMD-97-152, May 7, 1997).

previous operating losses, the composite rate would have been over $174 per hour in fiscal year 1998. Having made the decision to reduce the rates through staffing cuts, what remained to be done was to develop a depot staff reduction plan. The initial plan developed by IOC headquarters personnel eliminated about 1,720 depot jobs. The proposal would have affected personnel at three of the five maintenance depots—Corpus Christi, Letterkenny, and Red River.[2]

Staff Reduction Plan Based on Questionable Ratios and Productivity Assumptions

To determine the staff reduction plan, IOC headquarters used a methodology that considered direct labor requirements, overhead requirements, and employee overtime estimates. We analyzed these factors and determined that (1) the direct labor requirements were based on unproven productivity assumptions, (2) the overhead personnel requirements were based on an imprecise ratio analysis, and (3) unrealistic quantities of overtime were factored into the analysis. Table 2.2 shows the number of positions originally scheduled for elimination at each depot for fiscal years 1998 and 1999.

Table 2.2: Summary of Planned Personnel Reductions at Army Depots

Depot	Staffing as of Mar. 30, 1997	Reductions planned for FY 1998	Reductions planned for FY 1999	Total reductions planned for FY 1998-99
Anniston	2,578	0	0	0
Corpus Christi	3,074	328	685	1,013
Letterkenny	2,010	151	54	205
Red River	2,249	164	338	502
Tobyhanna	2,455	0	0	0
Total	**12,366**	**643**	**1,077**	**1,720**

Note: The planned reductions for fiscal year 1999 include additional cuts of 223 authorized positions at the Corpus Christi depot, 115 authorized positions at the Red River depot, and 54 authorized positions at the Letterkenny depot, which were proposed, but not included in budget planning documents. Table does not include BRAC-related personnel reductions, which total 595 positions at the Red River depot and 575 positions at the Letterkenny depot.

Source: GAO analysis of data provided by IOC.

Direct Labor Requirements Based on Unproven Productivity Assumptions

To determine and justify the number of required direct labor employees, IOC divided the total anticipated workload (measured in direct labor hours)

[2]Staff reductions were not recommended for the Anniston and Tobyhanna depots. These depots were projected to receive additional repair work from depots closed or realigned as a result of the 1995 BRAC process. IOC officials decided that their projected workloads would support the current workforce.

by a productive workyear factor. This factor represents the amount of work a direct labor employee is estimated to be able to accomplish in 1 fiscal year. IOC used a variety of assumptions to support its position that the number of depot personnel could be reduced. IOC's analysis used productive factors that are substantially higher than either the DOD productive workyear standard or the historical average achieved in the recent past by Army depots. For example, IOC's analysis assumed that each Corpus Christi depot direct labor employee would accomplish 1,694 hours of billable time, not including paid overtime hours, in a workyear. However, while DOD's productive workyear standard for direct labor depot maintenance employees is 1,615 hours per person, the Corpus Christi depot direct labor employees averaged a reported 1,460 hours of billable time in fiscal year 1997 and 1,528 hours in fiscal year 1996. By using the higher productivity level, the IOC analysis showed the Corpus Christi depot would need 14 percent fewer employees, based on the change in this factor.[3] Table 2.3 provides a comparison of IOC's worker productivity assumptions for each depot and the actual reported productivity levels for fiscal year 1997.

Table 2.3: IOC's Assumptions, DOD's Standard, and Reported Experience of Depot Workers' Productivity for Fiscal Year 1997

	Direct labor hours		
Depot	IOC assumption	DOD standard	Depot reported productivity
Anniston	1,656	1,615	1,421
Corpus Christi	1,694	1,615	1,460
Letterkenny	1,711	1,615	1,590
Red River	1,634	1,615	1,533
Tobyhanna	1,699	1,615	1,569

While the DOD productive workyear standard assumes that each direct labor worker will achieve 1,615 hours of billable time each year, the depots have been unable to achieve this goal. Several factors affect this productivity level. First, due to workforce seniority, Corpus Christi depot workers have recently reported using an average of 196 hours of paid annual leave per year.[4] This is higher than the reported 175 hours of annual leave used on average at all Army activities as well as the reported 167-hour average annual leave used at other government agencies. In addition, Corpus Christi depot employees used a reported average of

[3]Other depots would be affected similarly, but to a lesser degree, based on a comparison of the assumption and the individual depot's actual experience.

[4]Federal employees with between 3 and 15 years of government service earn 160 hours of annual leave per year, and those with over 15 years of service earn 208 hours.

about 112 hours of sick leave per year—more sick leave than they earn in a given year[5] and about 50 percent higher than other Army, DOD, and government activities. The reported Army-wide average sick leave use was 73 hours; the DOD average, 78 hours; and the governmentwide average, 74 hours. Several depot management officials commented that while they monitor sick leave usage, it has increased partly as a result of the older workforce and partly as a result of the Federal Employees Family Friendly Leave Act, Public Law 103-338, October 22, 1994, which allows the use of sick leave to care for family members and for bereavement purposes. Second, because most depot employees at the Corpus Christi and Red River depots are working a compressed work schedule of four 10-hour workdays, they receive 100 hours of paid holiday leave per year. In contrast, a government employee who works a 5-day 8-hour workweek, receives 80 hours of paid holiday leave per year. Third, the depots' direct labor workers charge varying amounts of overhead (nonbillable) time for training, shop cleanup, job administration, temporary supervision, certain union activities, and other indirect activities. In fiscal year 1997, direct labor workers' charges to overhead job orders ranged from a reported average of 125 hours at the Letterkenny depot to 205 hours at the Corpus Christi depot.

Overhead Labor Requirements Based on Questionable Ratio Analysis

To determine and justify the number of required overhead employees, IOC used a ratio analysis that essentially allowed a specified percentage of overhead employees for each direct labor worker. IOC officials told us that they believed the depots had too many overhead personnel and they had developed a methodology to base overhead personnel requirements on predetermined ratios of direct to overhead employees. IOC developed its methodology and the ratios based on actual direct and overhead employee ratios for a private-sector firm tasked with operating a government-owned, contractor-operated Army ammunition plant.

Different ratios were assigned based on the number of functions each depot organization performs—such as maintenance, ammunition storage, or base operation support.[6] The IOC ratio analysis assumed that for every 100 direct labor employees, a single-function depot organization could

[5]Federal civilian employees earn 104 hours of sick leave per year. Unused sick leave may be carried forward for use in subsequent years.

[6]Three of the Army maintenance depots are located on military bases that also support ammunition storage facilities, increasing the overall requirement for overhead personnel. Additionally, four of the depots are considered the host activity on the bases where they reside. As the host activity, they are responsible for managing the housekeeping and business activities associated with having a large piece of real estate that is similar to a small town—such as grounds-keeping, building, and road maintenance, and fire and safety operations. These activities require additional support personnel. The difficulty lies in estimating the number of personnel required to support these additional requirements.

have no more than 40 overhead personnel, a dual-function depot organization no more than 50 overhead personnel, and a three-function depot organization no more than 60 overhead personnel. Table 2.4 provides a summary of ratios IOC used to determine the number of overhead employees.

Table 2.4: IOC Ratios for Determining Overhead Personnel Requirements

Depot	Functions	Maximum permissible overhead personnel per 100 direct personnel
Anniston	Maintenance, ammunition storage, host	60
Corpus Christi	Maintenance	40
Letterkenny	Maintenance, ammunition storage, host	60
Red River	Maintenance, ammunition storage, host	60
Tobyhanna	Maintenance, host	50

A number of concerns have been raised about the use of these ratios. For example, in 1997 the then Deputy Under Secretary of Defense (Logistics) stated that the use of such ratios may provide only marginal utility in identifying potentially excess employees and inefficient depot operations. He noted that ratio analysis may not consider the value of productivity enhancements that result from the acquisition of increasingly sophisticated technology to accomplish depot missions, which in turn causes direct labor requirements to decrease, while the overhead labor requirements increase.[7] Depot officials similarly noted that technology enhancements over the past few years have significantly reduced direct labor requirements, while sometimes increasing overhead in the depots, particularly when training and maintenance costs increase. They noted that IOC's methodology did not consider the impact of various efficiency enhancements that eliminated substantial numbers of direct labor positions and added a smaller number of overhead positions. These enhancements include the replacement of conventional labor-intensive lathes with state-of-the-art numerically controlled devices, hundreds of conventional draftsmen with a few technicians having computer-aided design skills, and numerous circuit card repair technicians with multimillion-dollar devices that make and repair circuit cards.

[7]Defense Depot Maintenance Council Business Plan Fiscal Years 1996-2001. The Council is an organization of senior officials in each of the services, the Defense Logistics Agency, and the Office of the Secretary of Defense who are responsible for maintenance policy and operations.

Our discussions with depot officials and a support contractor raised similar concerns, including not considering and analyzing (1) differences in the complexity of work being performed in different depots, (2) requirements for government organizations to maintain certain overhead activities that are not required in the private sector, (3) differing policies in the way depots classify direct and overhead labor, (4) allowances for private sector contractors that perform supplemental labor, (5) the extent to which direct personnel work overtime, and (6) the extent to which contractors perform overhead functions.

Army officials stated that the ratios were not developed using a sound analytical basis, but said that determining overhead requirements is not, by its very nature, a precise science. While we recognize the challenge that this presents, we have stated in the past that until a costing system, computer-based methodology, and 12-step methodology are fully developed and integrated, the Army cannot be sure that it has the most efficient and cost-effective workforce.[8] Although the 12-step process also calls for the use of ratios in some cases, these ratios are based on methodologies that produce finer degrees of precision. The process also calls for the use of more appropriate mixes of fixed and variable overhead personnel. Nonetheless, we share IOC officials' concerns that the Army depots have too much overhead. We have reported that this is in part a consequence of having underutilized depot facilities.[9] Thus, personnel reductions alone, without addressing excess infrastructure issues, cannot resolve the Army's problem of increasing maintenance costs reflected in its depot rate structure.

In commenting on a draft of this report, DOD acknowledged that the methodology the Army used to project workload requirements lacked the precision that would have been available if AWPS had been fully implemented and workload projections were more realistic. While DOD stated that the personnel reduction process received intense scrutiny, implementation of its plan achieved its main objective, which was a reduction in indirect personnel costs that it believed would lead to unaffordable rates.

[8]Force Structure: Army Efforts to Improve Efficiency of Institutional Forces Have Produced Few Results (GAO/NSIAD-98-65, Feb. 26, 1998).

[9]Air Force Depot Maintenance: Privatization-in-Place Plans Are Costly While Excess Capacity Exists (GAO/NSIAD-97-13, Dec. 31, 1996) and Army Depot Maintenance: Privatization Without Further Downsizing Increases Costly Excess Capacity (GAO/NSIAD-96-201, Sept. 18, 1996).

Reduction Plan Envisioned Substantial Overtime Following Personnel Terminations

IOC's staff reduction plan was developed using the assumption that when the suggested personnel restructuring was completed the remaining direct labor employees would be expected to work varying amounts of overtime to accomplish their planned maintenance workloads. In fiscal years 1998 and 1999, Corpus Christi Army Depot direct employees would be expected to work overtime that averaged about 16 and 12 percent, respectively, of their regular time hours. IOC personnel stated that it is less expensive to pay overtime rates than to have more employees charging an equivalent number of straight time hours, particularly given the uncertainties regarding the amount of forecasted workload that might not materialize.

Historically, Army depot employees have performed varying amounts of overtime. For example, in fiscal year 1996, the Army maintenance depots reportedly averaged 13-percent overtime, with individual depot overtime rates ranging from a low of about 4 percent at the Tobyhanna depot, to a high of about 19 percent at the Corpus Christi depot. Although Corpus Christi originally planned for about 6-percent overtime for direct personnel during fiscal year 1998, the plan was revised to its current 15.8-percent overtime plan and unplanned requirements caused average reported overtime by direct employees to approach 30 percent in some months, with individual rates ranging from 0 to over 50 percent. Using overtime could provide a cushion against workload shortages, as opposed to a short-term alternative of hiring people to cover unanticipated increases in workloads; however, to plan for average overtime rates of up to 15.8 percent appears to be beyond the norm for such types of activities, particularly when unplanned requirements could drive the overtime usage substantially above the levels that were planned. For example, we compared the 1997 Bureau of Labor Statistics durable goods manufacturing work week, including overtime, which averaged about 42.8 hours, with comparable data for Corpus Christi and noted that a 15.8-percent overtime figure corresponds to a 46.3 hour work week, while 30 and 50 percent overtime figures correspond to workweeks of 52 and 60 hours, respectively.

Attempted Implementation of the Staff Reduction Plan at Corpus Christi Depot Proved Chaotic and Had Unintended Consequences

AMC efforts to implement its planned reductions at its Corpus Christi depot proved to be extremely chaotic and resulted in unintended consequences. The enactment of section 364 of the 1998 Defense Authorization Act restricted further personnel reductions, except those that are BRAC-related. Army officials stated that when it became apparent that the incentives[10] being offered to indirect personnel in exchange for voluntary employment terminations would not achieve the desired reduction of 336 employees, similar offers were extended to include direct personnel. These officials stated that incentive offers were made to direct labor employees, only when the position held by the terminated direct laborer could be filled by an indirect labor person, who otherwise would face involuntary separation.[11] Notwithstanding that requirement, any depot employee—indirect or direct—was allowed to separate until the desired goal of eliminating 336 employees was reached. Consequently, some direct employees separated, which further exacerbated an existing productivity problem. The congressional action followed and postponed completion of the staff reduction plan until AWPS was certified as operational.

Efforts to Implement Staff Reductions

According to headquarters AMC officials, command industrial activities had too many overhead personnel and the depots could eliminate some of these positions without adversely affecting productivity. To avoid an involuntary reduction in force targeting overhead positions, they developed a plan to encourage voluntary separations. AMC authorized the use of financial incentives, including cash payments and early retirement benefits, and authorized the extension of this offer to direct personnel. At the Corpus Christi depot, 336 personnel voluntarily terminated their employment in 1997 under the Army's staff restructuring plan—55 personnel left through normal attrition and 281 personnel were offered financial incentives to encourage their terminations.[12] In June and July 1997, this latter group was tentatively approved for various financial incentives in return for voluntary termination of employment.

By the end of June 1997, paperwork authorizing voluntary retirements with cash incentives was approved for some employees while still pending

[10]Incentives included approvals for early retirements and cash payments.

[11]In some cases, this was to be achieved by converting an indirect-employee to a direct one; in other situations, the position held by a separating direct employee might be filled by a second direct employee, whose job, in turn, might be filled by a third indirect employee. The general effect of this was to replace direct employees with less experienced or unexperienced employees.

[12]Also in 1997, 336 Red River depot employees received financial incentives to leave. Most of these terminations were related to the BRAC Commission realignment of workloads to the Anniston Army Depot.

for others. Some left the Corpus Christi area thinking they had been granted authorization to leave and receive cash incentive payments. However, at this same time, headquarters AMC was addressing numerous questions regarding the appropriateness of the staff reduction effort, given the size of the depot's scheduled workload. As a result of these questions, Headquarters, AMC, asked the Army Audit Agency to review and comment on the documentation supporting the recommended staff cuts.

Army Audit Agency personnel compared the IOC's assessment of personnel requirements against computer-generated forecasts from the AWPS, which was still under development. The auditors, using AWPS-generated products as their primary support, concluded on June 27, 1997, that personnel cuts were not necessary. Furthermore, the auditors concluded that, based on AWPS calculations, rather than lose personnel, Corpus Christi depot would need to hire 44 additional personnel.

On July 1, 1997, in response to the Army Audit Agency findings, the Army directed its personnel offices to stop processing paperwork for voluntary separations and financial incentives. On July 2, 1997, Corpus Christi personnel officers were directed to recall the more than 190 employees whose applications had not been fully approved. This event caused a great deal of concern, both among the affected personnel and the workforce in general. According to cognizant Corpus Christi depot personnel officials, some of the employees had taken separation leave, others had sold their residences, and still others had moved out of state and bought new homes.

Subsequently, the Army organized a task force including representatives from AMC, IOC, the Army Audit Agency, and depot management to review and validate information contained in the AWPS computational database. The team found that one major Corpus Christi customer had incorrectly coded unfunded workload requirements totaling $70 million as if they were funded, having the effect of overstating personnel requirements. This process left unclear the precise number of employees that were needed to support the approved depot workload.

Nevertheless, after 3 to 4 weeks of what depot officials described as zero productivity, the Army declared that documentation supporting IOC's recommended reductions was accurate and employees were given permission to depart.

Reductions Produced Unintended Consequences

In offering financial separation incentives at the Corpus Christi depot during fiscal year 1997, AMC did not limit the separation opportunities to

overhead personnel. They did not think the desired number of workers would volunteer, if the incentives were restricted to overhead personnel only. Further, headquarters personnel did not want to require involuntary separations. Of the 281 personnel separating with incentives from the Corpus Christi depot, 147 were classified as direct labor and 134 as overhead personnel. Including those separating without incentives, 187 direct labor employees were separated from Corpus Christi.[13]

Given the potential imbalances in the workforce caused by the planned personnel separations, Corpus Christi management and union personnel jointly developed a plan to transfer indirect employees to fill vacated direct labor jobs. These procedures were adopted before any incentive offers were made and were designed to avoid the involuntary separation of indirect personnel by retraining them to assume direct labor jobs vacated by senior personnel accepting incentive offers. The plan required that 49 overhead employees complete various training programs before they could assume the targeted direct labor position. However, progress toward achieving these objectives has been slower than expected. The depot initially expected to backfill vacant direct labor jobs by January 1998, but in May 1998 when we visited the depot, only one-third of the 49 overhead personnel scheduled to be retrained had moved to their newly assigned jobs and begun their conversion training and by mid-July, depot officials advised that 80 percent had moved to new positions.

In commenting on a draft of this report, Army officials stated that these conversions were scheduled to be completed in November 1998. However, depot officials also told us that it takes between 3 and 4 years to retrain a typical indirect employee as a direct employee. According to depot personnel, the loss of 187 experienced direct labor employees exacerbated the existing productivity problem at the Corpus Christi depot. To fill in the need for direct labor, employees worked a reported average of 19 percent overtime, and the depot had to use 113 contractor field team personnel[14] in addition to the 70 contractor personnel already working in the depot. Nonetheless, the depot has had major problems meeting its production schedule and, as discussed further in the next chapter, may lose repair work from the Navy, except for crash damage work.

[13]We have previously reported on the importance of planning for the effective use of separation incentives to eliminate unnecessary positions while retaining critical skills. See Federal Downsizing: Better Workforce and Strategic Planning Could Have Made Buyouts More Effective (GAO/GGD-96-62, Aug. 26, 1996).

[14]Contractor field team personnel are contractor employees who augment the government workforce on an as-needed basis. These personnel typically work along-side government employees.

Subsequently, the Congress enacted the section 364 legislation, which was effective November 18, 1997, postponing involuntary reductions until the Army had certified it had an operational automated system for determining workload and personnel staffing. As a result, the balance of IOC's proposed staff reductions planned for fiscal year 1999 was deferred.

Automated System for Identifying Requirements Could Soon Be Certified Operational, but Some Development Work Remains

Army efforts to develop AWPS have proceeded to the point that required certification to the Congress of its operational capability is expected soon. Even so, efforts will be required to ensure that accurate and consistent workload forecasting information is input to the system as it is used over time. The Army recently completed development and prototype testing of a system enhancement to provide automated support for determining indirect and overhead personnel requirements. Based on our draft report recommendations, the Army plans to postpone AWPS certification until this system improvement is operational at all five maintenance depots.

Certification of System to the Congress

In May 1996, the Army completed installation and prototype testing of the AWPS at the Corpus Christi Army Depot. In June 1997, it announced plans to extend the AWPS process to other Army industrial facilities, including manufacturing arsenals and ammunition storage sites. At the same time, the Army expected that implementation of AWPS at the five maintenance depots would be completed in August 1997.[15] Congressional certification as required by section 364 of the 1998 Defense Authorization has not yet occurred.

In March and April 1998, a team of representatives from various AMC activities, in consultation with the Army Audit Agency, developed AWPS acceptance criteria, that were later accepted by the Assistant Secretary of the Army for Manpower and Reserve Affairs. Army auditors compared acceptance criteria to actual demonstrated experience and reported that the system is operational at all five depots, system programming logic is reasonably sound, and AWPS performance experience satisfies the Army's acceptance criteria.[16] In August 1998, Army officials stated that the Secretary of the Army could make the mandated certification of successful implementation of computer-based workload and personnel forecasting procedures at Army maintenance depots within the next few months. Army officials stated that several planned system enhancements have not

[15]In fiscal years 1996 and 1997, the Army estimates it spent $2.4 million on AWPS development and implementation. In fiscal year 1998, it budgeted an additional $5 million for AWPS-related tasks.

[16]Army Workload and Performance System in Maintenance Depots, AA98-258, July 31, 1998.

yet been implemented, but they do not believe these items would preclude the Secretary from certifying successful completion of AWPS implementation. However, in its written comments to our draft report, DOD stated the Army now plans to postpone AWPS certification until an automated support module for determining indirect and overhead personnel requirements is fully operational at each of the five maintenance depots.

Ensuring Accurate Data

Assuming successful system implementation, future reliability of the system will depend upon the availability and entry of accurate and consistent data imported to AWPS and used to generate system products. The AWPS system provides three primary management information products—information concerning production performance on specific project orders and information concerning workload forecasts and related workforce requirements. The AWPS system receives and processes data from several computerized Army support systems, including the Standard Depot System, Automated Time Attendance and Production System, Headquarters Application System, and Maintenance Data Management System. The Standard Depot System and Automated Time and Attendance System input project status and expense information from the depot perspective. The Headquarters Application System provides status and planned workload data from the IOC perspective, and the Maintenance Data Management System provides workload data from the Army commodity command (major customer) perspective.

Army leadership, in 1997, asked the Army Audit Agency to review and validate the proposed depot personnel reductions. Although the system was still being developed, this early experience demonstrated the vulnerability of personnel requirement statements if the computational database contains errors and inconsistencies. The Army Audit Agency identified problems that resulted because AWPS-generated staffing estimates were based on inaccurate workload forecasts imported to the AWPS computational database. During the implementation period, the Army periodically compared AWPS data with similar information contained in the other computerized support systems and found numerous inconsistences. Other data inaccuracies stemmed from employees' not correctly charging time to job codes on which they were working and the reporting of job codes that were not recognized by the AWPS system. In July 1998, the Army Audit Agency reported that comparisons of data contained in AWPS and several support systems have improved to the point that system managers believe the system logic and AWPS-processed data are reasonably sound.

Further System Enhancements Underway

As of August 10, 1998, the Army had not updated and entered several critical items into the automated workforce forecasting subsystems. These items included (1) updating personnel requirements for overhead personnel based on the approved 12-step process and (2) developing a database of employee skills and a breakdown of depot workload tasks by required job skills. However, as noted in its comments to a draft of this report, DOD stated that the Army planned to postpone certifying this system as operational until it incorporates automated procedures for determining indirect personnel requirements. This should enhance the effectiveness of the AWPS system.

AWPS was initially envisioned only as a tool for documenting requirements for direct labor. However, in May 1998 the Army determined that it would integrate an automated version of the 12-step process into the AWPS system. The model estimates for each maintenance shop and support function the required fixed and variable overhead personnel that are needed to support the direct workload. Because the model is customized to meet individual depot needs, a 50-person sheet metal shop may have overhead requirements different from a similarly sized electronics shop. In October 1998, Army officials stated that the Army had installed an automated 12-step process for predicting overhead personnel requirements at each of the five maintenance depots and that the depots were developing input data required by the system's computational database.

The Army also plans to enhance the current AWPS system by adding an automated database reflecting specific skills of each depot's employee. Work on this system enhancement is expected to be completed in January 1999. The Army anticipates that the automated database will enable the depots to estimate personnel requirements for each specific job specialty and facilitate identification and movement of skilled workers between shops to offset short-term labor imbalances.

Conclusions

The Army did not have a sound methodology for projecting workforce requirements; this led to a highly undesirable set of events that resulted in the voluntary separation of direct labor employees, which negatively impacted employees and depot productivity. Also, given the need to use contract labor and the plan to have depot employees consistently work substantial amounts of overtime, it is questionable whether all of the reductions of direct labor personnel were appropriate. This situation also illustrates the challenge of targeting reductions at the depots in areas

where there are excess personnel and providing the required training to workers when skill imbalances occur, as a result of transfers.

We believe the Army's inability to deal with the perceived need for reducing overhead requirements prompted the chaotic staff reduction effort at the Corpus Christi depot. Further, incorporation of the capability to address overhead requirements is an essential element of an effective AWPS system. The Army's current plan to postpone certifying the AWPS system as operational until it incorporates procedures for determining indirect personnel requirements should enhance the overall effectiveness of the system.

Recommendations

We recommend that the Secretary of Defense require the Secretary of the Army, in making future personnel reductions in Army depots, to more clearly target specific functional areas, activities, or skill areas where reductions are needed, based on workload required to be performed. We also recommend that the Secretary of the Army complete incorporating an analysis of overhead requirements into AWPS prior to certifying the system, pursuant to section 364.

Agency Comments and Our Evaluation

DOD concurred with the recommendations. It stated that the development and testing of an automated process for predicting indirect and overhead personnel requirements would be completed before the system is certified as operational at maintenance depots. We modified our conclusions and recommendations to reflect the actions being taken by the Army in response to our draft report. Specifically, we now recommend that the Army complete ongoing actions that it initiated in response to our draft report recommendations. We also incorporated technical comments that were provided by DOD where appropriate.

Unresolved Issues Overshadow Progress in New Depot Workload Forecasting System

While the Army has made progress in establishing an automated process for analyzing and documenting personnel requirements, it is still faced with larger issues and factors that overshadow efforts to improve workload forecasting and efficient depot operations. First, workload estimates have been subject to frequent fluctuation and uncertainty to such an extent that it is difficult to use these projections as a basis for analyzing workforce requirements. Second, DOD and Army policies have resulted in the transfer of Army depot workloads to other government-owned repair facilities and private sector contractors without corresponding reductions in depot facilities and capacity. It is uncertain to what extent workloads will be assigned to Army depots in the future. Third, depot efficiency has been impacted by other factors—lower than anticipated worker productivity, inefficient use of personnel resources, and the timely availability of certain necessary repair parts.

Changing Workload Estimates Inhibit Army Efforts to Predict Personnel Requirements

Workload estimates for Army maintenance depots vary substantially over time due to the reprogramming of operations and maintenance appropriation funding and unanticipated changes in customer requirements. The Army's personnel budgets and staffing authorizations are generally based on workload estimates established 18 to 24 months before new personnel are hired or excess employees are terminated. Therefore, if actual workload is less than previously estimated, the depot is left with excess staff. Conversely, if actual workload is greater than previously estimated, the depot would have fewer staff than it needs to accomplish assigned work. Our work shows that workload estimates are subject to such extensive changes that they hamper Army depot planners' ability to accurately forecast the number of required depot maintenance personnel. In discussing similar issues with Navy shipyard personnel, we noted that in April 1996, the Navy issued guidance to encourage shipyard customers to adhere to the workload plans established during the budget process. Navy leadership found that past weaknesses in workload forecasting contributed to inefficient use of depot resources, which led to higher future operating rates to compensate for previously underutilized shipyard personnel and facilities. After implementing a guaranteed workload program to stabilize work being assigned to naval shipyards, these activities report having 3 years of positive net operating results, after operating at a loss for over 5 years.

Funding Transfers Affect Estimated Depot Maintenance Workloads

Appropriated operations and maintenance funding for the depot-level maintenance business area—a key source of depot maintenance funding—is reprogrammed by the Army to a much greater extent than

funds for other operations and maintenance appropriation business areas and create challenging fluctuations in workload execution. Table 3.1 shows the amount of depot maintenance funding the Congress appropriated for fiscal years 1996, 1997, and 1998 and the amounts later reprogrammed to cover funding shortfalls in other programs. For comparison purposes, table 3.1 provides the same information for the balance of the Army's operations and maintenance funding.

Table 3.1: Operations and Maintenance Funds Appropriated by the Congress and Reallocated by DOD and Army Headquarters Reprogramming

Dollars in millions

Operations and maintenance funds	Depot maintenance business area			Non-depot maintenance business areas		
	FY 1996	FY 1997	FY 1998	FY 1996	FY 1997	FY 1998
Authorized by the Congress	$966.4	$884.6	$780.2	$17,419.7	$16,928.2	$16,394.2
DOD-directed transfers	–15.7 –1.62%	–4.6 –0.52%	0.0 0%	1,038.0 5.96%	10.7 0.06%	48.0 0.29%
Army-directed transfers from unspecified congressional adjustments	–39.6 –4.09%	–105.7 –11.95%	–23.9 –3.06%	–34.5 –0.20%	–242.1 –1.43%	–469.8 –2.87%
Army-directed transfers	–146.5 –15.16%	–55.2 –6.24 %	–16.4 –2.10%	148.1 0.85%	56.8 0.34%	21.1 0.13%
Final funds available	$764.7 –20.87%	$719.1 –18.71%	$739.9 –5.17%	$18,571.3 6.61%	$16,753.6 –1.03%	$15,993.4 –2.44%

Notes: Estimated funding for fiscal year 1998 as of June 1998. Percentages reflect change from total congressional authorization. Unspecified congressional adjustments refer to provisions in the DOD Appropriations Act which reduce Army budget requests, but leave the allocation of funding adjustments to the discretion of DOD.

Source: GAO analysis based on Army budget data.

As indicated, funds for depot maintenance were reprogrammed at a much higher rate than funds for the other operations and maintenance business areas. The non-depot maintenance business areas provide funding for civilian salaries and private sector contractor support—funds that the Army generally has considered must be paid. The depot maintenance programs for the in-house overhaul and repair can be easily terminated without cost to the government. Army officials explained that when depot orders are terminated, financial losses are recovered by charging higher rates to future customers . However, if contracted work is terminated for the convenience of the government, the government often has to pay for expenses incurred by the contractor. While Army officials stated that

previous practices resulted in an inequitable distribution of funding transfers, they stated that they planned to conduct future reprogramming actions on a more equitable basis.

Unanticipated funding transfers as a result of reprogramming actions have impacted depot staffing and contributed to inefficient depot operations. For example, we estimate Army reprogramming actions moved funding that might have supported about 1,400 direct labor positions and 750 overhead positions in fiscal year 1996. Similarly, reprogramming actions in fiscal year 1997 moved funding that might have supported about 1,125 direct labor positions and 650 overhead positions. These reprogramming actions contributed to net operating losses in the years cited and higher rates in subsequent years.

Army Working Capital Fund Availability and Changing Customer Requirements Also Affect Estimated Depot Maintenance Workloads

AMC holds semiannual workload conferences to review, analyze, and document depot workload estimates. Our work shows that the command's estimates can differ significantly from reported spending, limiting their value in documenting personnel budgets and requirements. For example, in September 1994 the predecessor organization to the current Aviation and Missile Command estimated that in fiscal year 1997 it would generate workload requirements and provide funding to the Corpus Christi depot valued at about $161 million for the repair of aviation components. At the beginning of the fiscal year 1997, the projected workload value for that year decreased to $141 million—a 12-percent reduction. Moreover, the funded workload for that year was less than $94 million—a decline of 42 percent from the amount projected almost 3 years earlier. It is important to note that the rates for fiscal year 1997 were developed using the workload estimates projected in 1994. Partially as a result of the decreased workload, Corpus Christi did not receive the revenues it needed to break even. Losses for that year contributed to the need for increased rates in subsequent years.

Army officials attributed the decline in forecasted workload to reduced workload requirements resulting from slower-than-expected customer revenues from the sales of repaired items and cash shortages in the Army's working capital fund. Reduction of work typically results in underutilized personnel and can result in orders being placed for long lead-time parts that are not needed as expected. The workload expected from the Aviation and Missile Command, but not received, might have provided work for about 250 direct labor employees and 150 overhead employees for a year.

Workload estimates for overhaul and repair requirements generated by the other military services have also been inconsistent. For example, in September 1995, the Navy estimated that it would provide fiscal year 1998 funding for the overhaul of 38 helicopters at the Corpus Christi depot. In May 1997, the Navy estimated that in fiscal year 1998 it would fund the overhaul of 22, but in October 1997, it estimated the funded workload that would likely materialize during fiscal year 1998 would support the overhaul of only 12. Navy officials told us the estimated helicopter overhaul requirements were reduced, in part, because the Army was unable to complete prior year funded repair programs within agreed time frames. Additionally, the Navy is exploring ways to have future overhaul and repair work done incrementally by either contractor or government employee field teams working at Navy bases. The Navy believes the incremental overhaul and repair process can be done more expeditiously. At this point, it is unclear what role the Corpus Christi depot will play in providing future overhaul and maintenance support for Navy helicopters.

Figures 3.1 and 3.2 depict the fiscal years 1997 and 1998 funding estimates for the Corpus Christi Army Depot at various points in time. For example at the start of fiscal year 1995, the Army anticipated that the Corpus Christi depot would receive fiscal year 1997 funding for workloads valued at $349 million. Two years later, at the start of fiscal year 1997, the estimate increased to $355 million, compared to actual funding of $326 million. On the other hand, at the beginning of fiscal year 1996, the anticipated workload for the depot was valued at about $302.5 million. At the beginning of fiscal year 1998, the anticipated total had risen to about $333.5 million, and in June 1998, estimates of revenues for the year were about $360.5 million. Depot officials pointed out that with these variances in workload, it is almost impossible to set accurate rates or to project with precision the number of employees needed to perform the required work.

Figure 3.1: Fiscal Year 1997 Workload Estimates for Corpus Christi Army Depot (dollars in millions)

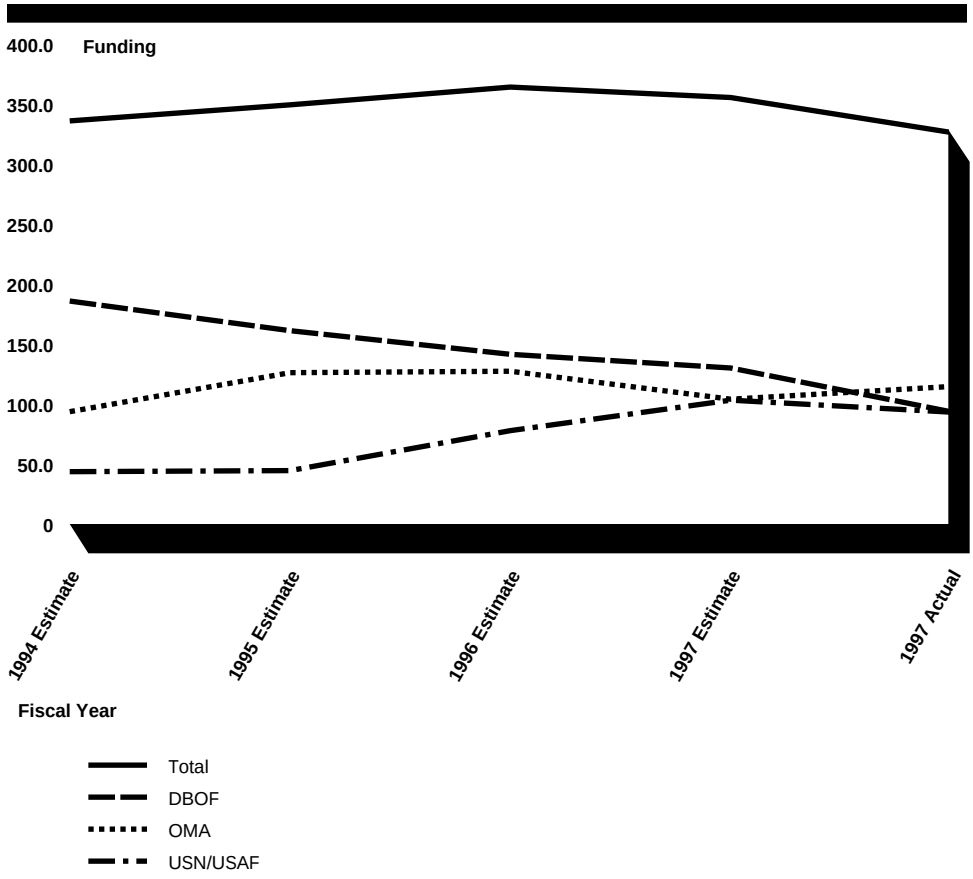
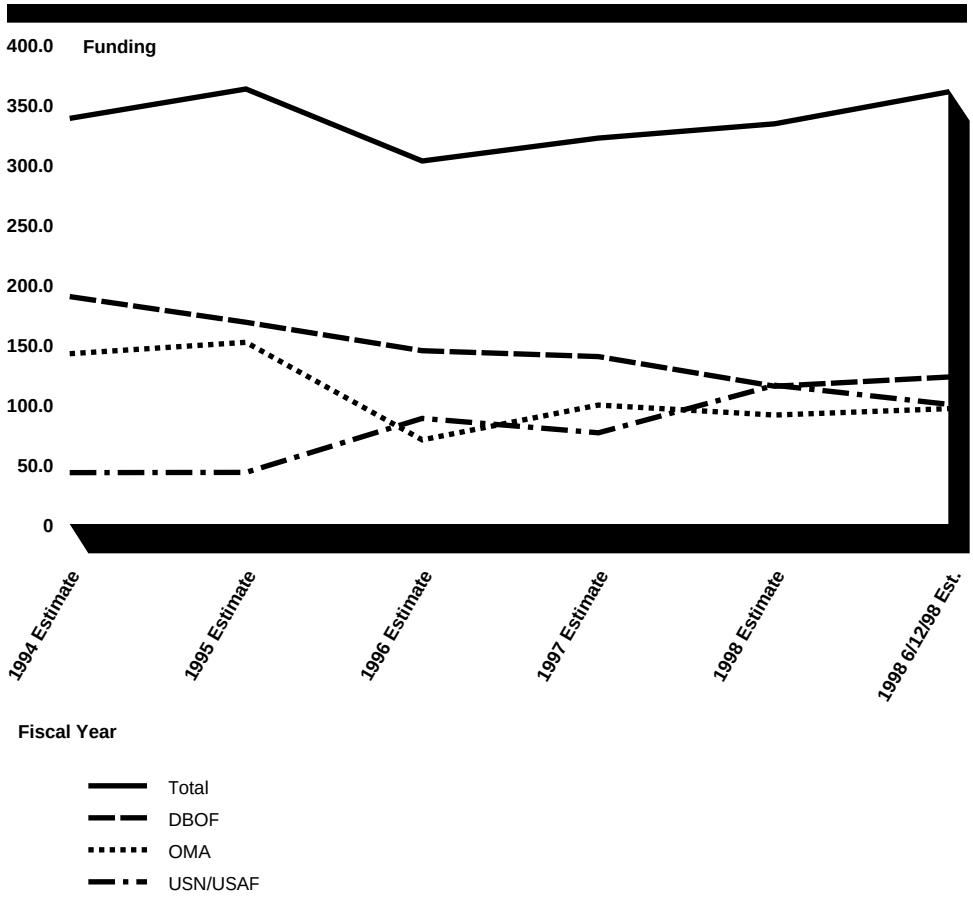


Figure 3.2: Fiscal Year 1998 Workload Estimates for Corpus Christi Army Depot (dollars in millions)



This experience at Corpus Christi illustrates the challenge depot planners face in projecting personnel requirements when the workload estimates change considerably over the 30 months between the time rate-setting is initiated to the end of fiscal year for which rates have been set. Similarly, under these conditions it is also difficult for budget personnel to set labor-hour rates that will generate the desired net operating result.

Implications of Depot Workload Assignments

As part of its overall depot maintenance strategy, the Army has established policies and procedures for assigning potential depot workloads to other government-owned repair facilities and the private sector.[1] These practices have significant cost effectiveness and efficiency implications for the depots, given the amount of excess industrial capacity that exists. First, AMC has authorized performance of depot-level workloads at government-owned repair sites located on and near active Army installations and at National Guard facilities. Second, Army policies and strategic plans emphasize the use of the private sector for depot-level maintenance workloads, within existing legislative requirements.

Depot Work Assigned to Other Government-Owned Facilities

In recent years the Army's Forces Command and its Training and Doctrine Command. have operated an increasing number of regional repair activities at active Army installations. Additionally, the Army National Guard operates regional repair activities at state-owned National Guard sites. Collectively, these repair activities are categorized as integrated sustainment maintenance (ISM) facilities. Sustainment maintenance includes repair work on Army equipment above the direct support level, including general support and depot-level support tasks. Accordingly, Army headquarters has allowed some ISM sites to perform depot-level workloads under special repair authorities.[2] ISM repair sites are staffed by a mixture of military and civilian federal employees, state employees, and contractors. AMC officials stated that ISM repair sites can perform depot-level work to save transportation costs, expand employee skills and capabilities, and shorten repair cycle times. We noted that many of the items requiring depot repair are being shipped to other bases' ISM repair sites, under a center of excellence program that is designed to assign work to the most cost effective repair source.

We did work at Army ISM facilities located at Fort Campbell, Kentucky, and Fort Hood, Texas, and an Aviation Classification Repair Activity Depot operated by the Connecticut National Guard.[3] We noted that each facility was performing depot-level work that was similar, and sometimes

[1]Our testimonies, Defense Depot Maintenance: Uncertainties and Challenges DOD Faces in Restructuring Its Depot Maintenance Program (GAO/T-NSIAD-97-112, May 1, 1997) and GAO/T-NSIAD-97-111, Mar. 18, 1997), noted that the Army would have 61 percent excess capacity in fiscal year 1999, based on consideration of projected workload for 1999 and maximum potential capacity at the Army depots.

[2]Special repair authorities, are approved after AMC determines that the repair sites have adequate facilities and equipment and sufficient trained personnel to accomplish the tasks.

[3]In addition to the Connecticut facility, the Army National Guard has established similar facilities in Missouri, Mississippi, and California and smaller facilities in almost every state.

identical, to work currently being conducted at the Corpus Christi Army Depot. For example, each repair site operated environmentally-approved painting facilities large enough to strip and repaint an entire helicopter—a task also being conducted at the Corpus Christi depot. Further, the National Guard facility was refurbishing Blackhawk helicopters—a task identical to work currently assigned to the Corpus Christi depot. Additionally, each facility will undergo or has recently undergone expansion and modernization. For example, the Fort Hood repair facility, which was constructed in 1994 at a reported cost of about $60 million, is scheduled for further expansion, and the National Guard facility was recently doubled in size at an estimated cost of $20 million.

ISM repair sites are not working capital fund activities. Repair work at these sites is financed through direct appropriations to the operational units, which obligate a level of funding at the beginning of the year. Field-level personnel believe they get a better value for repair work that is performed at the unit level than at the depots and prefer to use field level repair whenever they can.

The continuing reliance and expanded use of regional repair facilities for depot-level workloads could have a substantial impact on the future viability and efficiency of operations at the Army's public sector depots. While the overall impact on the depots' workloads has not been estimated, an AMC report shows that in fiscal year 1996, ISM and similar repair facilities received at least $51 million for depot-level tasks. AMC personnel told us they believe the actual amount of depot-level work is much higher because not all depot-level tasks and related work is reported. Further, DOD's 1998 logistics strategic plan envisions the eventual elimination of the public depot infrastructure by expanding the use of regionalized repair activities across all levels of maintenance and contracting more workloads. Lastly, an AMC reorganization proposal suggests that the current Corpus Christi Army Depot functions could be transferred to the four National Guard Aviation Classification Repair Activity Depots.

In commenting on a draft of this report, DOD stated that the Army approves Special Repair Authorities to enable regional repair facilities to conduct specific depot-level maintenance tasks for a specified number of items, after it evaluates the impact on depot workloads and core capabilities. However, our work shows that some Special Repair Authorities were granted for varying numbers of items to be repaired over prolonged time frames creating some uncertainty over how well the long-term impact on depot workloads and core competencies may have been assessed. Some

Army officials told us that Army reviewers have historically had little incentive to recommend disapproval of proposed Special Repair Authorities since they would likely be overruled by higher headquarters. More recently, Army headquarters officials told us they began to reject a number of proposed Special Repair Authorities and that they are undertaking a study to reevaluate the Special Repair Authorities process.

Work Shifting to Private Sector

DOD strategic plans and policies express a preference for assigning depot-level workloads to the private sector rather than public sector depots.

Recent DOD policies and plans show that DOD expects to increasingly outsource depot maintenance activities, within the existing legislative framework. For example, the DOD logistics strategic plan for fiscal years 1996 and 1997 envisions that it will develop plans to transition to a depot-level maintenance and repair system relying substantially on private sector support to the extent permitted under the current legislative framework. The 1998 plan states that DOD will pursue opportunities for eliminating public sector depot maintenance infrastructure through the increased use of competitive outsourcing. Further, in March 1998 we reported, overall, DOD is moving to a greater reliance on the private sector for depot support of new weapon systems and major upgrades, reflecting a shift from past policies and practices, which generally preferred the public sector. In that regard, the Secretary of the Army has announced plans to pursue several pilot programs that would make the private sector responsible for total life-cycle logistics support, including depot-level maintenance and repairs.[4]

DOD policy also emphasizes the use of private sector contractors for modifications and conversions of weapon systems. For example, in August 1996 the Army awarded a multiyear contract for the upgrade of Apache Longbow helicopters. While it is difficult to predict the number of depot maintenance jobs affected by this policy, the Army Audit Agency reported in June 1998 that the Apache Longbow modification, conversion, and depot maintenance workload will likely involve from 2,063 to 2,998 personnel.

In June 1998, the Secretary of the Army identified two weapon systems—the Apache helicopter and the M109 combat vehicle—to

[4]Defense Depot Maintenance: DOD Shifting More Workload for New Weapon Systems to the Private Sector (GAO/NSIAD-98-8, Mar. 31, 1998).

potentially pilot test prime vendor support concepts. Under this concept, private sector firms would provide total life-cycle supply and maintenance support. It is uncertain if or when these prime vendor contracts will be awarded, or what impact this would have on future workload and staffing of Army depots.[5]

Other Factors Inhibiting Depot Efficiency

We identified several factors contributing to depot inefficiency, including (1) the less-than-expected productivity, (2) excess depot capacity, (3) the lack of flexibility to shift workers among different functions, and (4) the nonavailability of parts. Additionally, we have previously reported that the Army's current repair pipeline is slow and inefficient and could be improved by implementing various private sector best practices, several of which are being considered at the Corpus Christi depot.[6]

Productivity Less Than Expected

Although DOD's depot productive workyear standard for depots was 1,615 hours, for fiscal year 1997, each of the Army depots reported productive levels below the standard (see table 2.3). Additionally, at the Corpus Christi depot, we noted that the hours required to complete depot maintenance projects exceeded the standard, which serves as the basis for payment, resulting in significant losses for that fiscal year.

The most significant productivity problem at the Anniston depot appeared to be that the expected levels of work that had been programmed did not materialize, including work that was expected to transition from the Red River and Letterkenny depots as a result of BRAC decisions. Anniston officials said they were reluctant to eliminate positions since the additional work should show up during 1998. Thus, in the short term, the workforce did not have enough work to keep it fully employed.

At Corpus Christi, the inability to complete work within scheduled time frames was a problem. As previously discussed, the use of large amounts of sick leave and annual leave and more holiday leave than other depots contributed to this problem. At the same time, we noted that this depot used premium pay in the form of overtime to a much greater extent than other Army depots.

[5]We recently reported that DOD is currently close to the maximum amount of depot maintenance work it may allocate to the private sector. See Defense Depot Maintenance: Public and Private Sector Workload Distribution Reporting Can Be Further Improved (GAO/NSIAD 98-175, July 23, 1998).

[6]Inventory Management: The Army Could Reduce Logistics Costs for Aviation Parts by Adopting Best Practices (GAO/NSIAD-97-82, Apr. 15, 1997).

We also noted that specific projects at Corpus Christi had consumed significantly more hours than projected, resulting in financial losses and schedule delays. For example, on average, depot employees charged 22,422 direct labor hours for each Seahawk helicopter repaired, compared to the projected goal of 12,975 hours per aircraft. In commenting on a draft of this report, DOD officials stated that this situation was caused by a variety of factors, including lack of access to Navy managed parts, lack of experience with some Navy-unique systems, and the fact that Navy helicopters were in worse physical condition than most comparable Army helicopters being inducted for overhaul work. Cumulative financial losses on the completed overhaul and repair of 29 Navy Seahawk helicopters are estimated at about $40.1 million, and total reported losses on completed Navy helicopters exceed $80 million.

Recognizing these problems, the Army has implemented a process reengineering plan to reduce the average repair cycle from the current 515 days to 300 days. As previously noted, the Navy is considering shifting repair work to field teams at Navy units. Since Navy work is about 30 percent of Corpus Christi's workload, the depot could lose 400 to 500 direct labor positions and increase its estimated future operating rates by about $20 per hour. Similarly, time charged against the overhaul of the T-53 engines used on the Huey helicopter was about 52,000 direct labor hours for 60 engines, compared to the projected goal of about 23,000 hours. The Army is considering plans to contract with the private sector for the performance of this work. At this time, it is uncertain what role, if any, the depot will have in future T-53 engine repair programs.

Excess Capacity Problems Continue to Impede Efficient Depot Operations

While the Army has not clearly articulated its long-range plans for its five depots, in the past it has stated that only three are needed, and more recent actions suggest that number may be even smaller. As discussed in a 1996 report, each of the five remaining depots has large amounts of underutilized production capacity which require substantial financial resources to support.[7] For example, the Army recently reported that its depots have capability to produce about 16 million hours of direct labor output, given the current plant layout and available personnel. The report also states that in fiscal year 1998 depots will produce an estimated 11 million hours of direct labor output, meaning that 68 percent of the available plant equipment and personnel are fully utilized on a single shift,

[7]Army Depot Maintenance: Privatization Without Further Downsizing Increases Costly Excess Capacity (GAO/NSIAD-96-201, Sept. 18, 1996).

40-hour week. Further, the depots are capable of producing even greater amounts of work.

Until recently, no attempt had been made to look at maintenance capability from a total Army perspective, including capability at the field level and in the National Guard. In commenting on a draft of this report, DOD cited several examples of efforts that they are starting to analyze maintenance requirements from a total Army perspective. For example, the ISM concept is designed to integrate and coordinate maintenance provided by active Army units, Army reserve activities and the Army National Guard installations. In addition, DOD stated that the Army will establish a Board of Directors to manage and coordinate depot-level maintenance from a total Army perspective.

Difficulty Shifting Workers

Improved systems and procedures for shifting workers between different organizational units and skill areas would offer better opportunities to effectively use limited numbers of maintenance personnel. Depot officials noted that prior practices made it difficult to transfer workers between organizational units and skill areas to adjust for unanticipated work stoppages caused by changes in work priorities, parts shortages, technical problems, or temporary labor imbalances. For example, in late 1997 work was suspended on repair of the T-53 engine at Corpus Christi due to a safety of flight issue, but personnel in that shop were not reassigned to other areas whose work was behind schedule.

Depot workers are trained in specific technical areas and perform work within their specific specialty code and organizational units. Agreements between the unions and the depots generally require that workers be assigned work only in their specialty areas; therefore, depot managers have limited capability to move workers to other areas. Depot managers noted that, in some cases, a worker could work in another area under the direction of a qualified specialist in the second skill area. Union officials at one depot stated that members understand the benefits of more flexible work agreements, but in the past have been reluctant to adopt them.

Depot managers cited a number of ongoing efforts that should, in the future, lead to more effective use of skilled depot workers. For example, depot managers said they were encouraging their workers to take courses during their off-duty time to develop multiple skills. Further, depot officials said completion of an ongoing AWPS system enhancement project will provide an automated database reflecting the specific skills of each

depot employee to facilitate identification of workers with the skills that are needed to meet short-term labor imbalances. Lastly, depot mangers are considering changes to organizational structures to better facilitate movement of skilled workers between shops.

In discussing this issue with Navy officials, we were told that when the Navy transferred civilians from the Pearl Harbor Shipyard to an intermediate activity at the same location, they implemented a program known as multi-crafting or multi-skilling through which workers trained in a second, complementary skill area so that they were qualified to do more tasks. Workers in seven different workload combination areas were involved in the program and received training in multiple skill areas. In the rubber and plastics forming skill area, cross-trained workers got a pay raise in addition to the satisfaction of knowing they were multi-skilled and more valuable employees. Maintenance facility managers said that the added flexibility of multi-skilling allowed them to use a limited number of workers more cost effectively and to be more responsive to emerging requirements. While we have not evaluated the extent to which the use of multi-crafting and multi-skilling has improved the efficiency of the Navy's combined operations, in concept it is in line with best practices employed by the private sector and appears to have merit.

In commenting on a draft of this report, DOD stated that the Army's direct labor personnel can become multi-skilled through support of the labor unions. They noted that while depot managers have the right to assign employees to specific work areas, they need to work with labor organizations to adopt more flexible work arrangements through collective bargaining or other partnering arrangements.

Lack of Required Parts

Parts shortages have also contributed to inefficient depot operations. For example, we previously reported on the length of time it took to repair and ship parts and an Army consultant recently reported that repair technicians spend as much as 40 percent of their time looking for required parts.[8] Army depots obtain parts from a variety of sources, including the Defense Logistics Agency, inventory control points operated by the military services, the private sector through local purchases, and limited depot manufacturing. Since Army procedures give higher priority in processing orders for parts to operational units and field-level repair activities, parts shortages are more likely to occur at the depot level.

[8]Inventory Management: The Army Could Reduce Logistics Costs for Aviation Parts by Adopting Best Practices (GAO/NSIAD-97-82, Apr. 15, 1997).

Further, parts shortage problems could increase as a result of a recent AMC headquarters decision attempting to eliminate parts inventories that have been procured for future depot use. For example, Corpus Christi maintains an inventory at a reported value of about $37 million for emergent work. AMC plans to have the depots turn in the material without giving a financial credit, a process that could cause the depots to report a financial loss equaling the inventory's value.[9] Officials at the Corpus Christi depot expressed concern that, without this inventory, their access to aviation parts, especially those that have long leadtimes to order, will deteriorate even more as will their ability to complete their work in a timely manner.

According to a Corpus Christi official, depot workers waited an average of 144 days from the time they placed requisitions with the Defense Logistics Agency until orders were received. Additionally, a large number of requisitions placed by the Corpus Christi Army Depot for parts managed by a Navy-operated inventory control point were initially rejected because the automated requisition processing system had not been modified to recognize the Army depot as a valid customer.

Although depot supply support depends largely on external sources, Corpus Christi Army Depot has taken actions to address the inefficiencies in the portions of the process they control. For example, a recent study by an Army consultant concluded that the material management process costs the depot an estimated $19 million per year and that a large percentage of these costs represents nonvalue added time spent handling, sorting, retrieving, inspecting, testing, and transporting parts between various local storage locations. A depot official estimated that the process reengineering plan, initiated in May 1997, will reduce the administrative costs by $10 million. Some of these initiatives include reducing (1) the average time required to obtain parts from the local automated storage and retrieval system from 12 to 4 days, (2) the time required to complete local purchase actions from 121 to 35 days, and (3) the number of days to complete local credit card purchases from 49 to 10 days.

Conclusions

Even though the Army has made progress in building an automated and more rigorous process for analyzing and documenting personnel requirements, important enhancements remain to be completed.

[9]In commenting on a draft of this report, Army officials informed us that the value of Corpus Christi Army Depot's inventory and the extent of the loss will be less than originally contemplated as Corpus Christi Army Depot has been able to consume a significant portion of the inventory. However, they did not provide an estimate of the inventory value.

Moreover, other severe problems—including significant fluctuations in funding, rising costs and continued losses in the Army's military depots—create much instability and uncertainty about the effectiveness and efficiency of future depot operations. Some reductions in the amount of work assigned to the military depots has occurred while such work performed by private sector contractors has increased. Further, by adding to its maintenance infrastructure at Army operational units in the active and guard forces and performing depot-level and associated maintenance at those locations, the Army has been adding to the excess capacity, underutilization, and inefficiency of its depots. The extent and financial impact of this situation is unknown. However, the Army is clearly suboptimizing use of its limited support dollars, and efforts are needed to minimize the duplications and reduce excess infrastructure. The Army needs to adopt reengineering and productivity improvement initiatives to help address critical problems in existing depot maintenance programs, processes, and facilities.

Recommendations

We recommend that the Secretary of Defense require the Secretary of the Army to

- establish policy guidance to encourage AMC customers to adhere to workloading plans, to the extent practicable, once they are established and used as a basis for the development of depot maintenance rates;
- require reevaluation of special repair authority approvals to accomplish depot maintenance at field activities to determine the appropriateness of prior approvals, taking into consideration the total cost to the Army of underutilized capacity in Army depots;
- encourage depot managers to pursue worker agreements to facilitate multi-skilling or multi-crafting in industrial facilities; and
- direct the depot commanders to develop specific milestones and goals for improving worker productivity and reducing employee overtime rates.

Agency Comments and Our Evaluation

DOD concurred with our recommendations and described several steps being taken to address our recommendations. For example:

- AMC recently reemphasized the importance of realistic and stabilized workload estimates to optimize depot capacity utilization, stabilize operating rates, and support future personnel requirements determinations.

- DOD stated that it recently initiated "A Study of the Proliferation of Depot Maintenance Capabilities" to include an examination of the current approval process for Special Repair Authority requests.
- DOD stated its intention to work in concert with the Army and other Services to pursue efforts to eliminate excess industrial capacity through future BRAC rounds and facilities consolidation.

DOD concurred with our recommendation to pursue multi-skilling or multi-crafting, but stated that such arrangements require implementation by individual depot managers. We have revised our recommendation accordingly.

While DOD agreed with our recommendation for developing milestones and goals for improving the efficiency of its depot operations to include reductions in employee overtime rates, it did not specify what actions were planned. We also incorporated technical comments where appropriate.

Uncertainties Surround Future of Arsenals

The Army plans to begin installing the new AWPS in its manufacturing arsenals in December 1998. However, it is not clear how effective the system will be in terms of identifying the arsenals' personnel requirements—given the uncertainty surrounding their future workload requirements. The arsenals are also confronted with larger problems and uncertainties that could diminish the effectiveness of the Army's efforts to automate the process of determining workforce requirements, stabilize its workforce, and increase productivity. At these facilities there have been significant workload reductions as a result of defense downsizing and increased reliance on the private sector. However, commensurate reductions have not been made to arsenal facilities. The arsenals have sought to diversify to improve the usage of available capacity and reduce their overhead costs, but limitations exist on their ability to do so. The Army is considering converting its two arsenals to government-owned, contractor-operated facilities. However, key questions, such as the cost-effectiveness and efficiency of this option, remain unanswered.

Automated Requirements Process Is Planned for Arsenals

The Army plans to begin installing the AWPS system in its two weapons manufacturing arsenals beginning in December 1998 and to complete that installation by September 1999. In June 1998, the Army began installing a prototype AWPS at one of its eight ammunition storage and surveillance facilities. Upon completion of the prototype testing, the Army plans to extend the system to the two weapons manufacturing arsenals.

Workload Is Declining and Capacity Is Underutilized

Since the end of the Cold War, workloads and employment at the two remaining arsenals have declined substantially; however, operating costs have continued to escalate as fixed costs have been spread among increasingly smaller amounts of workload. Additionally, personnel reductions have not kept up with workload reductions. At Rock Island, the workload dropped a reported 36.9 percent between 1988 and 1997 while the staffing dropped 30.8 percent. At Watervliet the reported workload dropped 64 percent during the same period while staffing dropped 51.8 percent. As workloads continue to decline, the arsenals have been left with relatively fixed overhead costs, including the salary expenses for an increasing percentage of overhead employees. For example, as of fiscal year 1998, the Watervliet Arsenal reported employing 409 direct labor "revenue producers" and 473 overhead employees compared with 1,089 direct labor workers and 924 overhead employees reported 10 years ago. Table 4.1 compares the arsenals' workloads in direct labor hours and

employment levels at the end of fiscal years 1988 through 1997 and projections for fiscal year 1998.

Table 4.1: Reported Arsenal Workload and Employment Levels for Fiscal Years 1988 Through 1998

	Rock Island		Watervliet	
Fiscal year	Workload[a]	Workforce	Workload[a]	Workforce
1988	1,944,291	2,501	1,894,000	2,013
1989	Not known	2,609	1,703,000	1,928
1990	1,843,268	2,442	1,583,000	1,767
1991	1,790,685	2,460	1,556,000	1,719
1992	2,029,436	2,377	1,444,335	1,623
1993	1,849,193	2,289	1,313,044	1,538
1994	1,583,674	2,144	1,129,575	1,422
1995	1,557,574	2,033	834,000	1,103
1996	1,258,073	1,853	800,000	1,024
1997	1,225,849	1,730	681,000	971
1998	1,140,941	1,531	593,000	897

[a]Workload is expressed in the number of direct labor hours

Source: Rock Island and Watervliet Arsenals.

Currently, the arsenals are using only a small portion of their available manufacturing capacity in the more than 3.3 million square feet of reported industrial manufacturing space. An arsenal official estimated that as of April 1998 the Watervliet facility was utilizing about 17 percent of its total manufacturing capacity—based on a single 8-hour shift, 5-day workweek—compared with about 46 percent 5 years ago and about 100 percent 10 years ago. Similarly, as of July 1998, officials at the Rock Island Arsenal estimated the facility was utilizing about 24 percent of its total manufacturing capacity compared with about 70 percent 5 years ago and about 81 percent 10 years ago.[1] Underutilized industrial capacity contributes to higher hourly operating rates. Over the last 10 years, the hourly rates charged to customers increased by about 88 percent at Watervliet and about 41 percent at Rock Island.

[1]The arsenals determined industrial capacity based on the peak workload accomplished by the facility using the current plant layout and complement of industrial plant equipments, assuming a single 8-hour shift, 5-day workweek. Capacity utilization rates are based on a comparison of current workload levels to the peak industrial capacity.

Movement Toward Greater Reliance on the Private Sector

The Arsenal Act (10 U.S.C. 4532) was enacted in 1920 and provides that the Army is to have its supplies made in U.S. factories or arsenals provided they can do so on an economical basis. The act further provides that the Secretary of the Army may abolish any arsenal considered unnecessary.[2]

The importance of the arsenals as a manufacturing source has declined over time. The declining workload noted in table 4.1 is a reflection both of defense downsizing in recent years as well as increased reliance on the private sector to meet the government's needs.

In recent years, the Army has pursued a policy of contracting out as much manufacturing work as possible to the private sector. When work was plentiful for both the arsenals and the private sector during the Cold War years, the allocation of work in accordance with the Arsenal Act was not an issue. However, the overall decline in defense requirements since the end of the Cold War has substantially reduced the amount of work needed.

When making decisions based on the Arsenal Act, the Army compares public and private sector manufacturing costs to determine whether supplies can be economically obtained from government-owned facilities—a process referred to as "make or buy". The comparison is based on the arsenals' marginal or additional out-of-pocket costs associated with assuming additional work. However, the arsenals report little use of the "make or buy" process. For example, Watervliet reported that it has not participated in a "make or buy" decision since 1989 and has not received any new work through the Arsenal Act since at least then. Rock Island officials could identify only one item for which it received new work through the Arsenal Act in recent years. Officials at both arsenals said they do not expect to receive any future work as a result of "make or buy" analyses.[3]

[2]However, as we previously reported, the Congress enacted legislation, codified in 10 U.S.C. 2687, which essentially halted base closures by DOD. Under the statute, the closure or realignment of any military installation in the United States above a certain threshold of authorized civilian personnel could not take place until the Secretary of Defense had satisfied certain study and reporting requirements, notified the Congress of the proposed closure or realignment, and waited 30 legislative days or 60 calendar days, whichever was longer, before proceeding. As a consequence, no major domestic military bases were closed between 1977 and 1988. Bases closed under BRAC rounds held between 1988 and 1995 were authorized under special legislation (P.L. 100-526 and the Base Closure and Realignment Act of 1990, title XXIX, P.L. 101-510) which expired at the end of 1995. See: Military Bases: Lessons Learned From Prior Base Closure Rounds (GAO/NSIAD-97-151, July 25, 1997).

[3]In commenting on a draft of this report, DOD stated that the arsenals are incapable of producing the majority of the products needed by today's Army.

Decreasing Workloads Impact Arsenals

As their workloads have declined, the arsenals have become less efficient, because each remaining direct labor job must absorb a greater portion of the arsenals' fixed costs. As noted earlier, rates charged to customers have increased significantly in recent years at both arsenals. Some efforts have been made to diversify into other manufacturing areas to better use excess capacity and reduce costs, but limitations exist. AMC headquarters has proposed converting the two arsenals to GOCO facilities. However, key questions—such as how much of this type of capacity is needed, and the cost-effectiveness of the various alternatives—remain unanswered.

Unlike maintenance depots, where workload is largely centrally allocated by Army headquarters, arsenal managers market their capabilities to identify potential military customers and workloads. Similar to private sector business, arsenal managers recover operating expenses through sales of products that produce revenues. However, as their volume of work declines, the arsenals must either reduce costs or increase prices to customers. If prices are increased, customers may go elsewhere to satisfy their needs, further exacerbating the declining workload problem. Recent proposals by the Watervliet Arsenal to balance workload and staffing were disapproved by Army headquarters in anticipation of new workloads. However, Watervliet officials stated that, as of October 1998, no new work had materialized and none was expected. This lack of new work could result in greater losses than planned at that facility.

Each year arsenal personnel estimate the amount of work they expect to receive and then use this information as a basis for projecting personnel requirements. The expected workload is divided into various categories based on the estimated probability of workload actually materializing. Work that is already funded is categorized as 100 percent certain. Unfunded work is categorized based on its considered probability of becoming firm. Watervliet, for example, uses three probability categories for unfunded workloads: 90, 60, and 30 percent. Staffing is then matched to the workload probability. Staffing needs for fully funded work and work with a 90-percent probability is allocated at 100 percent of the direct labor hour requirements. Staffing requirements for the remaining work is allocated in accordance with the workload probabilities.

In October 1997, AMC headquarters gave Watervliet approval to eliminate 98 positions by the end of fiscal year 1998. Also, on the basis of an expected decline in workload in fiscal year 1998, AMC headquarters gave the Rock Island Arsenal approval in May 1998 to eliminate 237 positions for a total arsenal workforce reduction of 335 positions. Employees who

voluntarily retire or resign will receive incentive payments, based on a varying scale with a maximum payment of $25,000. These incentives were intended to reduce the number of employees facing involuntary separations. By the end of September 1998, 54 Watervliet and 146 Rock Island employees had accepted incentive offers. As an additional incentive to encourage voluntary separations, the arsenals, in August 1998, received authority to offer early retirements to eligible employees.

Arsenals Are Diversifying, but Other Options Are Expected to Be Examined, Including the Establishment of a GOCO Operation

Both arsenals have tried to develop new areas of work because their traditional weapon-making roles no longer provide enough work to allow them to operate efficiently. For a number of years, Rock Island has been fabricating and assembling tool kits, maintenance trucks, and portable maintenance sheds for the Army, other military services, and civilian agencies. Rock Island personnel involved in this work made up about 22 percent of the arsenal's total employment in fiscal year 1998. Watervliet has tried to branch out into making propulsion shafts for Navy ships and has done contract work for private industry, making such things as ventilator housings and other metal fabrication items. The Rock Island facility is still selling exclusively to government customers.

10 U.S.C. 4543 requires that the arsenals cannot sell items to commercial firms unless a determination is made that the requirement cannot be satisfied from a commercial source located in the United States. However, section 141 of the 1998 Defense Authorization Act provides for a pilot program enabling industrial facilities including arsenals during fiscal years 1998 and 1999 to sell articles to private sector firms that are ultimately incorporated into a weapon system being procured by DOD without first determining that manufactured items are not available from commercial U.S. sources.

As a part of the Army's plan to reduce personnel positions under the Quadrennial Defense Review, the Army plans to study the cost benefits of converting the arsenals to GOCO facilities.[4] The AMC plans to initiate commercial activity studies for converting arsenal operations in fiscal year 1999. These studies will be conducted under the guidelines specified by OMB Circular A-76. According to an AMC official, the Army has determined that the government should retain ownership of the arsenals; however, operational responsibility could be assigned to a private sector contractor.

[4]The Quadrennial Defense Review, required by the fiscal year 1997 Defense Authorization Act, among other things, targeted infrastructure reductions to achieve savings for increased funding of weapon system modernization programs.

As a first step in the process, the arsenals are to develop proposed staff structures, documenting the government's most efficient operating strategy, and commercial offerors will be asked to submit proposals for operating the government-owned facility. A source-selection panel will compare the government's proposal with offers from private sector contractors. According to an AMC official, if the source-selection panel determines that a private sector offeror would provide the most cost-effective solution, nearly all remaining government employees at the arsenals would be terminated by 2002.

Conclusions

If recent workload declines and the consequent workforce reductions at the Rock Island and Watervliet arsenals continue, the long-term viability of these facilities is uncertain. Arsenal workloads have declined to the point that, even with significant personnel losses, their capabilities are significantly underutilized and greatly inefficient. An important part of the future decision making process will be analyzing the cost efficiency of government-owned and -operated facilities compared to the cost efficiency of GOCO facilities. If retention of a government-owned and -operated facility is found to be the most cost-effective option, then decisions will be needed that adjust capacity to better match projected future workload requirements.

Recommendations

We recommend that the Secretary of Defense require the Secretary of the Army to (1) assess the potential for improving capacity utilization and reducing excess arsenal capacity, and (2) evaluate options for reducing costs and improving the productivity of the remaining arsenal capacity.

Agency Comments and Our Evaluation

DOD concurred with each of our recommendations. It agreed that the Watervliet and Rock Island Arsenals currently support considerable amounts of excess manufacturing capability and stated that both facilities are included in current AMC plans to conduct a complete installation A-76 review to identify the most cost-effective option for future operations, including an evaluation of options for reducing costs and improving productivity.

Strategic Plan Is Essential for Addressing the Future of Army Depots and Arsenals

The synergy of the issues discussed in this report highlights a broader and more complex message regarding the effect of unresolved problems that impact the future of industrial operations currently performed in the Army. It also affects the cost-effectiveness of support programs for current and future weapon systems. These problems include the need to (1) clearly identify the workload requirements if capabilities are to be maintained in-house, (2) consolidate and reengineer functions and activities to enhance productivity and operating efficiencies, and (3) reduce excess capacity. Resolution of these problems requires that they be considered within the legislative framework pertaining to industrial operations. We have previously cited the need for improved strategic planning to deal with logistics operations and infrastructure issues, such as those affecting the Army's industrial facilities.

Summary of Issues

The Army faces difficult challenges in deciding what, if any, depot-level maintenance and weapons manufacturing workloads need to be retained in-house to support national security requirements. The 1998 DOD Logistics Strategic Plan states that, in the future, DOD will advocate the repeal of legislative restrictions on outsourcing depot maintenance functions by developing a new policy to obtain the best value for DOD's depot maintenance funds while still satisfying core capability requirements. Until DOD and the Congress agree on a future course of action, it will be difficult to plan effectively for dealing with other issues and problems facing DOD and the Army's maintenance programs and systems.

If the decision is made to retain certain amounts of in-house depot and arsenal capabilities, it will be important to look at overall maintenance infrastructure, including below depot as well as depot-level maintenance requirements in active as well as reserve forces, to ensure that the minimum level is retained that meets overall military requirements. Consolidation of existing activities, to the extent practicable, within the constraints of operational requirements, will be essential for developing a more efficient and cost-effective support operation. Further, improvement initiatives to address long-standing productivity issues are key to providing required maintenance capability for the least cost. Finally, the elimination of excess capacity—both in the public and the private sector, is another critical area that, if not addressed, will continue to adversely affect the cost of Army programs and systems.

Legislation Impacting Army Depots and Arsenals

A number of statutes govern the operations of Army depots and arsenals. For example:

- 10 U.S.C. 2464 provides for a DOD-maintained core logistics capability that is to be GOCO and that is sufficient to ensure the technical competence and resources necessary for an effective and timely response to a mobilization or other national emergency,
- 10 U.S.C. 2466 prohibits the use of more than 50 percent of funds made available in a fiscal year for depot-level maintenance and repair work to contract for the performance of the work by nonfederal personnel. The definition of depot-level maintenance and repair is set forth in 10 U.S.C. 2460,
- 10 U.S.C. 2469 provides that DOD-performed depot-level maintenance and repair workloads valued at $3 million or more cannot be changed to contractor performance without the use of competitive procedures for competitions among public and private sector sources,
- 10 U.S.C. 2470 provides that depot-level activities are eligible to compete for depot-level maintenance and repair workloads, and
- 10 U.S.C. 4532 requires that the Army have its supplies made in factories and arsenals of the United States, provided that they can produce the supplies on an economic basis.

DOD has stated that its depot maintenance initiatives would continue to operate within the framework of existing legislation. On the other hand, it has, in the past, sought repeal of these and other statutes and has stated in the DOD Logistics Strategic Plan that it will continue to pursue this option.

Our Prior Reports Have Reflected Need for Strategic Planning

For several years, we have stated that DOD should develop a detailed industrial facilities plan and present it to the Congress in much the same way that it presented its force structure reductions in the Base Force Plan and Bottom-Up Review. Our observations regarding the need for a long-term plan for Army industrial facilities parallels observations we made in our February 1997 high-risk report on infrastructure.[1] In that report, we credited DOD for having programs to identify potential infrastructure reductions in many areas. However, we noted that the Secretary of Defense and the service secretaries needed to give greater structure to these efforts by developing a more definitive facility infrastructure plan. We said the plan needed to establish milestones and time frames and identify organizations and personnel responsible for accomplishing fiscal and operational goals. Presenting the plan to the

[1]High-Risk Series: Defense Infrastructure (GAO/HR-97-7, Feb. 1997).

Congress would provide a basis for the Congress to oversee DOD's plan for infrastructure reductions and allow the affected parties to see what is going to happen and when.

The need for such a plan is even more important given that the issue of eliminating excess capacity in the industrial facility area is likely to raise questions about the ability of DOD's ability to accomplish this objective absent authority from the Congress for additional BRAC rounds. While the Congress has not approved additional BRAC rounds mainly due to concerns about the cost and savings, timing of new rounds, and other issues, it has asked DOD to provide it with information concerning the amount of excess capacity on its military installations and information on the types of military installations that would be recommended for closure or realignment in the event of one or more additional BRAC rounds. DOD's report to the Congress on this subject provided most, but not all, of the information requested by the Congress.[2] While this report indicates that significant excess capacity remains in the Army's industrial facilities, more needs to be done to fully identify the extent of excess facilities before any future BRAC round. In particular, the services must identify opportunities to share assets, consolidate workloads, and reduce excess capacity in common support functions so that up-front decisions can be made about which service(s) will be responsible for which functions. We noted that resolution of these issues would require strong, decisive leadership by the Secretary of Defense.[3]

In another 1997 report, we recommended that the Secretary of Defense require the development of a detailed implementation plan for improving the efficiency and effectiveness of DOD logistics infrastructure, including reengineering, consolidating, and outsourcing logistics activities where appropriate and reducing excess infrastructure.[4] In response, the Secretary of Defense stated that DOD was preparing a detailed plan that addressed these issues. In November 1997, the Secretary issued the Defense Reform Initiative Report, which contained the results of the task force on defense reform established as a result of the Quadrennial Defense Review.

[2]Military Bases: Review of DOD's 1998 Report on Base Realignment and Closure (GAO/NSIAD-99-17, Nov. 13, 1998).

[3]Military Bases: Lessons Learned From Prior Base Closure Rounds (GAO/NSIAD-97-151, July 25, 1997).

[4]Outsourcing DOD Logistics: Savings Achievable, but Defense Science Board's Projections Are Overstated (GAO/NSIAD-98-48, Dec. 8, 1997).

While this report was a step in the right direction and set forth certain strategic goals and direction, it did not provide comprehensive guidance. Further, the report did not resolve long-standing questions concerning what work in the depots and arsenals is of such importance that it should be performed in-house. Sorting out this issue becomes even more complicated when one introduces the prospect of moving toward GOCO facilities, which seem to fall somewhere between a pure in-house and a total contracted-out operation. Also, for the depots, existing policies do not address the situation involving the proliferation of depot-like facilities at regional repair sites, within both the active and reserve components, and the impact that this proliferation has on excess capacity and increased costs to the government for its total maintenance activities and infrastructure.

Conclusions

Uncertainties exist about the future economy and efficiency of depot and arsenal operations and the extent to which the functions they perform need to be performed by the government. In this context, recent experiences at the Army's maintenance depots and arsenals indicate that the Army is facing multiple, difficult challenges and uncertainties in determining staffing requirements, and in improving the efficiency and effectiveness of its industrial activities. Further, the Army's industrial facilities currently have significant amounts of excess capacity and that problem is aggravated because of the proliferation of maintenance activities below the depot level that overlap with work being done in the depots. Increased use of contractor capabilities without reducing excess capacity also affects this situation. Productivity limitations suggest the need to reengineer operations retained in-house to enable Army industrial activities to operate more economically and efficiently. The Army has inadequate long-range plans to deal with issues such as those currently affecting the Army's industrial facilities. Such a plan would need to be developed in consultation with the Congress and within the applicable legislative framework in an effort to reach consensus on a strategy and implementation plan. We continue to believe such an effort is needed if significant progress is to be made in addressing the complex, systemic problems discussed in this report.

Recommendations

We recommend that the Secretaries of Defense and the Army determine (1) the extent to which the Army's logistics and manufacturing capabilities are of such importance that they need to be retained in-house and (2) the

extent to which depot maintenance work is to be done at regular depots, rather than lower-level maintenance facilities.

We recommend that the Secretary of the Army develop and issue a clear and concise statement describing a long-range plan for maximizing the efficient use of the remaining depots and arsenals. At a minimum, the plan should include requirements and milestones for effectively downsizing the remaining depot infrastructure, as needed, and an assessment of the overall impact from competing plans and initiatives that advocate increased use of private sector firms and regional repair facilities for depot-level workloads.

If a decision is made to retain in-house capabilities, we also recommend that the Secretary of the Army develop a long-term strategy, with shorter term milestones for improving the efficiency and effectiveness of Army industrial facilities, that would, at a minimum, include those recommendations stated in chapters 2 through 4 of this report.

Agency Comments and Our Evaluation

DOD concurred with each of our recommendations and discussed actions it has completed, underway, or planned as appropriate for each recommendation. Among the key actions that DOD identified are:

- a study to assess the Army's overall maintenance support infrastructure to determine what functions need to be retained in-house to include its five depot-level repair activities and the recently expanded regional repair facilities;
- establishment of a board of directors to oversee and manage the Army's total maintenance requirements process, including the allocation of work to in-house and contractor repair facilities; and
- development of a 5-year strategic plan for maximizing the efficient use of remaining maintenance depots and manufacturing arsenals.

Fully implemented, these actions should lead to substantial improvements in the economy and efficiency of Army depot and arsenal operations.

Comments From the Department of Defense

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ACQUISITION AND
TECHNOLOGY

30 OCT 1998

Mr. David R. Warren
Director, Defense Management Issues
National Security and International Affairs Division
U.S General Accounting Office
Washington, DC 20548

Dear Mr. Warren:

Enclosed is the Department of Defense (DoD) response to the General Accounting Office Draft Report, "ARMY INDUSTRIAL FACILITIES: Workforce Requirements and Related Issues Affecting Depots and Arsenals," Dated August 13, 1998, (GAO Code 709290), OSD Case 1674.

The Department generally concurs with the intent and recommendations contained in the report.

Technical comments/corrections are also provided for consideration to ensure technical accuracy.

Sincerely,

for Roger W. Kallock
Deputy Under Secretary
of Defense (Logistics)

Enclosure:
As stated

GAO REPORT - DATED August 13, 1998
(GAO CODE 709290) OSD CASE 1674

"ARMY INDUSTRIAL FACILITIES: Workforce Requirements and Related Issues Affecting Depots and Arsenals,"

DEPARTMENT OF DEFENSE COMMENTS TO THE RECOMMENDATIONS

RECOMMENDATION (Chapter 2): "The Secretary of Defense require the Secretary of the Army, in future personnel reductions in its depots, to more clearly target specific functional areas, activities or skill areas where reductions are needed, based on workload required to be performed. We also recommend that the Secretary of the Army be required to incorporate an analysis of overhead requirements into AWPS prior to certifying the system, pursuant to section 364."

RESPONSE: Concur. The implementation of AWPS should provide additional workload and workforce data necessary to more accurately target needed reductions. The Navy programmed the AMCMEA Predictive Staffing Model to predict indirect and overhead requirements staffing into a module of AWPS. The AMCMEA reviewed the AWPS module that was prototyped at Letterkenny Army Depot. The results of the Navy programming efforts satisfied AMC requirements to accurately portray the 12-step methodology used by AMCMEA for indirect and overhead personnel under the Workload Based Manpower Review Program. Additional enhancements, none of which change the final results, were requested and are currently being worked by the Navy. This enhancement is expected to be operational at the five maintenance depots prior to AWPS certification.

RECOMMENDATION (Chapter 3): "The Secretary of Defense require the Secretary of the Army to:

1. Establish policy guidance to encourage AMC customers to adhere to workloading plans, to the extent practicable, once they are established and used as a basis for the development of depot maintenance rates.

2. Require reevaluation of special repair authority approvals to accomplish depot maintenance at field activities to determine the appropriateness of prior approvals, taking into consideration the total cost to the Army of underutilized capacity in Army depots.

3. Pursue a labor-union agreement to facilitate multi-skilling or multi-crafting in industrial facilities.

4. Direct the depot commanders to develop specific milestones and goals for improving worker productivity and reducing employee overtime rates."

RESPONSE: Concur. The Army has initiated a study titled "A Study of the Proliferation of Depot Maintenance Capabilities". The focus of this study will be to quantify the impacts to depot capability by work currently done by Special Repair Activities (SRA) and secondly, to review current approval processes for SRA workload requests. OSD in concert with the Army and other Services is continuing to pursue efforts to eliminate excess capacity through future BRAC rounds and facilities consolidation.

The annual workload estimates for the five maintenance depots need to be more predictable to help stabilize the depots' ability to forecast their staffing requirements. This in turn will improve their pricing structure and bid rates and operating results. With the support of the labor unions, direct labor personnel can be multi-skilled or multi-crafted.

A successful precedent was previously set by the Public Works with their facilities maintenance personnel. AMC has already taken some actions relevant to this recommendation. First, on 12 Feb 98 AMC issued policy guidance to Major Subordinate Commands' (MSC) depot customers that for execution, budget, and Program Objective Memorandum (POM) years, planned depot maintenance workload must be in agreement with either funding guidance or obligational authority. AMC issued this policy to counteract a trend for customers to overestimate depot maintenance workload projections. Second, on 17 Aug 98, CG, AMC, sent a message to all MSCs reemphasizing the importance of conservative, realistic depot maintenance workload projections. The fundability of depot maintenance dollars, together with the tendency for Army operational priorities to change quickly in response to changing world situations, will always make it difficult to sustain constancy in depot maintenance workload projections. However, AMC recognizes the critical importance of keeping its projections as constant as possible.

RECOMMENDATION (Chapter 4): "The Secretary of Defense require the Secretary of the Army to:

1. Assess the potential for improving capacity and reducing excess arsenal capacity.

2. Evaluate options for reducing costs and improving the productivity of the remaining arsenal capacity."

RESPONSE: Concur. The arsenals have considerable excess manufacturing capacity resulting from tremendous reductions in their workload. Both the Watervliet and Rock Island arsenals are included in current AMC plans to conduct a complete installation A-76 review to assess the cost effectiveness to retain the operation as in-house, to privatize, or to contract out the workload. This review will assess the most efficient operation that will include the evaluation of options to reduce costs and improve productivity.

RECOMMENDATION (Chapter 5, paragraph 1): "The Secretaries of Defense and the Army determine the extent to which the Army's logistics and manufacturing capabilities are of such importance that they need to be retained in-house; and the extent to which depot maintenance work is to be done at regular depots, rather than lower level maintenance facilities."

RESPONSE: Concur. Army studies are being formulated or are underway to look at all aspects of depot maintenance; contract and in-house, depot and SRA to determine the most efficient and cost beneficial approach to depot maintenance. The Army's Depot Maintenance Board of Directors will oversee not only the requirements process, but the allocation of depot workload as well. The Army is also initiating a study, which will result in the establishment of the Army's position on the requirement for in-house capability.

Additionally, any study or plan must consider core depot maintenance capability requirements and must look across Services for efficiencies and practices that avoid duplicative capabilities.

RECOMMENDATION(Chapter 5, paragraph 2): "The Secretary of the Army develop and issue a clear and concise statement describing a long-range plan for maximizing the efficient use of the remaining depots and arsenals. At a minimum, the plan should include requirements and milestones for effectively downsizing the remaining depot infrastructure, as needed, and an assessment of the overall impact from competing plans and initiatives that advocate increased use of private sector firms and regional repair facilities for depot-level workloads."

RESPONSE: Concur. Army is developing a depot maintenance 5-year plan, in conjunction with AMC MSCs that will address these issues. In addition, we plan to task the Army to develop and issue a clear and concise statement describing a long-range plan for maximizing the efficient repair and maintenance of Army material There is also an Army Study Proposal based on H.R. 3616 (Authorization Act) that will develop a strategic plan for the depot repair activities which is being proposed and staffed by M&RA.

RECOMMENDATION (Chapter 5, paragraph 3): "If a decision is made to retain in-house capabilities, we also recommend that the Secretary of the Army develop a long-term strategy, with shorter term milestones for improving the efficiency and effectiveness of Army industrial facilities, that would at a minimum include those recommendations stated in Chapters 2 through 4 of this report."

RESPONSE: Concur. General timelines for proposed recommended actions will become part of the corrective action plan to an Army-declared materiel weakness concerning manpower requirements determination.

Major Contributors to This Report

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Related GAO Products

Public-Private Competitions: Processes Used For Sacramento Depot Maintenance Award Appear Reasonable (GAO/NSIAD-99-42, Nov. 23, 1998).

Navy Depot Maintenance: Weaknesses in the T406 Engine Logistics Support Decision (GAO/NSIAD-98-221, Sept. 14, 1998).

Defense Depot Maintenance: Public and Private Sector Workload Distribution Reporting Can Be Further Improved (GAO/NSIAD-98-175, July 23, 1998).

Defense Depot Maintenance: Contracting Approaches Should Address Workload Characteristics (GAO/NSIAD-98-130, June 15, 1998).

Public-Private Competitions: Review of San Antonio Depot Solicitation (GAO/OGC-98-49, May 14, 1998).

Defense Depot Maintenance: Use of Public-Private Partnering Arrangements (GAO/NSIAD-98-91, May 7, 1998).

Public-Private Competitions: Review of Sacramento Air Force Depot Solicitation (GAO/OGC-98-48, May 4, 1998).

Navy Ship Maintenance: Temporary Duty Assignments of Temporarily Excess Shipyard Personnel Are Reasonable (GAO/NSIAD-98-93, Apr. 21, 1998).

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