

**GAO**

Report to the Ranking Minority  
Member, Subcommittee on Readiness,  
Committee on Armed Services, House  
of Representatives

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July 2003

# DEPOT MAINTENANCE

## Key Unresolved Issues Affect the Army Depot System's Viability





Highlights of [GAO-03-682](#), a report to Ranking Minority Member, Subcommittee on Readiness, Committee on Armed Services, House of Representatives

## Why GAO Did This Study

The Army's five maintenance depots produced work valued at \$1.5 billion in fiscal year 2002, with the remaining 49 percent of the Army's depot work performed by contractors. GAO was asked to assess (1) the trends in and the reliability of depot workload projections; (2) whether workloads are sufficient for efficient depot operations, initiatives are under way to improve efficiency, and additional workloads are possible; (3) whether the Army has identified depots' core capability and provided workload to support that capability; and (4) whether the Army has a long-range plan for a viable, efficient depot system.

## What GAO Recommends

GAO makes two recommendations to improve the reliability of workload projections from Army and other service acquisition communities and from inter-service customers. GAO previously reported on the need for improving the process for identifying core capabilities and improving strategic and workforce planning. Without improvements in these areas, the future viability of Army depots is questionable. In commenting on a draft of this report, DOD concurred in part with our recommendations to improve workload projections for Army depots, but stated that needed actions involved more than the Army. GAO revised the two draft report recommendations to address the broader need of improving projections of inter-service work for all the services.

[www.gao.gov/cgi-bin/getrpt?GAO-03-682](http://www.gao.gov/cgi-bin/getrpt?GAO-03-682).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Barry W. Holman at (202) 512-8412 or [holmanb@gao.gov](mailto:holmanb@gao.gov).

# DEPOT MAINTENANCE

## Key Unresolved Issues Affect the Army Depot System's Viability

### What GAO Found

The work assigned to Army maintenance depots has declined by 36 percent, although the cost of the Army's total maintenance program has increased since fiscal year 1987. Except for fiscal year 2003, projections for future work in the depots through fiscal 2008 show further decline. Depot work also changed from predominately overhauling Army end items to the increased repair of components. In addition, work from non-Army customers has increased from 6 to 26 percent. Army component and recapitalization work is projected to be the majority of depot work in the future. Depot planners generally do not have reliable projections of work requirements for non-Army customers. Because of this and other factors, including changing conditions, future projections have limitations. Potential increases in depot work resulting from the Iraq war are not yet clear.

Various factors, including workload reductions and workload performance issues, have resulted in efficiency and productivity problems in Army depots. Such initiatives as facility and equipment rightsizing, depot maintenance partnerships, and "lean manufacturing" have been implemented. Trends in two metrics—capacity utilization and employee productivity—show that, while more needs to be done, efficiency and productivity improvements have been made. Additional workloads, particularly for new and upgraded systems, are essential for future depot viability. However, in the past most new work has gone to private contractors. Some new-systems work is being explored for depots, and depot managers believe that partnering with the private sector may be the best chance for getting such work.

The Army has not identified its depots' core capability requirements using a revised DOD methodology meant to overcome weaknesses in the core process. At the same time, it is unclear whether the revised methodology, which is undergoing further changes, will correct weaknesses in the core process. Moreover, no one in the Army assesses the extent to which depot work compares with identified core capability requirements. Depot managers are concerned about the loss of work and the failure to obtain work necessary to support core capabilities.

The Army does not have a comprehensive and current strategic plan for the depots and has not implemented the limited plan it developed. GAO concluded in a 1998 report that the Army had inadequate long-range plans for its depots and that such planning is essential if significant progress is to be made in addressing the complex, systemic problems facing the depots. Despite the time that has passed, the same issues remain. DOD has not implemented a comprehensive and current plan for resolving continuing issues about (1) reduced workloads being assigned to Army maintenance depots and (2) deficiencies in the process of quantifying both core depot maintenance capabilities and the workload needed to ensure cost efficiency and technical competence and to preserve surge capability. Without such a plan, the long-term viability of Army depots is uncertain.

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United States General Accounting Office  
Washington, DC 20548

July 7, 2003

The Honorable Solomon P. Ortiz  
Ranking Minority Member  
Subcommittee on Readiness  
Committee on Armed Services  
House of Representatives

Dear Mr. Ortiz:

Army maintenance depots 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, we have identified deficiencies in the Department of Defense's (DOD) planning for depot maintenance operations. For example, in 1998 we reported, "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."<sup>1</sup> We also said that 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. We pointed out that uncertainties about the workload to be assigned to these facilities was a critical factor that needed to be addressed, and we recommended that the Secretary of the Army develop and issue a long-range plan for maximizing the efficient use of depots and arsenals.

You requested that we review the following Army depot maintenance issues:

- What are the trends in historical and future maintenance workloads assigned to the depots, and are future projections reliable?
- Do the depots have sufficient workload to promote efficient maintenance operations, are initiatives being implemented to improve efficiency, and are additional workloads possible?

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<sup>1</sup> See U.S. General Accounting Office, *Army Industrial Facilities: Workforce Requirements and Related Issues Affecting Depots and Arsenals*, [GAO/NSIAD-99-31](#) (Washington, D.C.: Nov. 30, 1998).

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- Has the Army identified the depots' core capability requirements and provided its depots with workload needed to ensure cost efficiency and technical competence?
  - Does the Army have a long-range plan for the future viability of an efficient depot system?

We briefed your office on the preliminary results of our work on April 7, 2003. This report summarizes and updates the information presented at that briefing. The scope and methodology for our work are discussed in appendix I. We conducted our review from September 2002 through June 2003 in accordance with generally accepted government auditing standards.

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## Results in Brief

Work performed in Army depots declined by 36 percent from fiscal year 1987 through fiscal year 2002, while the total depot maintenance program grew. With the exception of fiscal year 2003—which has seen increased work, some of which is resulting from the Iraqi conflict—future workload projections indicate further decline in the work to be performed in military depots, but the full impact of the Iraqi conflict on future depot workload is not yet known. Although future workload projections are important tools for managing depot operations, they have limitations because some inputs are not reliable and because operational and budget conditions change. However, opportunities exist for improving future estimates.

A number of factors, including the decline in workload performed in Army depots and changes in the type of work, have led to inefficient operations. Initiatives have been implemented to improve depot efficiency and productivity; and trends in two metrics—capacity utilization and employee productivity—show that improvements have been made. Additional workloads could play a key role in further improving the cost-effectiveness of the Army depots, but other issues must also be addressed. Nonetheless, without new work, the depots cannot continue to be viable. While some new work is being explored, little work for new or upgraded systems is going to the depots.

The Army has not yet identified current core capability requirements that are based on a new methodology put forth by the Office of the Secretary of Defense in January 2003. Moreover, the new methodology has continued to be revised and has not yet been finalized. In the past, the Army has not routinely assessed whether assigned workloads were adequate for its depots to ensure cost efficiency and technical competence and to preserve surge capability. Furthermore, Army depots do not have sufficient

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workload to ensure they can either sustain or establish identified core capabilities.

Neither the Office of the Secretary of Defense nor the Army has a comprehensive and current depot maintenance strategic plan, which is an essential aspect of ensuring future depot efficiency and viability. We previously recommended that a strategic plan for DOD-owned depots be developed,<sup>2</sup> but the Office of the Secretary of Defense has not done so, and the Army's depot plan is neither current nor comprehensive and has not been implemented. Without the implementation of an effective plan to provide a vision for resolving past problems with the depot system, continuing issues about (1) reduced workloads being assigned to Army maintenance depots and (2) deficiencies in the process of quantifying both core depot maintenance capabilities and the workload needed to ensure cost efficiency and technical competence and to preserve surge capability raise significant questions about the long-term viability of Army depots.

We are making two new recommendations to improve the quality of maintenance workload projections, and we continue to believe that DOD's implementation of our prior recommendations is essential for maintaining a viable Army depot system in the future. In commenting on a draft of this report, DOD partially concurred with the two recommendations in our draft report. The Department's response stated that the lack of workload projection data for inter-service depot workloads should be addressed across all the military services. We modified the two recommendations in the draft report to respond to the Department's comments.

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## Background

The Army maintains maintenance depots for overhauling, upgrading, and maintaining missiles, combat vehicles, tactical vehicles, and communication and electronic equipment for the Army, other military services, and foreign countries. These depots, which were established from 1941 through 1961, repair end items—such as ground combat systems, communication systems, and helicopters—and reparable secondary items—various assemblies and subassemblies of major end items, including helicopter rotor blades, circuit cards, pumps,

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<sup>2</sup> See U.S. General Accounting Office, *Defense Logistics: Actions Needed to Overcome Capability Gaps in the Public Depot System*, [GAO-02-105](#) (Washington, D.C.: Oct. 12, 2001).

transmissions, and thousands of other components.<sup>3</sup> The number of these facilities has been reduced from 10 in 1976 to the existing 5 as of June 2003, and 2 of the remaining 5 were significantly downsized and realigned as a result of implementing the 1995 Base Realignment and Closure (BRAC) decisions. Figure 1 shows the locations of the remaining five Army maintenance depots.

**Figure 1: Location of the Five Army Maintenance Depots**



Source: DOD.

<sup>3</sup> Several of the depots also do some manufacturing but generally for small quantities of individual items needed in support of depot overhaul and repair programs.

In fiscal year 2002, the depots reported that the total value of work performed was \$1.5 billion. In a separate report on the distribution of depot maintenance funds between the public and private sector, the Army stated that DOD employees performed about 51 percent of the work included in the Army's fiscal year 2002 depot maintenance program. Table 1 provides the name and location of each of the five Army depots, the primary work performed in each, the hours of work performed in fiscal year 2002, the value of that work, and the number of civilian personnel employed at each depot in fiscal year 2002.

**Table 1: Army Depot Workload, Workload Value, and Civilian Employees in Fiscal Year 2002**

Depot	Principal work	FY 2002 workload <sup>a,b</sup>	FY 2002 value of workload executed <sup>c,d</sup>	FY 2002 number of civilian depot employees
Anniston Army Depot, Anniston, Alabama	This depot performs maintenance on heavy- and light-tracked combat vehicles and components and is the designated center of technical excellence for the M1 Abrams tank.	2.5	\$421.6	2,429
Corpus Christi Army Depot, Corpus Christi, Texas	As the Army's only aviation facility, the depot overhauls and repairs DOD rotary wing aircraft and components, such as the AH-64 Apache, CH-47 Chinook, and UH-60 Blackhawk.	2.9	\$500.2	2,869
Letterkenny Army Depot, Chambersburg, Pennsylvania	This depot provides repair and overhaul support for air defense and tactical missiles such as the Patriot, Hawk, Avenger, Multiple Launch Rocket System, and Sidewinder.	0.9	\$108.0	1,082
Red River Army Depot, Texarkana, Texas	For combat and tactical systems, the depot supports systems such as the Bradley Fighting Vehicle, Multiple Launch Rocket System, and vehicles for the Patriot and Hawk missiles.	1.2	\$236.7	1,478
Tobyhanna Army Depot, Tobyhanna, Pennsylvania	From handheld radios to satellite communication, the depot provides repair of or overhaul support for hundreds of communications and electronic systems.	2.6	\$251.3	2,237

Sources: U.S. Army data (data); GAO (presentation).

<sup>a</sup> Maintenance mission direct labor hours not including overtime.

<sup>b</sup> Hours in millions.

<sup>c</sup> Value of the workload executed for all customers, or total revenue.

<sup>d</sup> Dollars in millions.

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## Trends in Historical and Future Workloads and Reliability of Future Projections

Depot maintenance work performed in Army depots has declined significantly since fiscal year 1987. However, the total depot maintenance program, of which the work assigned to the depots is a part, has grown in dollar value by 72 percent from \$1.55 billion to \$2.66 billion over that period. The decline in the amount of work performed in Army depots reflects the downsizing in the number of systems that followed the end of the Cold War, the trend toward greater reliance on the private sector, and the use of regional repair activities at Army active installations and Army National Guard activities for depot-level maintenance.

The type of work performed in the depots also changed from fiscal year 1987 through fiscal year 2002. While workloads were once predominately the overhaul of Army end items, the percentage of work for non-Army customers<sup>4</sup> and for repair of Army secondary items has increased over the last 16 years. Projections of future work indicate further decline, except that 2003 is likely to have a slight increase at least partially because of support for Operation Iraqi Freedom (the recently completed conflict in Iraq). The extent to which Operation Iraqi Freedom will result in increases in future years is not clear. Future projections may not be a reliable indicator, since they change with changing conditions. The reliability of the estimates decreases with an increase in the projection beyond the current year.

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## Dollar and Labor Hour Trends

Comparing the amount of maintenance work accomplished in the Army depots with the Army's total maintenance program shows that the total program has increased, while the amount of work assigned to the depots has declined. Figure 2 shows the dollar value of the total Army depot maintenance program from fiscal year 1987 through fiscal year 2002. The dollar value of the total Army depot maintenance program grew by 72 percent from fiscal year 1987 through fiscal year 2002.<sup>5</sup>

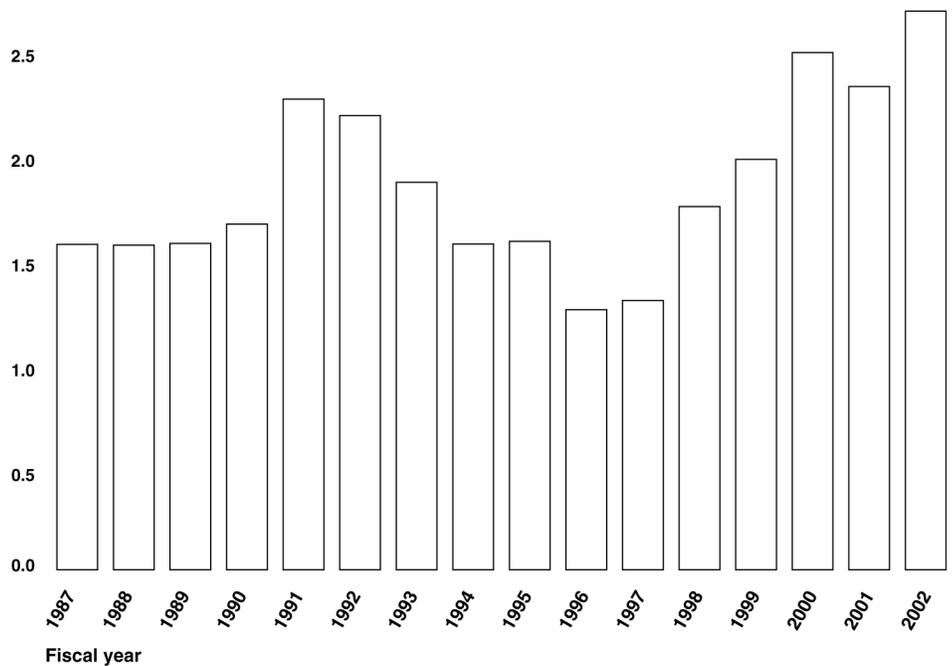
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<sup>4</sup> For our analyses, non-Army customers include the Air Force, Navy, Marine Corps, Defense Logistics Agency, foreign militaries, and unspecified DOD and non-DOD agencies.

<sup>5</sup> For our analysis, we characterized the total maintenance program by dollar value since the private sector does not report the work it does in terms of the amount of time spent.

**Figure 2: Dollar Value for the Total Army Maintenance Programs, Fiscal Years 1987-2002**

3.0 Dollars in billions

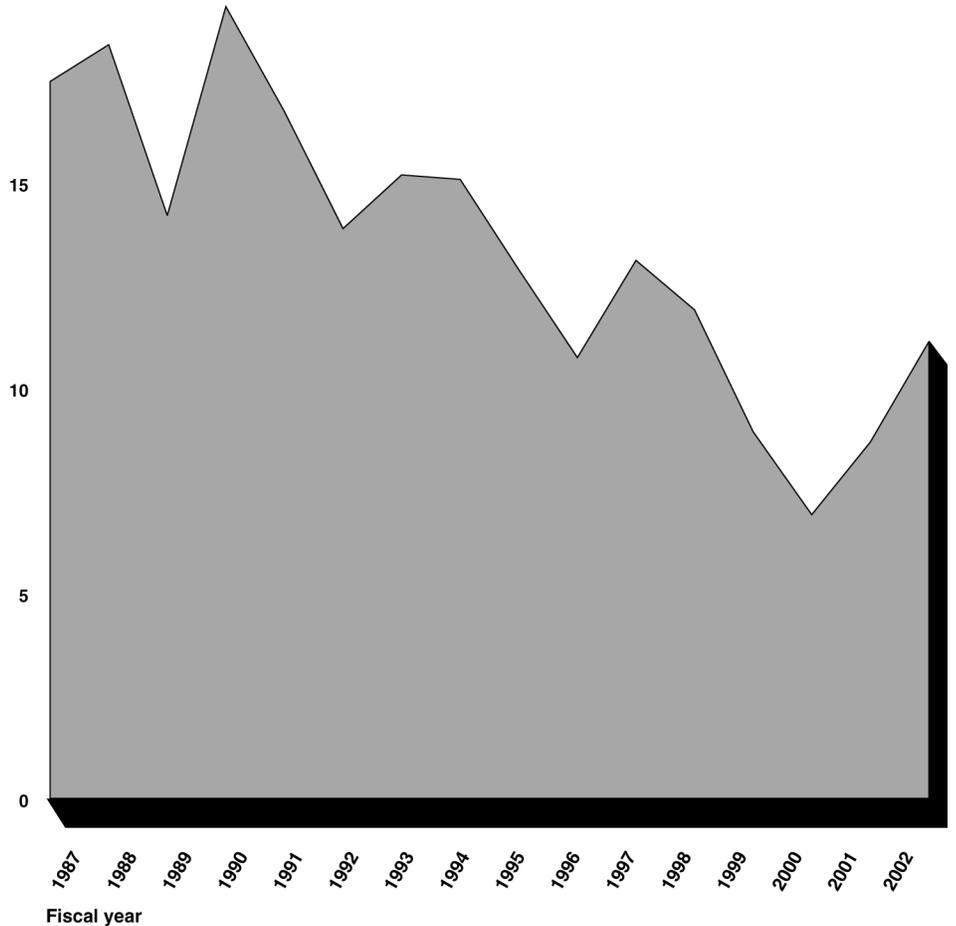


Sources: U.S. Army (data); GAO (presentation).

As reflected in figure 3 the labor hours for maintenance programs completed in each of the fiscal years from 1987 to 2002 at the five current Army depots show a significant overall decline in work during much of this period, with a slight upturn from fiscal year 2000 to fiscal year 2002. The total number of hours for depot maintenance programs completed in Army depots in fiscal year 2002 was 11.0 million—36 percent less than the 17.3 million hours for maintenance programs completed in fiscal year 1987.

**Figure 3: Total Number of Hours for Maintenance Programs Completed in Army Depots, Fiscal Years 1987-2002**

20 Direct labor hours in millions



Sources: U.S. Army (data); GAO (presentation).

Figure 3 indicates that in fiscal year 2000, the number of hours for maintenance programs completed in Army depots were the lowest since 1987. In fiscal year 1999, the Army completed the transfer of operational command and control of Army depots to the depots' major customers, the Army Materiel Command's (AMC) subordinate commands,<sup>6</sup> which are also

<sup>6</sup> The Army Tank-automotive and Armaments Command manages the Anniston and Red River depots; the Army Aviation and Missile Command manages the Corpus Christi and Letterkenny depots; and the Army Communications-Electronics Command manages the Tobyhanna depot.

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the coordinating inventory control points for the depots' products. In making these realignments, the Army has tasked AMC to pay more attention to the amount of work assigned to the depots, since these commands are now responsible for the depots' budgets and operations.

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## Workload Type and Customer Trends

The type of work performed in Army depots has changed significantly from fiscal year 1987 through fiscal year 2002. While Army depot work in fiscal year 1987 predominately involved the overhaul of Army end items (such as tanks, helicopters, and wheeled vehicles), in fiscal year 2002, the percentage of work for repairing Army secondary items (reparable components such as engines, transmissions, and rotor blades) was greater than that for end item repair. Our analysis of the labor hours for maintenance programs completed in fiscal years 1987 through 2002 showed that the overhaul of Army end items steadily decreased from 68 to 26 percent of the total workload over that period, while the repair of Army secondary items increased from 4 to 31 percent of the workload total.<sup>7</sup>

In addition, the percentage of work performed for non-Army customers increased from fiscal year 1987 through fiscal year 2002 from 6 to 26 percent of the total hours for maintenance programs completed in those years. At the Tobyhanna depot, which now has the largest amount of non-Army work, Air Force work accounted for only 4 percent of the hours of all maintenance programs completed at the depot from fiscal year 1987 through fiscal year 1997. However, from fiscal year 1998 through fiscal year 2002, repair work on Air Force systems was 23 percent of the total amount of work completed at this depot. At Corpus Christi, labor hours for Navy work accounted for 9 percent of the hours for all programs completed from fiscal year 1987 through fiscal year 1995. The hours spent for Navy work grew to 22 percent of the hours for all programs completed from fiscal year 1996 through fiscal year 2002. However, since the Navy withdrew some of its helicopter work from Corpus Christi in fiscal year 2003, that level of Navy work is not likely to continue unless new Navy workloads are designated for repair at Corpus Christi. At the Letterkenny depot, labor hours for foreign military sales accounted for 4 percent of the hours for all programs completed from fiscal year 1987 through fiscal year

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<sup>7</sup> This analysis did not include all of the depots' work, since the data we analyzed did not break out the repair category for non-Army customers and for a small amount of Army work.

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1999. For fiscal years 2000 through 2002, foreign military sales work at that depot increased to 15 percent of the total hours of work completed.

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## Workload Projections

Workload projections suggest that in fiscal year 2003, the small upward trend begun in fiscal year 2001 will continue for another year, but another period of decline may occur from fiscal year 2004 through fiscal year 2008. Army component and recapitalization workload is projected to be the majority of the depots' work. These projections are an April 2003 estimate from the Army Workload and Performance System (AWPS), an analytically based workload-forecasting system that projects future workloads and coordinates personnel requirements.<sup>8</sup> This projection includes some recent increases in prior estimates for fiscal year 2003 to reflect revised estimates for reparable components to support Operation Iraqi Freedom. Officials at several depots said they are working overtime and have hired some temporary employees to support this increased requirement, but an official at one depot said it is not likely to be able to produce the amount of work currently estimated for fiscal year 2003 in AWPS because it does not have enough people. Depot officials said they do not know if reconstitution<sup>9</sup> requirements following Operation Iraqi Freedom will result in increases in depot workload in fiscal year 2004 and beyond, and AWPS does not reflect increases in the out-years resulting from Operation Iraqi Freedom. According to an AMC official, the Army does not yet have a plan for managing the reconstitution, but one is being developed.

Army officials said and we have confirmed that out-year estimates are not always reliable predictors of the specific work that will be performed in a future year. These projections are only as good as the knowledge of the personnel preparing them about future requirements. As we have reported in the past, workload estimates for Army maintenance depots vary substantially over time owing to the reprogramming of operations and

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<sup>8</sup> We reviewed the status of the AWPS development as required by the Congress. See U.S. General Accounting Office, *Army Logistics: Report on Manpower and Workload System Inadequate and System Interface Untested*, GAO-03-21 (Washington, D.C.: Oct. 30, 2002).

<sup>9</sup> Reconstitution is the process, after a contingency/surge operation, of making a unit or activity available again for steady-state operational commitments. Reconstitution planning begins during the initial stages of surge operations, and actual reconstitution of the forces continues beyond the end of the contingency operation. Factors to be considered in reconstitution planning include the maintenance of equipment, restoring levels of consumables, lost training, an examination of the impact of operations on personnel and attrition rates, and post-contingency steady-state operational requirements.

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maintenance appropriation funding and unanticipated changes in customer orders. Workload estimates are subject to much uncertainty and to frequent fluctuations with changing circumstances. For example, as previously noted, fiscal year 2003 requirements in AWPS have increased during the year as Operation Iraqi Freedom's demands have generated more work than previously expected. On the other hand, reductions to future requirements frequently occur. For example, to fund other priorities, the Army has been considering reducing recapitalization work,<sup>10</sup> which is forecasted to be about 29 percent of the depots' future workload. Furthermore, the impact that reconstitution requirements could have on the Army depots following Operation Iraqi Freedom is unclear. Additionally, according to Army officials, AWPS does not receive actual programs planned for the out-years of all depot customers. Customers whose actual programs are entered into AWPS vary by subordinate command. Out-year workload for customers that are not based on actual programs must be estimated by the subordinate commands on the basis of past history and discussions with their customers about workload planned for the depots. Thus, these estimated workloads may not represent future workloads. Moreover, since work from other customers has become a much more substantial share of the total Army depot workload, the impact of these estimates' accuracy will be more significant.

Finally, future workloads that Army acquisition officials might have planned for the depots are difficult to identify, and AWPS will not accurately reflect these workloads unless acquisition officials provide the subordinate commands with such information. The Army acquisition community is primarily responsible for establishing future capability at the depots on the basis of the results of source-of-repair decisions and other factors such as core requirements. However, as discussed later, the amount of such work likely to be assigned to the depots is unclear. Army officials explained that the acquisition community does not enter these workloads into AWPS and that no central database exists of systems undergoing source-of-repair decisions to help the subordinate commands identify planned workloads and adjust AWPS projections accordingly.<sup>11</sup> For these reasons, depot managers do not consider workload projections from AWPS reliable beyond 2 years, and they recognize that changes will occur even in the first 2 years.

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<sup>10</sup> Recapitalization is the rebuilding and upgrading of currently fielded systems to ensure operational effectiveness and a like-new condition.

<sup>11</sup> The Air Force has such a database.

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As previously discussed, the reliability of out-year projections in AWPS is affected by a number of factors such as changing requirements, funding limitations, and the work that may be planned but has not been identified and included in AWPS. While requirements and funding changes are expected occurrences, the Army is faced with the possibility that incomplete projections in AWPS regarding the size of the direct labor force required in the future can occur. This is because the Army's current capability to identify maintenance workloads that are being planned for its depots is limited. Specifically, officials stated that the Army has no standard business rules or procedures for identifying the work that the Army acquisition community and non-Army customers may be planning for Army depots. They said that, at best, the current process is a hit-or-miss situation, depending on how aggressive the Army commands are in requesting such customers to identify their forecasted workloads, if it is done at all. Moreover, an Army official told us that the Army does not have a mechanism in place to adjust these estimates when it becomes clear that such forecasts are inaccurate. Improvements in this area could increase the reliability of future depot workload projections, as well as depot planners' ability to manage depot operations efficiently. In its comments on a draft of this report, DOD officials stated that the lack of workload projection data for inter-service depot workloads should be addressed across all the military services—not just at Army depots. Consequently the Department will initiate a study to examine how the identification and reporting of depot inter-service workload projections across all the military services can be improved.

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## Workload Efficiency and Sufficiency Issues

Army depots have had some efficiency problems, caused by several factors, including the loss of work to the private sector and field-level maintenance activities. Initiatives such as facility and equipment downsizing, depot partnerships, and “lean manufacturing”<sup>12</sup> have been implemented to address depot inefficiencies. Trends in two key metrics—capacity utilization and employee productivity—show that progress has been made in recent years, although further improvements are still desirable. Additional workloads could play a key role in further improving the cost-effectiveness of the Army depots, and acquiring work for new systems is essential for long-term depot viability. Whether new systems

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<sup>12</sup> Lean manufacturing is an industry best practice that is being implemented in the five Army depots. Lean manufacturing focuses on cutting costs while also shortening production lead times and time-to-market; improving quality; and providing customers with what they want, precisely when they want it.

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work will be assigned to the depots is unclear, but depot officials believe that partnerships may offer the best potential for new systems work. Whether depot-level work that gravitated to field-level activities will return to the depots is also unclear.

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## Factors Resulting in Depot Efficiency Problems

Depot maintenance operations have not been as efficient as Army depot managers would like them to be. This is, in part, due to a host of factors, including the impact of workload reductions, the changing nature of the work assigned, and workload performance issues such as less-than-expected employee productivity and work slow-downs caused by a lack of required spare and repair parts or inefficient repair processes. We have identified several issues that adversely affected depot efficiency and productivity, including DOD's policy for greater reliance on the private sector for depot support of new weapon systems and major upgrades, the increased reliance on the use of regional repair activities and private-sector contractors for work that otherwise might be done in the depots, cost and schedule overruns, excess capacity, and difficulties in effectively using depot personnel.<sup>13</sup> In August 2002, an Army task force identified problems with depot efficiency and productivity at the Corpus Christi depot. The task force pointed to the following as key problem areas: the use of inaccurate data to price maintenance programs, schedule and cost overruns caused by work performed against wrong standards and beyond the statement of work, and the use of direct workers to perform indirect tasks.

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## Initiatives to Improve Depot Efficiency and Productivity

Initiatives that have been implemented to improve depot efficiency and productivity include "rightsizing" at realigned depots, depot partnerships designed to improve the efficiency and performance of depot operations, and lean manufacturing initiatives. The 1995 base realignment and closure process significantly realigned two of the remaining five Army depots. Significant efforts were made to rightsize the workforce, property, plant, and equipment on the basis of assigned and projected workloads at the Letterkenny and Red River depots, which had the benefit of BRAC funding to support their realignment activities. The other depots have attempted to improve their efficiency as well.

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<sup>13</sup> See [GAO/NSIAD-99-31](#) and U.S. General Accounting Office, *Defense Depot Maintenance: DOD Shifting More Workload for New Weapon Systems to the Private Sector*, [GAO/NSIAD-98-8](#) (Washington, D.C.: Mar. 31, 1998).

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Various partnering initiatives have been undertaken to improve depot performance. In fiscal year 2002, the Army had 42 depot maintenance partnerships, the largest number in any of the military services.<sup>14</sup> One of the most successful has been the partnership initiative implemented at Corpus Christi for the T700 engine. Wanting to reduce the repair time and improve the reliability of the Army's T700 helicopter engine, the Corpus Christi Depot entered into a partnership with General Electric to achieve these improvements. Under the partnership, Corpus Christi provides the facilities and equipment and repairs the engine. General Electric provides spare parts as well as technical, engineering, and logistics services. According to depot officials, this effort has introduced General Electric's best practices at the depot, which has resulted in a 26-percent reduction in engine turnaround time in the T700 engine repair line and a 40-percent increase in test cell pass rates for the repaired engines. Depot and contractor officials both attribute improved depot repair times for the T700 engine to better parts availability and improvements to the depot's repair processes, although they also recognize that the related T700 recapitalization effort begun shortly after the formation of the partnership may also be a factor influencing these improvements. Figure 4 shows the repair line for the T700 engine.

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<sup>14</sup> See U.S. General Accounting Office, *Depot Maintenance: Public-Private Partnerships Have Increased, but Long-Term Growth and Results Are Uncertain*, [GAO-03-423](#) (Washington, D.C.: Apr. 10, 2003).

Figure 4: Corpus Christi T700 Engine Repair Line



Source: U.S. Army.

Other initiatives are also being implemented to improve efficiency and productivity in Army depot maintenance operations under the umbrella of lean manufacturing. Most of these initiatives are in the early phases of implementation, but some progress is being reported. Anniston officials report that they have identified a more efficient reciprocating-engine process. Corpus Christi officials reported improvements for other maintenance processes as a result of their lean-manufacturing initiatives. Depot managers at Letterkenny set a goal to reduce the repair time for the Patriot missile launcher and report that they have already reduced the number of technicians by three and the floor space by 70 percent. Red River officials reported that process improvements have allowed them to

increase monthly maintenance production for a truck engine from 17 to 40. A Tobyhanna official stated that, because of its process improvements, unit costs for the Sidewinder missile’s guidance and control system have decreased substantially. Furthermore, with planned improvements on the Sidewinder and two other systems, Tobyhanna officials expect major reductions in overhaul and recapitalization timelines, reduced customer costs, gains in customer satisfaction, and greater employee satisfaction, as depot workers take the lead in transforming their work.

## Progress Trends in Two Key Metrics

Trends in two key metrics—capacity utilization and employee productivity—show that progress has been made in recent years, although improvements are still desirable. DOD measures capacity utilization by considering the amount of work produced relative to the work that could potentially be produced on a single shift operation using the number of personnel on board. Table 2 shows capacity utilization in each of the five Army depots from fiscal year 1999 through fiscal year 2002.

**Table 2: Depot Capacity Utilization for Fiscal Years 1999-2002**

Depot	Depot capacity for fiscal year			
	1999	2000	2001	2002
Anniston	68	66	69 <sup>a</sup>	76 <sup>a</sup>
Corpus Christi	60	70	77 <sup>a</sup>	83 <sup>a</sup>
Letterkenny	81	66	75	82
Red River	81	83	75	79
Tobyhanna	61	72	78	76

Sources: Army depots and headquarters, Army Materiel Command (data); GAO (presentation).

<sup>a</sup> Indicates that the number provided by Headquarters, Army Materiel Command, was used when there was a difference in the numbers provided by it and the depot. Headquarters’ numbers were used because they had been reported by the depots to headquarters in official command documents. In the four instances where numbers from these two sources were different, the difference ranged from 2 to 14 percent, and the average difference was 7.75 percent.

Compared to a DOD goal of 75 percent utilization, capacity utilization for the five Army depots has fluctuated from fiscal year 1999 through fiscal year 2002, but generally has improved. In fiscal year 1999, three of the five depots were below the goal by an average of 12 percent while two depots exceeded the goal by an average of 6 percent. In contrast, by fiscal year 2002, all five depots exceeded the goal by an average of 4 percent. At 83 percent utilization, the Corpus Christi depot showed the highest capacity utilization in fiscal year 2002, and Letterkenny and Red River had

utilization rates of 82 and 79 percent, respectively. The higher-capacity utilization was largely achieved by decreasing the physical layout or “footprint” of the maintenance depot. Downsized by decisions of the 1995 BRAC process, Letterkenny and Red River received BRAC funds to support their realignment activities. While the capacity utilization of these two depots for fiscal year 2002 was relatively high, they have the smallest workloads of the five depots.

It is important to remember that DOD’s capacity-utilization computation somewhat understates the depots’ full potential for producing work. The capacity-utilization computation assumes operations during an 8-hour workday and a 5-day workweek. However, all the depots have some overtime and some shift work and, if needed, could increase the amount of overtime and shift work.

Another metric—employee productivity—also indicates that Army depot operations are improving. Employee productivity measures the average number of productive hours worked in a year by depot workers after leave, holidays, training, and other time away from the job are excluded. Table 3 shows average employee productivity at each of the five Army depots from fiscal year 1999 through fiscal 2002.

**Table 3: Employee Productivity for Fiscal Years 1999-2002**

Depot	Average work hours per year per direct employee for fiscal year			
	1999	2000	2001	2002
Anniston	1,534	1,549	1,551 <sup>a</sup>	1,608
Corpus Christi	1,434	1,516	1,478 <sup>a</sup>	1,560 <sup>a</sup>
Letterkenny	1,421	1,504	1,471 <sup>a</sup>	1,593 <sup>a</sup>
Red River	1,534	1,494	1,549 <sup>a</sup>	1,614
Tobyhanna	1,599	1,622	1,635	1,625

Sources: Army depots and Headquarters, Army Materiel Command (data); GAO (presentation).

<sup>a</sup> Indicates that the number provided by Headquarters, Army Materiel Command, was used when there was a difference between the numbers reported by it and the depot. Headquarters numbers were used because they had been reported by the depots to headquarters in official command documents. In the six instances where the numbers from these two sources were different, the difference ranged from 1 to 51 hours, and the average difference was 13.2 hours.

The Army depot average of 1,600 hours for fiscal year 2002 was significantly higher than it was a few years ago and is progressing toward

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the DOD standard of 1,615 hours.<sup>15</sup> In fiscal year 1999, none of the depots were at the standard—averaging 1,504 hours and ranging from a low of 1,421 hours to a high of 1,599 hours. In fiscal year 2002, the number of employee productive hours at the Tobyhanna depot was 1,625 and 1,614 at Red River. The employee productivity of all of the Army depots has improved since 1999. Depot managers said they were successful in improving worker productivity by emphasizing to direct workers the need for reducing the amount of time spent in nonproductive areas.

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### Additional Workloads Possible and Essential for Depot Viability

Additional workloads could play a key role in further improving the cost-effectiveness of the Army depots and are essential for the depots' long-term viability. As the systems currently being repaired in the depots age, they will be withdrawn from the Army's inventory and replaced with new and/or upgraded systems. If repair and overhaul for the new and upgraded systems go to the private sector, workload in the depots will continue to diminish. In considering additional workloads for its depots, the Army has several options: (1) move work that the private sector is performing either by reassignment at contract renewal time or establishing a partnership arrangement with the private sector, (2) assign new work from the source-of-repair process the Army uses to identify where the work will be performed, (3) and move work from field-level activities that now perform depot tasks. In considering additional workload, an essential issue for the Army is whether its depots have the capability or whether establishing capability is affordable to take on work that is being performed by other sources.

Acquiring new systems work will be the key to the survivability of the depots in the long term. In recent years, the depots have received very little new and upgraded systems work. As older systems are withdrawn from the inventory, the repair work on systems currently assigned to the depots will continue to decline. Unless new systems work is identified for the depots, they will become more and more inefficient as their workload declines. With regard to the potential for additional workloads for the depots from new systems, Army acquisition officials told us that establishing new capability at the depots has become more difficult with

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<sup>15</sup> This factor represents the amount of work that a direct labor employee is estimated to be able to accomplish in 1 fiscal year.

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the Army's implementation of performance-based logistics<sup>16</sup> because the Army is not buying the technical data or the rights to use the data in establishing repair capability at its depots. This could adversely affect the Army's ability to realign existing work from the private sector to government-owned depots. An internal Army study found that weapon systems program officials make decisions to outsource the repair of new and upgraded systems without considering the impact of these decisions on the requirement to maintain core capability for essential systems in military depots.

Depot managers believe that partnership arrangements are an effective means for improving the efficiency and productivity of depot operations<sup>17</sup> and are the best opportunity to bring additional workloads into the depots. Among potential partnerships being explored for new workload are the following: Anniston, for the M1A2 tank service extension program; Corpus Christi, for the Comanche helicopter; Letterkenny, for the Javelin missile; and Red River, for the Heavy Expanded Mobility Tactical Truck.

With regard to moving work from field-level activities that now perform depot tasks, the Army has taken some initiative to get control over this problem, but the extent that it has dealt with proliferation of depot work in field-level activities is unclear. The *Report of the House Committee on Armed Services on the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001* said that the Army has yet to account accurately for depot-level maintenance workloads performed by organizations outside the depot system.<sup>18</sup> That report directed the Army to provide a report identifying the proliferation of depot-level maintenance in these activities by February 1, 2001, and directed us to review the Army's report and provide the Congress with an analysis, including an assessment of the Army's ability to comply with 10 U.S.C. 2466, the requirement that not more than 50 percent of funds made available for depot-level maintenance

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<sup>16</sup> Performance-based logistics is the preferred support concept for DOD systems. According to the department, it is an integrated acquisition and logistics process for buying weapon system capability that is designed to delineate outcome performance goals of weapon systems; ensure that responsibilities are assigned; provide incentives for attaining these goals; and facilitate the overall life-cycle management of system reliability, supportability, and total ownership costs. Performance-based logistics contracts were negotiated by system program offices for systems such as the C-17 Globemaster cargo aircraft.

<sup>17</sup> See [GAO-03-423](#).

<sup>18</sup> Report 106-616 (May 12, 2000) p. 340.

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be used to contract for performance by nonfederal personnel. The Army has not yet reported to the Congress, but Army officials stated that as of July 3, 2003, the report was being reviewed internally. We will analyze the report when it is completed.

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## Core Capability Issues

Beginning in November 1993, the Army did biennial identification of core capability requirements and the workloads necessary to sustain those depot maintenance core capabilities. The most recent core identification, however, was in December 1999 for fiscal year 2001 and showed that 10.8 million work hours were associated with maintaining core capability requirements for the five depots. An updated core identification is overdue, but in January 2003 the Deputy Under Secretary of Defense for Logistics and Materiel Readiness issued a new core identification methodology and, at the time of our review, had additional revisions under way to the methodology. Thus, the Army has not yet computed core capability requirements based on this new methodology. Furthermore, the Army does not routinely assess whether the work performed by its five depots is adequate to sustain their core capabilities; and workloads performed by the five depots have not been at the level identified by the 1999 core identification as necessary to maintain core capabilities.

The identification of core logistics capability involves a complex process that has been evolving over the past 10 years. This process is based on a requirement contained in 10 U.S.C. 2464 to identify and maintain within government owned and operated facilities a core logistics capability, including the equipment, personnel, and technical competence required to maintain weapon systems identified as necessary for national defense emergencies and contingencies. Specifically, the Secretary of Defense is to identify the workloads required to maintain core logistics capabilities and assign to government facilities sufficient workload to ensure cost efficiency and technical competence in peacetime, while preserving capabilities necessary to fully support national defense strategic and contingency plans. To accomplish this requirement, beginning in November 1993, the Office of the Deputy Secretary of Defense for Logistics outlined a standard multi-step method for determining core capability requirements and directed the services to use this method in computing biennial core capability and associated workload requirements. In November 1996, the core methodology was revised to include (1) an assessment of the risk involved in reducing the core capability requirements as a result of having maintenance capability in the private sector and (2) the use of a best-value comparison approach for assigning workload not associated with maintaining a core capability to the public

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and private sectors. The core methodology provided a computational framework for quantifying core depot maintenance capabilities and the workload needed to sustain these capabilities. It included three general processes:

1. The identification of the numbers and types of weapon systems required to support the Joint Chief of Staff's wartime-planning scenarios.
2. The computation of depot maintenance core capability workload requirements measured in direct labor hours to support the weapon systems' expected wartime operations as identified in the wartime-planning scenarios.
3. The determination of industrial capabilities (including the associated personnel, technical skills, facilities, and equipment) that would be needed to accomplish the direct labor hours identified above that were generated from the planning scenarios. That determination is adjusted to translate those capabilities into peacetime workloads needed to support them. These peacetime workloads represent the projected workload necessary to support core capability requirements for the next program year in terms of direct labor hours.

To conclude the process, the services then identify specific repair workloads and allocate the core work hours needed to accomplish the maintenance work that will be used to support the core capabilities at the public depots.

We previously reported that the DOD depot maintenance policy was not comprehensive and that the policy and implementing procedures and practices provided little assurance that core maintenance capabilities were being developed as needed to support future national defense emergencies and contingencies.<sup>19</sup> Some of the weaknesses were that (1) the existing policy did not provide a forward look at new weapon systems and associated future maintenance capability requirements, (2) the existing policy did not link the core identification process to source-of-repair policies and procedures for new and upgraded systems, and (3) the various procedures and practices being used by the services to implement the existing policy, such as using "like" workloads to sustain core capabilities, were affecting the ability of the depots to establish core

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<sup>19</sup> See [GAO-02-105](#).

capabilities. In October 2001, DOD revised the methodology by dividing the core methodology into two distinct parts to more clearly distinguish between core capability requirements and the depot maintenance workloads needed to satisfy those requirements. Detailed core capability and associated workload computations would be performed on a biennial basis in conjunction with the planning, programming, and budgeting system in order to address both the requirements for new systems and changes to existing systems. Also, core computations would be reviewed annually to assess the impact of unanticipated budgetary adjustments. Regarding the new methodology issued in January 2003, DOD officials told us that some revisions are being made and the methodology has not yet been finalized. Thus, we have not reviewed the methodology in detail and cannot be sure whether the new methodology will correct the weaknesses we identified in the core process.

The Army's identification of core capabilities and workloads required to sustain them in December 1999 showed that the five depots had a total workload requirement of 10.8 million work hours associated with its core capability requirements. As shown in table 4, work performed by the depots for the 4-year period, fiscal years 1999 to 2002, was generally below the amount identified for total core capability requirements.

**Table 4: Comparison of Core Capability and its Associated Workload with Actual Work Performed for Fiscal Years 1999-2002**

Hours in millions					
Depot	1999 core capability assessment	Fiscal years			
		1999	2000	2001	2002
Anniston	2.3	2.0	2.0	2.1	2.5
Corpus Christi	3.5	2.3	2.5	2.6	2.9
Letterkenny	1.1	0.9	0.7	0.8	0.9
Red River	0.9	1.2	1.1	0.9	1.2
Tobyhanna	3.0	2.4	2.7	2.6	2.6
<b>Total</b>	<b>10.8<sup>a</sup></b>	<b>8.8<sup>a</sup></b>	<b>9.0<sup>a</sup></b>	<b>9.0<sup>a</sup></b>	<b>10.1<sup>a</sup></b>

Sources: Army (data); GAO (presentation).

<sup>a</sup> Excludes overtime hours.

Depot officials stated that for the core identification process, the depots identify the skills required by job series to support the core capability. However, Army officials said that neither the depots nor the Army routinely assess the extent to which work performed by the depots

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compares with the identification of core capability requirements and associated workloads. Thus, they do not have the information needed to determine whether the level and nature of the work performed in the depots is sufficient to ensure cost efficiency and technical competence and to preserve core capability.

When we discussed identification of core capability and associated workloads with depot managers, they said that ensuring appropriate workloads are going to the depots is essential to their being able to maintain required core skills to support combat readiness. They also expressed concern that the definition of core capability workload requirements seems to constantly fluctuate and that maintenance workloads that once were identified as required for core capabilities were being transferred to the private sector. For example, depot managers at the Red River Army Depot pointed out that workload associated with the Heavy Expanded Mobility Tactical Truck was a significant factor in the depot's ability to maintain the necessary core capabilities. However, the truck workload was lost in October 2001 when the Army decided to stop recapitalization work at the depot and to use a contractor to perform an extended service life program for the truck. They said that other systems, such as the Bradley Fighting Vehicle, are headed in the same direction. Depot managers also pointed out that the depots are not always assigned work sufficient to ensure cost efficiency and technical competence and to preserve surge capability. Additionally, the depots are not capable of providing some core capabilities. For example, the depots do not have capability to repair key components of the M1A2 tank, the Apache helicopter, and the Bradley Fighting Vehicle for which core capability requirements were identified. More specifically, Anniston does not have the capability to support unique electronic components for the M1A2 tank, Corpus Christi does not have the capability to support Apache Longbow unique components, and Red River does not have the capability to support electronic components for the Bradley A3 model. Our October 2001 report identified a number of the same concerns with the fluctuations in core capability identification and the loss of work required to sustain depot core capabilities.<sup>20</sup> DOD's latest policy on core, which was released in January 2003, requires the services to develop an assessment of what specific workload is necessary to achieve its core goals at the DOD, service, and facility levels. However, the services have not yet been tasked by DOD to recompute core capability requirements based on the new

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<sup>20</sup> See [GAO-02-105](#).

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policy. Officials said some changes to the revised policy are expected to occur.

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## Strategic Planning Issues for Depots

Although we previously recommended that a strategic plan for DOD-owned depots be developed, neither the Office of the Secretary of Defense nor the Department of the Army has implemented comprehensive or strategic plans for defense maintenance to revitalize or protect the future viability of its depot facilities and equipment and its depot workers.<sup>21</sup> The Army has taken steps to develop a strategic plan for its depots, but it is not comprehensive or current and the Army has not yet implemented it. The Office of the Secretary of Defense has undertaken a depot planning study, but still has no depot strategic plan.

Our prior reports have demonstrated that a strategic plan is critical to the future viability of the defense depot system. For example, in our October 2001 report, we pointed out that logistics activities represent a key management challenge and that depot maintenance is an important element of those activities.<sup>22</sup> As such, we noted that DOD was at a critical point with respect to the future of its maintenance programs and that the future role for the military depots in supporting the department's future maintenance programs was unclear. Finally, we pointed out that before DOD can know the magnitude of the challenge of revitalizing its depot facilities and equipment and its depot workforce, it must first know what its future workloads will be; what facility, equipment, and technical capability improvements will be required to perform that work; and what personnel changes will be needed to respond to retirements and workload changes. We recommended, among other things, that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology, and Logistics, in conjunction with the military services, to establish expedited milestones for developing strategic and related implementation plans for the use of military depots that would identify desired short- and long-term core capabilities and associated capital investments and human capital needs. However, although the Department is conducting a study that could lead to the development of a depot strategic plan, as of July 2003, DOD still has no strategic plan that provides

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<sup>21</sup> See U.S. General Accounting Office, *Defense Maintenance: Sustaining Readiness Support Capabilities Requires a Comprehensive Plan*, [GAO-01-533T](#) (Washington, D.C.: Mar. 23, 2001).

<sup>22</sup> See [GAO-02-105](#).

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required direction to shape the future of the depots if they are expected to remain viable for the future. We again addressed the issue of the need for strategic planning in our recent report on strategic workforce planning for the DOD industrial workforce, noting that DOD has not implemented our prior recommendations regarding the need for a DOD depot strategic plan.<sup>23</sup> However, absent a DOD depot plan, the services have laid out a framework for strategic depot planning in varying degrees, but this is not comprehensive.

While the Army has taken some actions regarding the development of a strategic depot plan, its plan is not comprehensive, and implementation of the plan was suspended. In January 2000, the Army Deputy Chief of Staff for Logistics published *Army Depot Maintenance Enterprise Strategic Plan*, a plan that provided mission and vision statements for the Army depots and identified five strategic issues for which they began developing action plans:

1. Identification and management of all depot maintenance requirements for Army systems throughout all phases of their life cycles in the Planning, Programming, and Budget Execution System.
2. Restructuring the process for determining the source of depot repair to ensure that appropriate approval authorities are utilized for decisions to rebuild, overhaul, upgrade, and repair decisions above a certain threshold (e.g., dollar value).
3. Ensuring that the Army depot workforce is capable of meeting future depot maintenance requirements.
4. Managing materiel/supplies (parts) used by the depots to provide for more efficient depot operations.
5. Making Army depots more competitive with private-sector depot maintenance providers.

Identifying these broad strategic issues, along with some objectives, measures, and action plans, was a step in the right direction. However, the Army did not finalize or implement its action plans. Army planners told us

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<sup>23</sup> See U.S. General Accounting Office, *DOD Civilian Personnel: Improved Strategic Planning Needed to Help Ensure Viability of DOD's Civilian Industrial Workforce*, [GAO-03-472](#) (Washington, D.C.: Apr. 30, 2003).

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that implementing the strategic plan was put on hold, pending an effort to reassess depot capabilities and requirements as part of the Army's effort to identify the depot capabilities that had proliferated in field-level activities. The plan did not address depot maintenance that is being performed in field-level activities. The Army's assessment of depot proliferation was supposed to result in a report to the Congress on this subject, but as previously discussed, the Army has not yet provided this report. Furthermore, Army officials stated that there has been no update to modify the strategic plan to address how the Army will manage this category of depot work.

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## Conclusions

Continuing issues about (1) the assignment of reduced workloads to Army maintenance depots, (2) deficiencies in the process of quantifying both core depot maintenance capabilities and the workload needed to ensure cost efficiency and technical competence and to preserve surge capability, and (3) strategic planning for depots raise significant questions about the long-term viability of Army depots. We have discussed these issues in the past, but they remain unresolved. It will be important for the Congress and the Department of Defense to clarify these issues to ensure the continued performance of required support resources in the future.

In addition to the issues discussed in the past, we identified another area where action would improve data reliability for Army depots—the development and implementation of procedures for identifying and reporting depot workload projections from the Army acquisition community and from non-Army customers. By addressing both the identification and reporting of initial forecasts as well as subsequent changes to the forecasts, greater reliability should be achievable for the Army Workload and Performance System. Furthermore, as DOD has observed, improved projections of interserviced maintenance work would benefit all depots, not just those of the Army.

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## Recommendations for Executive Action

To improve the reliability of future maintenance workload projections in all DOD maintenance depots, we recommend that the Secretary of Defense through the Under Secretary of Defense for Acquisition, Technology, and Logistics,

- require the Army Materiel Command in conjunction with the Army acquisition community to develop and implement standard business rules and procedures for identifying and reporting Army

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depot workload projections from the Army acquisition community and

- require the DOD depot maintenance community to develop and implement ways to improve the identification and reporting of depot inter-service workload projections across all the military services using standard business rules and procedures.

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## Agency Comments and Our Evaluation

In commenting on a draft of this report, the Department partially concurred with our recommendations to improve the reliability of future workload projections. Appendix II contains the text of DOD's comments.

The Department partially concurred with the recommendation in our draft report that the Army Materiel Command develop standard business rules and procedures for identifying and reporting Army depot workload projections. While agreeing that this could be done for work coming from the Army acquisition community, the response noted that the Department did not believe that the Army Materiel Command alone could establish standard business rules and procedures for identifying and reporting Army depot workload projections from the non-Army customers. However, the Department agreed with us that a need exists for Army Depots to have valid workload projections from the Army acquisition community and non-Army customers and that standard business rules and procedures are required. Moreover, the Department's response stated that since the lack of workload projection data for inter-service depot workloads should be addressed across all the military services, the Department planned to initiate a study to examine how the identification and reporting of depot inter-service workload projections across all the military services can be improved. Consequently, we modified our recommendation to address the Department's comments.

The Department partially concurred with a second recommendation in the draft report requiring the Army acquisition community and non-Army customers to report depot workload projections for Army depot work through the Army Workload and Performance System using the standard business rules and procedures. The Department stated that it agreed in concept that Army customers should provide Army depots with workload projections, but that it currently does not appear feasible for all non-Army customers to report depot workload projections for Army depots through the Army Workload and Performance System. Therefore, we dropped the reference to the Army Workload and Performance System from our recommendation. The Department stated also that, as with the first

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recommendation, it plans to address this recommendation with a study to examine how the identification and reporting of inter-service workload projections across the military services can be improved.

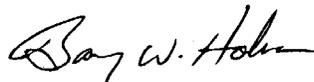
The Department also provided some technical comments for our draft report that were incorporated where appropriate.

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We are sending copies of this report to interested congressional committees; the Secretary of Defense; the Secretary of the Army; and the Director, Office of Management and Budget. We will make copies available to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

If you or your staff have questions regarding this report, please contact me at (202) 512-8412 or [holmanb@gao.gov](mailto:holmanb@gao.gov) or Julia Denman, Assistant Director, at (202) 512-4290 or [denmanj@gao.gov](mailto:denmanj@gao.gov). Other major contributors to this report were Bobby Worrell, Janine Prybyla, Jane Hunt, and Willie Cheely.

Sincerely yours,



Barry W. Holman  
Director, Defense Capabilities  
and Management

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# Appendix I: Scope and Methodology

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To answer the specific questions posed by the Ranking Minority Member, Subcommittee on Military Readiness, House Committee on Armed Services, we interviewed Army officials and analyzed pertinent information at Army headquarters in the Washington, D.C., area; Headquarters, Army Materiel Command in Alexandria, Virginia; and three subordinate Army commands—the Army Aviation and Missile Command, Huntsville, Alabama; Communications-Electronics Command, Fort Monmouth, New Jersey; and the Tank-automotive and Armaments Command, Warren, Michigan. Additionally, we interviewed depot managers and reviewed pertinent information at the Army’s five depots: Anniston Army Depot, Anniston, Alabama; Corpus Christi Army Depot, Corpus Christi, Texas; Letterkenny Army Depot, Chambersburg, Pennsylvania; Red River Army Depot, Texarkana, Texas; and Tobyhanna Army Depot, Tobyhanna, Pennsylvania. We also made extensive use of our prior work and ongoing work related to Army depot maintenance.

To assess the trends in historical and future workloads assigned to the Army depots, we analyzed workload information from the Army’s automated databases. Specifically, for historical workloads, we evaluated the trend in workload hours for closed maintenance programs from the Army Headquarters Application System for fiscal years 1987 through 2002. For trends in future workloads, we used workload hours from the Army Workload and Performance System for fiscal years 2003 through 2008. For the reliability of future workload projections, we used our prior work showing that Army depot workload estimates are subject to frequent changes because of factors such as fluctuations in requirements and funding levels. We also questioned Army officials and depot managers about the reliability of the workload estimates as shown by the Army Workload and Performance System.

In determining whether the depots have sufficient workload to promote efficient maintenance operations, we compared metric data that others and we have previously identified with data on the Army’s current operations. We examined data on key metrics to determine how well the depots performed assigned workloads against key metrics and standards such as depot-level capacity utilization and employee productivity. We obtained metric data from the Army depots and from Headquarters, Army Materiel Command. Since Headquarters, Army Materiel Command, could not provide the data prior to 2001, the data for fiscal years 1999 and 2000 are from the depots. In those instances where the reported data for fiscal years 2001 and 2002 differed, we used the data reported by Headquarters, Army Materiel Command, because the headquarters data were reported by the depots. To identify whether additional workloads are possible, we

relied upon our prior and ongoing work, which shows that the Army had contracted with the private sector for maintenance workloads that its depots had previously performed and that upgrades and modifications of older systems and new weapon systems were a potential source of work for the depots. We also questioned acquisition and logistics officials at the subordinate commands with responsibility for workloads for the depots about workloads that were being considered for the Army depots and the limitations to bringing these workloads to the depots. To identify whether initiatives are being implemented to improve efficiency, we examined the plans and projects that the depots had under the umbrella of lean manufacturing to improve maintenance operations. In addition, we reviewed depot reports on the extent to which these initiatives were improving operations.

To answer whether the Army has identified the depots' core capability and provided its depots with workload to use that capability, we reviewed the Department of Defense and Army guidance for computing core capability requirements and associated workloads in December 1999 for fiscal year 2001 and compared the results with workloads assigned to the depots since fiscal year 1999. We also examined the department's new methodology issued in January 2003 for computing core capability requirements and questioned department and Army officials about the schedule for implementing the new methodology. We also questioned depot officials about the adequacy of workloads assigned and the extent to which the work allows the depots to maintain necessary capabilities.

For the question of whether the Army has a long-range plan for the future viability of an efficient depot system, we relied upon prior work that shows that neither the department nor the Army had a comprehensive defense maintenance strategic plan.

We conducted our review from September 2002 through June 2003 in accordance with generally accepted government auditing standards.

# Appendix II: Comments from the Department of Defense



DEPUTY UNDER SECRETARY OF DEFENSE FOR  
LOGISTICS AND MATERIEL READINESS  
3500 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3500

JUN 17 2009

Mr. Barry W. Holman  
Director, Defense Capabilities and Management  
U.S. General Accounting Office, Room 4440B  
441 G Street, NW  
Washington, D.C. 20548

Dear Mr. Holman,

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "DEPOT MAINTENANCE: Key Unresolved Issues Affect The Viability Of The Army Depot System," (GAO Code 03-682). The Department partially concurs with the report's recommendations. For Army customers, the Department concurs with the GAO recommendation that the Army Materiel Command should develop standard business rules and procedures for identifying and reporting Army depot workload projections from the Army acquisition community. For non-Army customers, however, the Department does not agree with the recommended method to obtain these outcomes, as explained in the Department's enclosed response to the draft report's recommendations.

The Department agrees that there exists a need for Army depots to have valid workload projections from the Army Acquisition community and non-Army customers and that standard business rules and procedures are required. The Army, and all other Services that perform inter-service workloads, require projections from their respective customers. These projections are used by the performing facilities to match workforce to workload and to develop the rates necessary to recoup operating expenses. The Department believes that the lack of workload projection data for inter-service depot workloads should be addressed across all the Military Services, not just at Army depots. Consequently, the Department will initiate a study to examine how the identification and reporting depot inter-service workload projections across all the Military Services can be improved.

The detailed DoD comments on the draft GAO report recommendations are provided in the enclosures. Additionally, we have also enclosed technical issues for your consideration to improve its accuracy and clarity of the final report. The DoD appreciates the opportunity to comment on the draft report.

Sincerely,  
  
Allen W. Beckett  
Principal Assistant

Enclosure: As stated



GAO DRAFT REPORT  
(GAO CODE 03-682)

“DEPOT MAINTENANCE: KEY UNRESOLVED ISSUES AFFECT THE VIABILITY OF  
THE ARMY DEPOT SYSTEM”

DEPARTMENT OF DEFENSE COMMENTS TO THE GAO RECOMMENDATIONS

**RECOMMENDATION 1:** To improve the reliability of future workload projections in the Army Workload and Performance System, the GAO recommends that the Under Secretary of Defense for Acquisition, Technology, and Logistics require the Army Materiel Command to develop standard business rules and procedures for identifying and reporting Army depot workload projections from the Army acquisition community and non-Army customers in the Army Workload and Performance System. (p. 25/GAO Draft Report)

**DOD RESPONSE:** Partially Concur. The Department of Defense concurs with the GAO recommendation that the Army Materiel Command should develop standard business rules and procedures for identifying and reporting Army depot workload projections from the Army acquisition community. However, the Department does not agree that the Army Materiel Command alone can establish standard business rules and procedures for identifying and reporting Army depot workload projections from the non-Army customers.

The Department believes that the lack of workload projection data for inter-service depot workloads should be addressed across all the Military Services. Consequently, the Department will initiate a study to examine how the identification and reporting depot inter-service workload projections across all the Military Services can be improved.

**RECOMMENDATION 2:** The GAO recommended that the Under Secretary of Defense for Acquisition, Technology, and Logistics require the Army acquisition community and non-Army customers report depot workload projections for Army depot work through the Army Workload and Performance System using the standard business rules and procedures. (p. 25/GAO Draft Report)

**DOD RESPONSE:** Partially Concur. The Department agrees in concept that Army customers should provide workload projections to Army depots. For Army customers, the Department believes that the Army should determine the required systems that will be used for reporting depot workload projections using the standard business rules and procedures.

Currently it does not appear feasible for all non-Army customers to report depot workload projections for Army depot work through the Army Workload and Performance System. As indicated in response to the first recommendation, the Department also believes that the lack of workload projection data for inter-service depot workloads should be addressed across all the Military Services, not just at Army depots. Therefore, the Department will initiate a study to examine how the identification and reporting depot inter-service workload projections across all the Military Services can be improved.

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