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Accounting and Information
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The Honorable Earl Hutto
Chairman, Subcommittee on Readiness
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

This report responds to your request that we review the Army Industrial Fund (AIF), which was incorporated into the Defense Business Operations Fund subsequent to your request. Our work focused on maintenance operations, AIF's largest activity. We previously issued related reports on the Air Force and Navy industrial funds.

We are sending copies of this report to the Secretary of Defense, the Acting Secretary of the Army, the Director of the Office of Management and Budget, the Ranking Minority Member of your Subcommittee, and interested congressional committees. Copies will also be made available to others upon request.

Please contact me at (202) 512-9095 if you or your staff have any questions. Major contributors to this report are listed in appendix II.

Sincerely yours,

A handwritten signature in cursive script that reads 'David M. Connor'.

David M. Connor
Director, Defense Financial Audits

Executive Summary

Purpose

The Army Industrial Fund (AIF), which is supposed to break even, sustained operating losses from 1989 through 1991 for its maintenance and storage activities. AIF depot maintenance, which is the largest activity, sustained losses of about \$97.9 million on revenues of about \$4 billion for fiscal years 1989 through 1991. In fiscal year 1992, AIF was incorporated into the Defense Business Operations Fund (DBOF) and its billing rates were adjusted to recover prior year losses. AIF maintenance operations reported a profit for fiscal year 1992, expected a profit in fiscal year 1993, but projected a loss equal to the 2 previous years' profits for fiscal year 1994.

To increase the efficiency of AIF operations and minimize future losses, the Army instituted a cost-saving initiative in fiscal year 1991, including a program to compete maintenance work among depots and private sector suppliers of maintenance services. The Army projects it will realize about \$74.2 million in cost savings in maintenance operations from this initiative over the 5-year period from fiscal years 1991 through 1995 and an additional cost savings of \$64 million in fiscal years 1996 and 1997.

The Chairman, Subcommittee on Readiness, House Committee on Armed Services, asked GAO to assess the financial results of military service industrial fund operations. This review focused on (1) determining the reasons for AIF's continuing operating losses, (2) assessing the impact operating losses had on AIF's working capital and identifying actions taken to lessen that impact, and (3) assessing the reasonableness of Army's projected cost savings from the competition initiative. GAO has reported on similar reviews of the industrial funds operated by the Air Force and Navy.

Background

AIF includes four activities: (1) storage of weapons, ammunition, and equipment, (2) depot maintenance of weapons and equipment, (3) transportation services, and (4) procurement and distribution of armaments, munitions, and chemical weapons.

AIF received initial working capital through appropriated funds at the time it was established. After that, it was supposed to generate sufficient revenues to cover costs and expenses incurred in its operations; that is, it was to break even over time.

AIF generates revenues by billing its customers at predetermined prices to perform specifically agreed upon work. The prices are based upon estimated costs and are set by AIF's parent command and primary

customer, the Army Materiel Command (AMC), and the Department of Defense (DOD). Payments from customers replenish the fund's working capital, which is used to finance subsequent operations. Conceptually, industrial funds should provide an incentive to control costs and maximize efficiency. Also, because AIF's customers purchase services with moneys appropriated to them, the predetermined prices and the number and types of items they want to maintain provide a basis for developing budget requests and for deliberations and decision-making during the budget formulation process.

Results in Brief

AIF maintenance operations have not achieved their goal of breaking even over time because billing rates were not set at levels to recover all costs and because excess direct labor capacity at depots increased overhead costs. Because of internal control weaknesses in AIF's accounting systems, GAO could not assess the financial impact of each factor contributing to AIF's continued losses.

Continuing losses on maintenance operations reduced AIF's working capital below levels needed to sustain operations and in 1989 created a deficit in the working capital account for maintenance and storage operations. To restore its working capital to needed levels, AIF received appropriations from the Congress and transfers of funds from other Army appropriations. Also, DOD and AMC permitted AIF to use billing rates higher than those that DOD had originally approved. Beginning in fiscal year 1993, billing rates included factors to recover prior year losses and factors for depreciation of equipment and major construction of facilities.

AIF's overall losses clearly show that it has not operated as intended when it was established. Because AIF was able to compensate for losses by increasing subsequent year prices and other means, the incentives for efficiency and economy were diminished. Moreover, because prices for specific work reflected factors unrelated to the actual work costs, the usefulness of these prices for budget decisions was reduced.

In all likelihood, the Army will not realize its anticipated \$74.2 million in savings through 1995 or the additional \$64 million in anticipated savings in fiscal years 1996 and 1997 from the initiative to compete jobs with the private sector. Although the workload competition generally reduced the prices charged for the individual projects, they did not necessarily reduce the overall costs incurred in doing the work. These include (1) the cost of overhead, which increases due to excess depot labor capacity that is not

charged to customer orders, and (2) losses on competed jobs. Depots will not achieve projected savings unless they are given the authority to balance their projected capacity (particularly direct labor) with anticipated workload.

Principal Findings

Various Factors Contributed to Continuing Losses on Maintenance Operations

AIF maintenance operations incurred continued operating losses for several reasons. First, DOD reduced AIF's proposed billing rates, thus lowering its revenues, to reflect departmentwide policy considerations, such as anticipated benefits of cost saving initiatives. When savings were not fully realized, AIF's rates were too low to recover its costs. Second, maintenance job cost estimates that were used to bill customers were too low because the estimates were usually based on visual inspections that could not always determine the actual physical condition of the items to be repaired. Third, AIF's accounting system did not include controls needed to preclude nonmaintenance and unnecessary costs being charged to maintenance jobs. Fourth, demand for AIF maintenance work decreased, creating excess direct labor capacity and thus increasing overhead. Also, unanticipated changes in scope of work on customers orders required more direct labor hours than the customer and AIF had agreed to. Since customers were charged the estimated costs of jobs determined before work began, these costs resulted in a loss to AIF.

Losses Impairing AIF Working Capital Were Restored Through Special Funding and Increased Billing Rates

Continuing losses on AIF maintenance operations resulted in a cumulative net operating loss of \$233.7 million as of fiscal year-end 1991. After AIF became part of DBOF in fiscal year 1992, it reported a profit of \$62.6 million on maintenance operations for fiscal year 1992, estimated a profit of \$53.4 million for fiscal year 1993, but projected a loss of \$116 million for fiscal year 1994. If these estimates are accurate, AIF's net loss will climb back to 1991 levels by the end of fiscal year 1994. Earlier AIF losses had reduced its fund balance for maintenance and storage operations and in fiscal year 1989 resulted in an \$18.5 million deficit. To restore AIF's working capital and cash balances for maintenance and storage activities to levels needed to sustain continuing operations, the Congress appropriated funds to AIF and authorized the transfer of funds to AIF from other Army fund accounts. Also, AIF was allowed to implement billing rates that were higher than those DOD initially approved. Beginning with fiscal

year 1993, AIF billing rates also include factors to recover prior year losses and depreciation factors to replace equipment and facilities as they wear out. Because construction of facilities is funded out of the military construction appropriation, depreciation of such facilities is not an appropriate cost to AIF.

Army Will Not Realize Projected Savings From the Competition Initiative

The Army's initiative to compete maintenance work between Army depots and private contractors assumes that competition will encourage depots to become more cost efficient. Bids under this initiative were, in fact, between 25 percent and 67 percent lower than prices that would have been charged customers under AIF's in-house maintenance program for the same work. Although these bids would reduce costs to the depot customer on individual maintenance jobs, they would not reduce overall depot maintenance costs. First, the bids do not include costs associated with excess direct labor capacity at the depots. At the time of GAO's review, depot maintenance capacity substantially exceeded current workload projections. This excess labor capacity increased AIF's overhead costs. Second, the depots may incur losses on competed jobs. Such losses, combined with all other losses, increase the depots' subsequent year billing rates for in-house work, which, by policy, are currently set to recoup losses. Since AMC is the primary customer for both competed and in-house maintenance work, its savings on competed work are offset by increases in the rates for in-house work. In addition, to the extent that depots lose work to the private sector, the initiative will reduce revenues to AIF and exacerbate the excess labor capacity.

DOD has not given AIF authority to reduce excess direct labor capacity pending implementation of the Base Realignment and Closure Commission's recommendations. The Army has proposed funding the cost of excess capacity through direct appropriations for fiscal year 1994. This approach has merit.

Recommendations

GAO is recommending that the Secretary of Defense direct the Defense Comptroller to (1) set prices based on realistic estimates of all the costs that will be incurred in providing goods and services to AIF customers, (2) adjust prices only by factors directly related to the costs expected to be incurred, and (3) request congressional appropriations whenever accumulated prior year losses are adversely affecting the operation of AIF.

Agency Comments

As requested by the Chairman's office, GAO did not obtain comments on a draft of this report. GAO did, however, discuss its contents with cognizant Defense and Army officials and their views have been incorporated where appropriate.

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Abbreviations

AIF	Army Industrial Fund
AMC	Army Materiel Command
DBOF	Defense Business Operations Fund
DOD	Department of Defense
GAO	General Accounting Office

Introduction

For fiscal year 1992, the Army Industrial Fund (AIF) reported revenues approaching \$3 billion. AIF is one of the military service industrial funds used to finance the operations of industrial and commercial type activities providing common services within the Department of Defense (DOD), such as depot maintenance (for ships, aircraft, combat vehicles, and other items) and transportation services (aircraft, sealift, and traffic management). The Chairman, Subcommittee on Readiness, House Committee on Armed Services, requested that we review DOD's management of the industrial funds. This report on AIF complements the reports we have issued on our reviews of the Air Force and Navy industrial funds.¹

AIF includes four major activities: (1) storage of weapons, equipment, and ammunition, (2) maintenance of weapon systems and other equipment, (3) worldwide military traffic management, and (4) procurement and distribution of armaments, munitions, and chemical weapons.

This report focuses primarily on maintenance operations, which in financial terms, are the largest part of AIF. Specifically, maintenance operations generated about \$1.4 billion (44 percent) of the \$3.2 billion in total AIF revenues for fiscal year 1991. For fiscal years 1989 through 1991, these operations reported losses of about \$97.9 million on revenues of about \$4 billion. AIF maintenance operations, which include the inspection and repair, overhaul, and/or major modification of weapons and equipment, are carried out at 10 depots and 5 depot activities.

Establishment and Operation of Industrial Funds

While studying abuse in government operations during the 1940s, the Hoover Commission reported that the military budget and appropriation process were highly inefficient. Specifically, the Commission found that managers at DOD industrial activities did not know the cost of individual jobs and, therefore, concentrated on obtaining funds to support existing programs rather than improving the efficiency of operations. The Commission also found that industrial activity customers were seldom constrained by financial considerations because they were not charged for the work performed.

To correct problems such as those reported by the Hoover Commission, the Congress amended the National Security Act of 1947 in 1949 to authorize the establishment of industrial funds. By doing so, the Congress

¹Financial Management: Navy Industrial Fund Has Not Recovered Costs (GAO/AFMD-93-18, March 23, 1993); Air Force Depot Maintenance: Improved Pricing and Financial Management Practices Needed (GAO/AFMD-93-5, November 17, 1992).

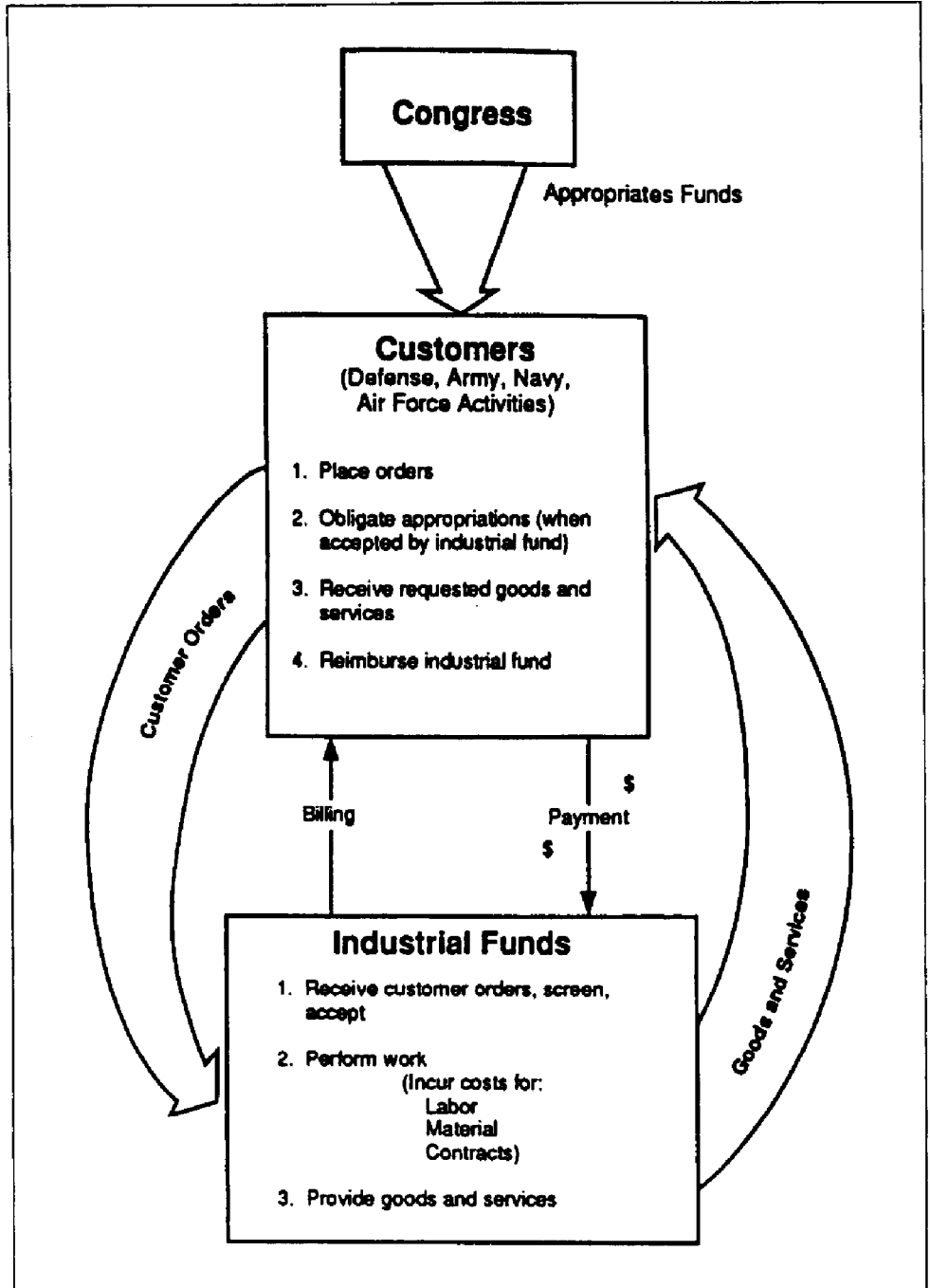
intended to introduce the discipline and incentives of private industry and commerce to industrial activities and their customers. Industrial funds were expected to improve government operations by establishing a buyer-seller relationship between fund activities and their customers. The fund activities would be financially dependent upon obtaining orders and matching costs with reimbursements. Consequently, the activities would be motivated to (1) improve cost estimates and controls and (2) identify and correct inefficiency and waste. Customers would be forced to pay for services received and would, therefore, be motivated to order only necessities.

Industrial funds receive their initial working capital through either a direct appropriation or a transfer of resources from existing appropriations or funds. They use these resources to finance the initial cost of providing the goods and services that are ordered by their customers. Thereafter, as the industrial funds do work and incur costs, they bill customers on the basis of predetermined prices—commonly referred to as “stabilized” prices—or billing rates. Payments from customers are then used to finance subsequent operations, much as sales revenues are used in commercial enterprises.

Once established, industrial funds have a financial objective to be self-sustaining and to operate on a break-even basis over the long term. To accomplish this objective, industrial fund activities set their sales prices at a level that will allow them to recover their expected operating costs. These billing rates remain in effect for the entire fiscal year.

The Congress directly affects industrial funds by establishing or prohibiting specific policies or practices. For example, in 1992, the Congress directed DOD to use a separate subaccount to collect depreciation charges that will be used to finance future capital asset acquisitions for the Defense Business Operations Fund. In addition, the Congress exercises indirect oversight through the authorization and appropriation process, which permit it to adjust resource and program levels of industrial fund customers. The operation of industrial funds is illustrated in figure 1.1.

Figure 1.1: How Industrial Funds Operate



The Defense Business Operations Fund

In October 1991, DOD implemented the Defense Business Operations Fund (DBOF), which consolidated into one organization the existing industrial and stock funds and five other DOD activities—the Defense Finance and Accounting Service, the Defense Commissary Agency, Industrial Plant Equipment Services, the Defense Reutilization and Marketing Service, and the Defense Technical Information Service. According to Public Laws 102-190 and 102-484, the Army, Navy, and Air Force industrial funds will maintain their individual identities as part of DBOF. In addition, the rate setting and budgeting process will remain the same. DBOF is expected to have sales of about \$81 billion in fiscal year 1993.

According to DOD, a primary goal of DBOF is to encourage support organizations, such as maintenance facilities, to provide quality goods and services at the lowest cost by (1) helping to identify the total cost of operations for units such as fighter squadrons and (2) highlighting the cost implications of management decisions. DBOF's customers can be charged for products or services based on the total cost of providing them. Through this new structure, DOD intends to link support costs with customer funding.

DOD Initiative to Reduce Depot Maintenance Costs

Defense Management Report Decision 908, "Consolidating Depot Maintenance," directed the military services to reduce depot maintenance costs by \$3.9 billion during the 5-year period from fiscal years 1991 through 1995. The services were to reduce costs by \$1.7 billion by streamlining depot maintenance operations and downsizing the infrastructure of their maintenance depots. However, in downsizing their maintenance depots, the services had to maintain enough depot maintenance capacity to respond to any future mobilization needs.

The military services were also directed to develop a joint long-range plan to reduce depot maintenance costs by an additional \$2.2 billion over the 5-year period. The military services developed this joint plan, which was approved by their under secretaries in September 1990. It was to achieve the targeted reductions by (1) increasing the interservicing² of depot maintenance work, (2) making more effective use of in-house maintenance capacity, and (3) implementing a public/private competition program for depot maintenance work.

The Army's segment of the joint long-range plan included a program to compete maintenance work among its depots and private sector

²Interservicing refers to the practice of having one military service perform work for another.

organizations in an effort to encourage the depots to perform their work more efficiently and make more effective use of in-house maintenance capacity. Army projected it would reduce depot maintenance costs by more than \$60 million over 5 years by competing maintenance work with private sector organizations. However, in fiscal year 1993, the Army estimated its cost savings would be \$74.2 million through 1995, with an additional \$64 million in savings in fiscal years 1996 and 1997. The Army conducted a pilot test of the competition program in fiscal year 1991.

Objectives, Scope, and Methodology

Based on discussions with your office, our objectives were to (1) determine the reasons for AIF's continuing operating losses, (2) assess the impact operating losses had on AIF's working capital and identify actions taken to lessen that impact, and (3) assess the reasonableness of projected estimated savings from competing maintenance workload with the private sector.

We focused our work on AIF's maintenance operations, AIF's largest single component in financial terms, comprising 44 percent of total AIF fiscal year 1991 revenues. We also reviewed the results of the pilot test which competed maintenance workload with private sector suppliers.

To determine the reasons for the reported losses on AIF maintenance operations, we

- documented the AIF budget formulation and rate-setting process and reviewed the budget formulation process for AIF customers included in our fiscal year 1991 financial statement audit of Army: the Tank Automotive Command, the Aviation Systems Command, and the Missile Command;
- analyzed AIF billing rates, revenues, and costs for fiscal years 1989 through 1992;
- reviewed explanations of losses included in AIF budget formulation documents and financial statements;
- judgmentally selected 25 customer orders representing a cross-section of the weapon types overhauled and reviewed (1) estimated job costs, (2) actual job costs, and (3) reasons for job profits or losses at four depots included in our fiscal year 1991 financial statement audit of Army; and
- identified the profits or losses on selected customer orders and the reasons for continuing overall losses sustained by AIF maintenance operations with AIF officials.

To assess the impact of operating losses on AIF's working capital as a whole and to determine actions to mitigate the impact of losses, we analyzed AIF's (1) accumulated operating results, (2) annual operating gains or losses, (3) cash accounts, and (4) appropriated funds received for fiscal years 1987 through 1991. To determine actual financial results, we focused on fiscal years 1987 through 1991. In addition, we reviewed actual financial results for the AIF maintenance mission for fiscal years 1989 through 1991 because these were the only years for which detailed information was available. For fiscal years 1992 through 1994, we analyzed reported and estimated financial results in DBOF's fiscal year 1994 budget estimates.

To determine the reasonableness of savings projected from the competition of workload we (1) reviewed the bids prepared under the pilot competition program at the four depots visited, (2) compared the pilot competition program bids with the costs to do similar work under AIF's in-house maintenance program, and (3) discussed differences between the pilot program bids and costs incurred under in-house maintenance programs with AIF officials. Because jobs had just been awarded to the depots at the time of our review, and no work had been done, we could not determine the actual costs incurred for the completed jobs.

Our work was conducted at the Depot System Command, Chambersburg, Pennsylvania; the U.S. Army Materiel Command, Alexandria, Virginia; the Department of the Army's Budget Office, Washington, D.C.; four Army depots (Anniston, Alabama; Corpus Christi, Texas; Letterkenny, Chambersburg, Pennsylvania; Tooele, Utah); and three AMC Major Subordinate Commands (the U.S. Army Tank-Automotive Command, Warren, Michigan; the U.S. Army Aviation Systems Command, St. Louis, Missouri; and the Missile Command, Huntsville, Alabama).

Our review was performed from August 1991 through August 1993 in accordance with generally accepted government auditing standards.

In accordance with the requester's wishes, we did not obtain written agency comments on a draft of this report. However, at the end of our fieldwork, we discussed the facts and issues presented in the report with cognizant representatives of the Army Materiel Command and AIF. Their views have been incorporated where appropriate.

Multiple Factors Led to Losses on AIF Maintenance Operations

AIF maintenance operations have not broken even over time. During fiscal years 1989 through 1991, AIF maintenance operations received revenues of about \$4 billion and reported losses totalling about \$97.9 million. After AIF was incorporated into DBOF in fiscal year 1992, it reported a profit for fiscal year 1992, expected a profit for fiscal year 1993, but projected a large loss for fiscal year 1994. AIF estimates that cumulative losses at the end of fiscal year 1994 will total \$233.7 million. Table 2.1 summarizes AIF's cumulative and estimated losses through fiscal year 1994.

Table 2.1: Financial Results of AIF Maintenance Operations

Dollars in millions		
Accumulated loss as of September 30, 1988		(\$135.8)
Annual operating results		
Fiscal year 1989	(6.2)	
Fiscal year 1990	(42.3)	
Fiscal year 1991	(49.4)	(\$97.9)
		(\$233.7)^a
Fiscal year 1992 (reported) ^b	62.6	
Fiscal year 1993 (estimated)	53.4	
Fiscal year 1994 (estimated)	(116.0)	0.0
Accumulated operating results (estimated) as of September 30, 1994		(\$233.7)

^aThrough fiscal year 1991, AIF was operated as an independent working capital fund.

^bStarting with fiscal year 1992, AIF was incorporated into DBOF and made major billing rate changes.

Source: Figures for fiscal years 1989 through 1991 were derived from our analysis of AIF accounting records. Figures for fiscal years 1992 through 1994 come from volume II of Defense Business Operations Fund FY 1994 Budget Estimates, Corporate Overview Operating Budgets, April 1993.

AIF's maintenance operations sustained continuing losses because (1) DOD reduced AIF's proposed billing rates, (2) maintenance job cost estimates did not include all work to be done, (3) nonmaintenance and unnecessary costs were charged to maintenance jobs, and (4) demand for AIF maintenance work decreased.

As a result of continued operating losses, AIF's working capital for maintenance and storage operations fell below the level needed to conduct operations. To help lessen the impact of these losses, AIF received additional funding through appropriations and transfers of funds from

other appropriations, and was allowed to use billing rates higher than those initially approved by DOD. Also, starting in fiscal year 1993, AIF's billing rates included factors to recover prior year losses.

AIF's Budgeting and Rate Setting Process

AIF develops its proposed maintenance budget based on direct labor hours assigned by the Army Materiel Command (AMC);¹ inflation factors developed and provided by AMC; and prior year costs reported by AIF's maintenance depots. Reported prior year costs include adjustments made throughout the year for differences between the actual cash disbursements made for direct labor, materials, and overhead and the costs billed customers. Such differences can arise because costs billed customers are based on AIF's billing rates—which, in turn, are based on estimated rather than actual expenses. Actual cash disbursements made by depots could be higher or lower than the estimates of those expenses on which AIF's billing rates are based.

The total estimated costs for the fiscal year—materials, direct labor, and overhead—in AIF's proposed maintenance budget become the estimated revenue AIF needs to break even. Using its estimated revenues and assigned direct labor hours, AIF proposes an adjustment to its billing rate per direct labor hour, expressed as a percentage increase in its current billing rate.

AIF submits its proposed maintenance budget and billing rate adjustment to the Army Budget Office each August and to DOD each September. DOD reviews the proposed maintenance budget and billing rate adjustment and makes adjustments to reflect policy considerations, such as expected savings from implementing Defense Management Review Decision 908 to increase the efficiency of depot maintenance operations. DOD then approves a final billing rate adjustment and AIF depot operating budget in January of each year for inclusion in the budget request the President sends to the Congress. AIF billing rates for maintenance work are established for each fiscal year and are held constant for the entire fiscal year.

¹AMC's constituent commodity commands are the largest customers of maintenance services. The commodity commands determine depot level repairs and overhauls for Army weapons and equipment and schedule them for this work. These determinations by the commodity commands are the basis for assigning labor hours to AIF.

DOD Reductions of AIF Proposed Billing Rates Contributed to Losses

As shown in table 2.2, DOD reduced the percentage increase in customer billing rates AIF requested for all but 1 of the 6 fiscal years from 1987 through 1992. DOD's reductions reflect in financial terms the impact of policy decisions on AIF maintenance operations. For example, DOD lowered the requested increase for 1992 because it expected AIF to reduce its costs by implementing cost-saving actions, including the competition initiative discussed in chapter 3. DOD's actions reduced AIF's revenues, thus contributing to AIF's continued losses.

Table 2.2: AIF Proposed and DOD Approved Percentage Changes in AIF Maintenance Customer Billing Rates

Fiscal year	Percentage change	
	AIF proposed	DOD approved
1987	15.0	0
1988	25.6	(6.8)
1989	53.6	2.8
1990	16.5	10.4
1991	4.4	9.5
1992	31.0	23.1

For the years for which detailed information was available and for which DOD decreased AIF's requested increase in billing rates, and also for the year in which DOD increased the rate, AIF sustained significant losses on its depot maintenance operations. An AMC analysis of fiscal year 1989 AIF operations showed that net operating results, which are based in part on billing rates, contributed to the losses incurred.

Initial Cost Estimates for Maintenance Orders Did Not Consider All Required Work

Initial cost estimates for maintenance work orders did not consistently consider all the work that needed to be done because the visual inspections to determine these estimates did not always disclose the true physical condition of the items to be overhauled. AIF estimates job costs when it receives a customer maintenance order. The estimated cost is based on the work requested and a visual inspection of the physical condition of the items to be repaired or overhauled. After determining the work required, AIF uses direct labor hour standards to estimate the time needed to complete the job and standard bills of materials to identify the materials and parts needed to refurbish the weapon or equipment being overhauled.

As work is performed, AIF's cost accounting system accumulates information on actual direct labor hours spent times the billing rate. However, most AIF customers are billed the estimated job cost that AIF

established when the work order was received. This is in accordance with DOD's stabilized billing rate policy, which is designed to protect AIF customers' appropriated funds from unanticipated fluctuations in AIF maintenance service costs. Any difference between estimated and actual costs—job profit or loss—is accumulated in the maintenance operation net operating results account.

According to AIF maintenance officials, many job costs significantly exceeded estimated costs because the initial inspections of the weapons or equipment to be repaired or overhauled did not reveal the actual condition of these items. Corrosion or damage to internal parts, such as cylinder walls of a diesel engine, cannot be determined until the engine is disassembled. As work progresses, the true physical condition of the items is revealed. Because this condition is often worse than originally anticipated, the items may have to be scrapped or extra direct labor hours may have to be expended to repair or overhaul them.

Since most AIF maintenance customers are billed only the estimated costs, unestimated costs to disassemble and inspect items that are ultimately scrapped or to correct unanticipated physical deterioration of the items will cause actual job costs to exceed amounts billed to customers. For example, it takes at least 15 direct labor hours to disassemble a 6.2-liter diesel engine to determine whether it can be overhauled or must be scrapped. If an engine must be scrapped, another diesel is disassembled, at a cost of an additional 15 direct labor hours, to determine whether or not it can be overhauled. This process continues until the depot has overhauled the number of engines called for in the order. As we reported in January 1993,² AIF maintenance operations have experienced an estimated 70 percent scrappage rate for 6.2-liter diesel engines brought in for overhaul. Accordingly, an order to repair 1,000 engines might require the depot to bring about 3,300 engines into the maintenance process because of unanticipated physical deterioration. Thus, the cost of the 15 direct labor hours for initial disassembly to determine the condition and repairability of up to 2,300 engines would not be billed to AIF's customer, but be recorded as a loss on the maintenance order.

Our comparison of estimated to actual costs for 25 judgmentally selected customer orders at the four maintenance depots included in our review showed that AIF incurred a net loss on these orders totalling \$1.6 million. Appendix I summarizes our analysis of these 25 projects.

²Financial Management: Poor Internal Control Has Led to Increased Maintenance Costs and Deterioration of Equipment (GAO/AFMD-93-8, January 25, 1993).

Our January 1993 report also stated that at four depots reviewed in detail, additional costs were incurred on customer orders to correct unnecessary physical deterioration caused by the unprotected shipment and storage of items awaiting entry into the maintenance process. For example, on one order to overhaul 6.2-liter, 8-cylinder diesel engines, 80 percent of the loss was attributed to extra direct labor hours used to correct unanticipated physical deterioration of the engines. Our report stated that for three orders to overhaul 6.2-liter, 8-cylinder diesel engines, actual costs exceeded the estimated costs billed customers by 42 percent to 89 percent.

AIF's maintenance depots did not keep historical records of scrappage rates by type of weapon or equipment. If AIF compiled and analyzed this type of data, it would have critical information needed to develop more appropriate standard job costs and more realistic maintenance estimates.

Nonmaintenance and Unnecessary Costs Were Charged to Maintenance Jobs

AIF's cost accounting system for maintenance operations did not include the controls needed to preclude nonmaintenance and unnecessary costs being charged to customer maintenance work orders as direct labor hours. When depots estimated costs of maintenance jobs, they did not include nonmaintenance costs charged as direct labor hours and, consequently, did not bill customers for them. However, as we previously reported, AIF has charged nonmaintenance and unnecessary costs as direct labor to maintenance jobs.

In our January 1993 report on AIF's internal controls over depot maintenance operations,³ we stated that at four depots reviewed in detail, nonmaintenance work that should have been charged to other appropriated funds was charged to customer maintenance orders as direct labor. For example, on an order to overhaul 2.5 ton trucks, the depot included in direct labor charges 457 hours of Army Reservist training, 193 hours of General Supply Directorate clerical support, and 52 hours for painting vehicles in preparation for a depot visit by AMC and AIF headquarters officials.

We also reported in May 1992⁴ that two Army maintenance depots were making unnecessary repairs, potentially resulting in unnecessary costs. Specifically, these depots were overhauling items when only minor repairs

³See footnote 2 in this chapter.

⁴Army Maintenance: Savings Possible by Stopping Unnecessary Depot Repairs (GAO/NSIAD-92-176, May 5, 1992).

were needed. We estimated that as a result of this practice, one depot incurred as much as \$1.1 million in unnecessary costs.

Because nonmaintenance costs were inappropriately charged as direct labor hours on maintenance jobs and unnecessary work was performed, the recorded costs on customer maintenance orders increased. To the extent that these nonmaintenance and unnecessary costs exceeded initially estimated job costs billed to AIF customers, they contributed to losses on the individual maintenance jobs and increased total annual operating losses. In addition, because recorded costs are considered in developing future billing rates, these inappropriate charges could have the effect of artificially increasing the billing rate.

Excess Direct Labor Capacity and Changes in Scope of Work Contributed to Losses

When AIF has more direct labor capacity than it needs to complete its work orders, the cost of this excess labor is a loss to AIF because it is not billed to the customer. Also, if scope of work changes on customer maintenance orders require more direct labor than agreed to by the customer and AIF, the cost of the additional direct labor results in a loss to AIF. The Base Closure and Realignment Commission's recommendations included realignments of responsibilities at selected AIF maintenance depots which, if implemented, could affect the level of excess direct labor capacity.

Excess Direct Labor at AIF Depots

Because of the current peacetime environment, DOD directed Army to downsize by about 400,000 military and 77,000 civilian personnel over fiscal years 1992 through 1995. This downsizing will directly affect AIF's maintenance operations because reductions in the numbers of soldiers will also result in reductions in the number of Army weapon systems. As a result, the need for AIF maintenance services will also decline. Table 2.3 shows the Army's planned reduction of direct labor hours needed at AIF's maintenance depots.

Table 2.3: Army Depot Maintenance Peacetime Workload

Fiscal year	Direct labor hours for in-house maintenance work (Thousands of hours)
1991	19,840
1992	19,202
1993	18,179
1994	16,986
1995	15,879

The declining demand for depot maintenance services presents AIF with a dilemma. On the one hand, if AIF does not balance its direct labor capacity with its direct labor needs, it will have excess direct labor which will be absorbed as an overhead cost. On the other hand, AIF cannot reduce its direct labor capacity below the level of experienced maintenance personnel needed to support any future mobilization.

The following illustration shows how excess direct labor results in losses to AIF. At one depot included in our review, officials told us that the depot incurred losses on overall operations because it was not balancing the decreasing workload with its direct labor resources. Specifically, the depot's proposed expenses for the fiscal year 1992 maintenance budget were based on using its 2.4 million hours of available direct labor. However, in its fiscal year 1992 proposed maintenance budget, AIF only assumed a workload that would require 2.2 million hours, thus creating 200,000 hours of excess direct labor capacity at the depot. It also proposed to DOD a 31-percent increase in the depot's customer billing rate. When DOD reviewed the AIF proposed depot maintenance budget, it approved funding a workload of 2 million hours, rather than the 2.2 million hours deemed necessary by AIF. This added another 200,000 hours of excess direct labor capacity. DOD also reduced the requested increase in the depot customer billing rate from 31 percent to 23.1 percent. During fiscal year 1992, actual customer demand for maintenance work at the depot required about 1.7 million direct labor hours. However, the depot still had a direct labor capacity of 2.4 million hours. The depot incurred a fiscal year 1992 loss for maintenance operations because it maintained 700,000 hours in unused direct labor capacity. Because depot attrition rates for direct labor were low, they did not significantly reduce excess labor capacity.

Unanticipated Changes in Scope of Work on Customer Orders

An Army Inspector General report⁵ on AIF maintenance operations found that more than 6,000 changes had been made to the fiscal year 1990 projected maintenance workload. Some changes required extensive unanticipated use of AIF resources, thus contributing to AIF losses on maintenance operations. For example, the report pointed out that a depot contracted to overhaul 10 M110 series self-propelled howitzers for a fixed price of about \$2.3 million. However, scope of work changes resulted in a cost overrun of \$375,000 for the five howitzers that had been overhauled as of July 1990. The cost to overhaul the remaining five howitzers as well as the cost overrun of \$375,000 was absorbed as a loss by AIF.

⁵AMC Inspector General Activity, Inspection of Army Industrial Fund Within AMC, March 29, 1991.

On another order to overhaul M-25 protective masks, the report disclosed that the depot billed its customer the agreed upon \$6 per mask but incurred actual costs of \$28 per mask. This order alone sustained a loss of \$1.43 million—actual costs of \$1.82 million less the \$390,000 billed the customer.

**Base Closure and
Realignment Commission
Recommendations Affect
Selected AIF Maintenance
Depots**

On September 20, 1993, the Congress accepted the Base Closure and Realignment Commission's report, which recommended realignment of responsibilities at several AIF maintenance depots. For example, in an effort to promote savings through interservicing of military maintenance work, the Commission recommended that tactical missile maintenance work be consolidated at one depot and that rotary wing aircraft maintenance be consolidated at two depots. These recommendations will have an impact on the excess direct labor capacity at the AIF maintenance depots. However, the Army will not be able to determine whether these changes will reduce or exacerbate the excess capacity at maintenance depots until it knows the amount of maintenance work actually funded and assigned to AIF depots as a result of the realignment of responsibilities.

**AIF Maintenance
Losses Reduced
Working Capital
Below Needed Levels**

AIF's continuing maintenance operation losses reduced its working capital for maintenance and storage operations—the resources it received to carry out customer maintenance orders—below the level needed to conduct operations. AIF maintained a consolidated AIF-wide cash account for its maintenance and storage missions rather than separate cash accounts. These missions accounted for 67 percent of 1991 AIF revenues. Consequently, to assess the impact of operating losses on cash, we analyzed the operating results (profits and losses) and the cash accounts of the combined storage and maintenance missions. For these two missions, AIF earned an overall profit in fiscal year 1987 and incurred losses in fiscal years 1988 through 1991. In fiscal years 1987 and 1988, AIF returned funds to its customers through refunds to their operations and maintenance appropriated funds. In fiscal years 1989 through 1991, AIF received additional funds to compensate for prior year losses. These transactions are summarized in table 2.4.

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Table 2.4: Cash Flows for AIF Maintenance and Storage Missions for Fiscal Years 1987 Through 1991

Dollars in millions

Fiscal year	Cash at start of year ^a	Operating results for year	Refunds to customers	Additional funds given to AIF ^b	Net cash adjustments ^c	Cash at end of year ^a
1987	\$246.3	\$20.8	\$(109.7)	\$20.7	\$(55.1)	\$123.0
1988	123.0	(84.3)	(70.9)		63.5	31.3
1989	31.3	(2.0)		23.9	(71.7)	(18.5)
1990	(18.5)	(70.9)		118.6	63.1	92.3
1991	92.3	(17.2)		162.1	(59.3)	177.9

^aAIF's maintenance and storage missions' fund balance.

^bThese funds include passthroughs and congressional appropriations distributed to AIF.

^cNet cash adjustments reflect the net total of adjustments to the AIF cash account flowing from other asset and liability accounts such as work-in-process, accounts receivable, and accounts payable.

During 1990, AMC and AIF conducted a special study of fiscal year 1989 transactions to determine why AIF's maintenance and storage missions cash account showed a deficit of \$18.5 million at fiscal year-end. This study concluded that the cash deficit was caused by (1) operating losses for the fiscal year which reduced AIF's cash and (2) prior year refunds to AIF customers' operations and maintenance appropriated fund accounts. This study is consistent with our analysis of the effects of DOD's reduction of AIF billing rate increases.

**Impact of AIF
 Operating Losses
 Lessened by
 Appropriations and
 AIF and DOD Actions**

To sustain operations when AIF maintenance and storage missions had an \$18.5 million cash deficit at the end of fiscal year 1989, the Congress provided AIF with appropriated funds, the Army transferred funds from its operations and maintenance appropriations to AIF, and DOD allowed AIF to implement billing rates higher than those initially approved. Beginning with fiscal year 1993, AIF billing rates include factors to recover prior year losses and to reflect depreciation on buildings and equipment.

As shown in table 2.5, AIF received \$199 million in additional funds during fiscal years 1989 through 1991 to lessen the impact of continuing operating losses from maintenance operations and to restore AIF's working capital to the level needed to sustain operations. These funds included passthroughs (which were transfers of funds to AIF from Army operations and maintenance appropriated funds to recover prior year losses) and congressional appropriations distributed to AIF.

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Table 2.5: Operating Results of AIF Maintenance Operations and Appropriations AIF Received

Dollars in millions

Fiscal year	Accumulated gain/(loss) beginning of year	Annual gain/(loss)	Prior period adjustment	Accumulated gain/(loss) before additional funds	Additional funds	Accumulated gain/(loss) at year-end
1989	\$(135.8) ^a	\$(6.2)	\$(.2)	\$(142.2)	\$10.2	\$(132.0)
1990	(132.0)	(42.3)	2.8	(171.5)	79.0	(92.5)
1991	(92.5)	(49.4)	(10.5)	(152.4)	109.8	(42.6)
		\$(97.9)			\$199.0	

^aAccumulated operating losses as of September 30, 1988. Data on operating results for AIF maintenance operations were not available for fiscal years 1988 and before.

For fiscal years 1988, 1989, and 1990, AIF implemented billing rates higher than those initially approved by DOD, as detailed in table 2.6.

Table 2.6: Proposed, Initially Approved, and Finally Implemented Customer Billing Rates for AIF Maintenance Operations

Fiscal year	Percentage increase (decrease) in rate		
	AIF proposed	DOD initially approved	AIF finally implemented
1988	25.6	(6.8)	14.85
1989	53.6	2.8	2.82
1990	16.5	10.4	20.64

In addition to the increases in customer billing rates, AIF—with the approval of AMC—charged maintenance customers the next fiscal year's billing rate for all orders received during the last quarter of any fiscal year. AIF further acted to mitigate the effect of continued losses on maintenance operations by increasing the prices on selected fiscal year 1988 and 1989 customer maintenance work orders.

AIF Billing Rates Modified to Recover Prior Year Losses and Reflect Depreciation

When AIF was incorporated into DBOF in fiscal year 1992, two major changes were made to its customer billing policies. Specifically, starting with fiscal year 1993, AIF billing rates included factors to (1) recover prior year losses and (2) depreciate AIF buildings and other fixed facilities. After incorporation into DBOF, AIF reported a \$62.6 million profit for fiscal year 1992, anticipated a \$53.4 million profit for fiscal year 1993, but projected an overall loss of \$116.0 million for fiscal year 1994. If AIF's actual financial results match these estimates, its profits and losses will cancel each other

out and AIF's \$233.7 million in cumulative losses at the end of fiscal year 1991 would remain unchanged at the end of fiscal year 1994, as shown previously in table 2.1.

In May 1993, we testified⁶ before the Subcommittee on Readiness, House Committee on Armed Services, that DOD's pricing guidance stated that the prices charged customers will include depreciation expense for military construction facilities. By the end of fiscal year 1994, DOD expects the accumulated depreciation charges to total \$80.5 million. However, the Congress has directed that these facilities be financed by military construction appropriations. As long as the Congress continues to separately approve and fund construction projects, including depreciation expense in the prices charged customers is inappropriate since these expenses are to be borne not by DBOF, but by the military construction appropriation.

Conclusions

AIF incurred losses primarily because billing rates were determined by a process of negotiation with DOD which did not focus on establishing rates at levels that recovered estimated costs. Some losses resulted from factors beyond AIF's control, such as DOD policy decisions, workload changes, and downsizing of the Army. However, other major contributing factors, particularly ineffective cost estimates for individual jobs and ineffective controls over accounting for actual costs, reflected weaknesses within AIF. Because of the ineffective accounting controls, we could not quantify the effect of each of the multiple causes of continued AIF losses.

The losses caused AIF's cash balances for maintenance and storage operations to fall below the level necessary to continue operations. While a shutdown of AIF operations was prevented through special appropriations and actions taken by AIF and DOD, these measures undermined AIF's overall purpose of operating on a businesslike basis by recovering the full costs of services provided to customers and accurately reporting operating results.

Recommendations

We recommend that the Secretary of Defense direct the DOD Comptroller to (1) set AIF billing rates to recover realistic estimates of the costs that will be incurred in providing the goods and services to AIF customers, (2) adjust prices only by factors directly related to the costs expected to

⁶Financial Management: Opportunities to Strengthen Management of the Defense Business Operations Fund (GAO/T-AFMD-93-4, May 13, 1993).

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be incurred, and (3) request congressional appropriations whenever accumulated prior year losses are adversely affecting the operation of AIF.

Reduced Work Demand and Excess Labor Capacity Undermine Competition Initiative Savings

Army's \$138.2 million in projected savings from its initiative to compete jobs with the private sector will in all likelihood not be realized. While competing work among depots and private contractors has resulted in lower prices charged to the depot customer on individual maintenance jobs, it has not generated overall program savings on depot maintenance operations for several reasons. First, the initiative does not reduce the costs associated with excess direct labor capacity at the depots. The Defense Business Operations Fund fiscal year 1994 budget estimate projected that excess AIF maintenance depot capacity would cost about \$38 million for that year. Even though the cost of the excess capacity is substantial, the overriding need to maintain readiness places practical constraints on reducing it. The recommendations of the Base Closure and Realignment Commission, which were recently accepted by the Congress, will affect this overcapacity. However, the recommendations had not been implemented at the time of our review and, thus, their impact could not be assessed.

As long as excess direct labor capacity exists, the competition initiative will not lead to savings on depot operations taken as a whole. In addition, if actual costs of completed work exceed the amounts bid, the resulting loss would have to be recouped through increased prices charged to in-house work or through appropriations.

AIF's Pilot Competition Program

As mentioned in chapter 1, the military service undersecretaries in 1990 agreed to develop a joint long-term plan to reduce depot maintenance costs over 5 years. The Army's portion of this plan included an initiative to compete maintenance jobs among depots and private sector suppliers of maintenance services. Army initially projected cost savings of about \$60 million from this initiative for fiscal years 1991 through 1995. In fiscal year 1993, the Army revised these projected savings upwards to \$74.2 million and projected an additional \$64 million in savings for fiscal years 1996 and 1997.

Army initiated its competition pilot in fiscal year 1991. As part of this program, each maintenance depot prepared a bid on a maintenance job for which bids were also solicited from private sector organizations. Bids were awarded on the basis of the technical capability of the bidders and the amounts bid. Subsequent to the pilot program, the Army continued to compete depot maintenance with the private sector and, as of August 31, 1993, had completed 24 competitions.¹

¹Depot Maintenance, GAO/NSIAD-93-292R, September 30, 1993.

Depots Used Lower Billing Rates for Competed Maintenance Projects

AIF established special task forces at its depots to prepare these bids. In doing so, the task forces did not use standard AIF billing rates or the amounts billed customers under the in-house maintenance program for similar work. Instead, they used selected information from AIF's Cost Accounting System and relied on their job experience to develop bids that reflect the (1) estimated costs of the actual materials to be used in carrying out the work and (2) actual individuals who would do the work.

Based on discussions with Army officials responsible for overseeing the pilot competition program, we determined that the bids only considered the actual costs of doing the work called for, in contrast to the in-house billing rates that consider all costs at each depot. For example, the direct labor rate for the in-house maintenance program averages the total cost of all direct labor at the particular depot and, consequently, reflects the wage rates of all depot workers. Also, depots routinely based the overhead cost charged to in-house noncompeted jobs on a percentage of the average direct labor rate. For the pilot program, the bid cost included only the actual wage rates of the individuals that were to carry out the work called for in the solicitation for bids, which was generally lower than the direct labor cost charged for in-house work. Since overhead is charged as a percentage of direct labor, a lower overhead charge was also applied to the competed work than to the in-house work.

Our analysis of four bids under this program showed that they were between 25 percent and 67 percent lower than prices that would have been charged in-house customers using DOD approved billing rates. As discussed in chapter 2, our analysis of 25 selected customer orders showed that the amounts billed on those orders resulted in overall losses to the depots. GAO and the Army Audit Agency reported that the savings the Army achieved from the fiscal year 1991 pilot competition programs were considerably less than the 20 percent savings that were expected.² While we are still analyzing the results of the competitions that have been conducted to date, our preliminary work indicated that the military services' lower-than-expected savings can be attributed, to a large extent, to (1) a declining demand for work that has not only caused workloads to

²In May 1993, we testified before the Subcommittee on Readiness, House Committee on Armed Services, that DOD has increasingly used public/private competition as a tool to reduce depot maintenance cost on individual jobs. Our preliminary review of DOD's competition program indicated that (1) the military services have overly optimistic assumptions on how rapidly they will be able to expand their program and (2) these programs have achieved very little actual savings thus far and are unlikely to result in the savings that are being projected. See Depot Maintenance: Issues in Management and Restructuring to Support a Downsized Military (GAO/T-NSIAD-93-13, May 6, 1993). See also Review of Defense Management Report Decision 908, Consolidation of Depot Maintenance, Army Audit Agency, Information Memorandum Number 92-R3, February 7, 1992.

be eliminated from the program but also limited the amount of savings that were achieved on the workloads that remained in the program, (2) unanticipated cost increases, and (3) a certain amount of fixed costs that must be shifted to noncompeted workloads when a competition results in the transfer of a workload from the public to the private sector.

Noncompeted Work Absorbs Disproportionately High Overhead Cost

Our analysis of the amounts historically charged to depot customers for maintenance services indicates that in all likelihood Army will not realize any savings from its competition initiative. Although the competition initiative will reduce prices charged to the depot customer on individual maintenance jobs competed with private sector suppliers, it will not result in overall reductions in the cost of depot maintenance operations. For example, the Army Audit Agency reported in February 1992³ that the Army's competition pilot program would likely result in a 10 percent net cost increase, rather than the projected 20 percent cost savings.

The pilot competition initiative only affected the revenues the depot received for jobs it won by underbidding private sector suppliers of maintenance services. It did not affect the actual costs incurred in carrying out the maintenance work called for and charged to the job. Specifically, costs such as depot overhead (which includes the costs of excess direct labor capacity) would be incurred and charged to all maintenance jobs regardless of the revenues received on the jobs. To the extent that job costs exceeded job revenue, they would be considered a loss and be recovered through higher billing rates in future years, under current DOD pricing policies. AMC, the primary customer for the depots, may receive savings from the lower charges on competed jobs. However, if those jobs result in depot losses, the savings will be offset by higher amounts charged on work AMC gives to the depot under the in-house noncompeted program.

Reduced Workload Will Increase Upward Pressure on Billing Rates

The premise behind the competition initiative was that competition with the private sector would encourage the depots to become more efficient by reducing the cost of carrying out the work. However, a major component of that cost is the depot's overhead, which includes the cost of excess direct labor capacity allocated to all maintenance jobs based on direct labor charges. As discussed in chapter 2, excess direct labor capacity has contributed to losses on individual customer maintenance orders and on overall depot maintenance operations. Under the competition initiative, the depots did not have the authority to reduce or

³See footnote 2 in this chapter.

eliminate their excess direct labor capacity. The cost of excess capacity can be eliminated only by balancing the depots' direct labor capacity with their demand for maintenance services.⁴ Recently, DOD has acknowledged that the depot maintenance capacity at all military services exceeds the demand by between 25 percent and 50 percent.

Furthermore, the competition initiative will actually exacerbate the excess direct labor capacity to the extent that private sector suppliers win work away from the depots. In those cases, depot overhead costs would continue despite the fact that no revenue would be generated. In the final analysis, given the excess capacity, any contracts won by organizations other than the depots will increase depot losses.

Some Increased Costs Due to Excess Capacity May Be Unavoidable

While the competition initiative's goal of increasing the efficiency of Army depot maintenance is vital, maintaining readiness so that the Army can fulfill its mission is of paramount importance. Achieving this goal will involve determining (1) the optimum size of depot maintenance resources, including underused capacity to support future mobilizations and other unanticipated work demands, and (2) the level of private sector capacity to be maintained to support Army operations.

The Defense Business Operation Fund (DBOF) estimated that excess capacity at AIF's maintenance depots would cost about \$38 million in fiscal year 1994. This excess capacity is maintained to respond to any increase in the demand for depot maintenance services as a result of mobilization. For fiscal year 1994, DBOF proposed that AIF customer billing rates for maintenance services be reduced to remove the costs of this underused capacity from amounts billed customers. The Army included \$38 million in its fiscal year 1994 operations and maintenance budget request to separately fund the underused capacity of AIF maintenance depots.

Conclusions

Diverting work from the depots to the private sector will serve to increase excess capacity and result in even higher billing rates to sustain break-even operations. DBOF's proposed approach to separately fund the cost of excess capacity at AIF's maintenance depots recognizes that the excess capacity is a readiness, not a maintenance, cost. This will enable

⁴The Base Realignment and Closure Commission recommendations, which were approved by the Congress on September 20, 1993, realign workload among AIF maintenance depots. Whether these realignments balance the depots' direct labor capacity with the demand for maintenance services will only be determined after actual operating experience is gained under the implemented recommendations.

**Chapter 3
Reduced Work Demand and Excess Labor
Capacity Undermine Competition Initiative
Savings**

the Congress to make annual decisions regarding the level and cost of excess capacity needed to support mobilization. It will also enable DBOF to set more realistic maintenance billing rates because the cost of excess capacity will no longer be included in maintenance costs.

Financial Results of Maintenance Work on 25 Customer Work Orders

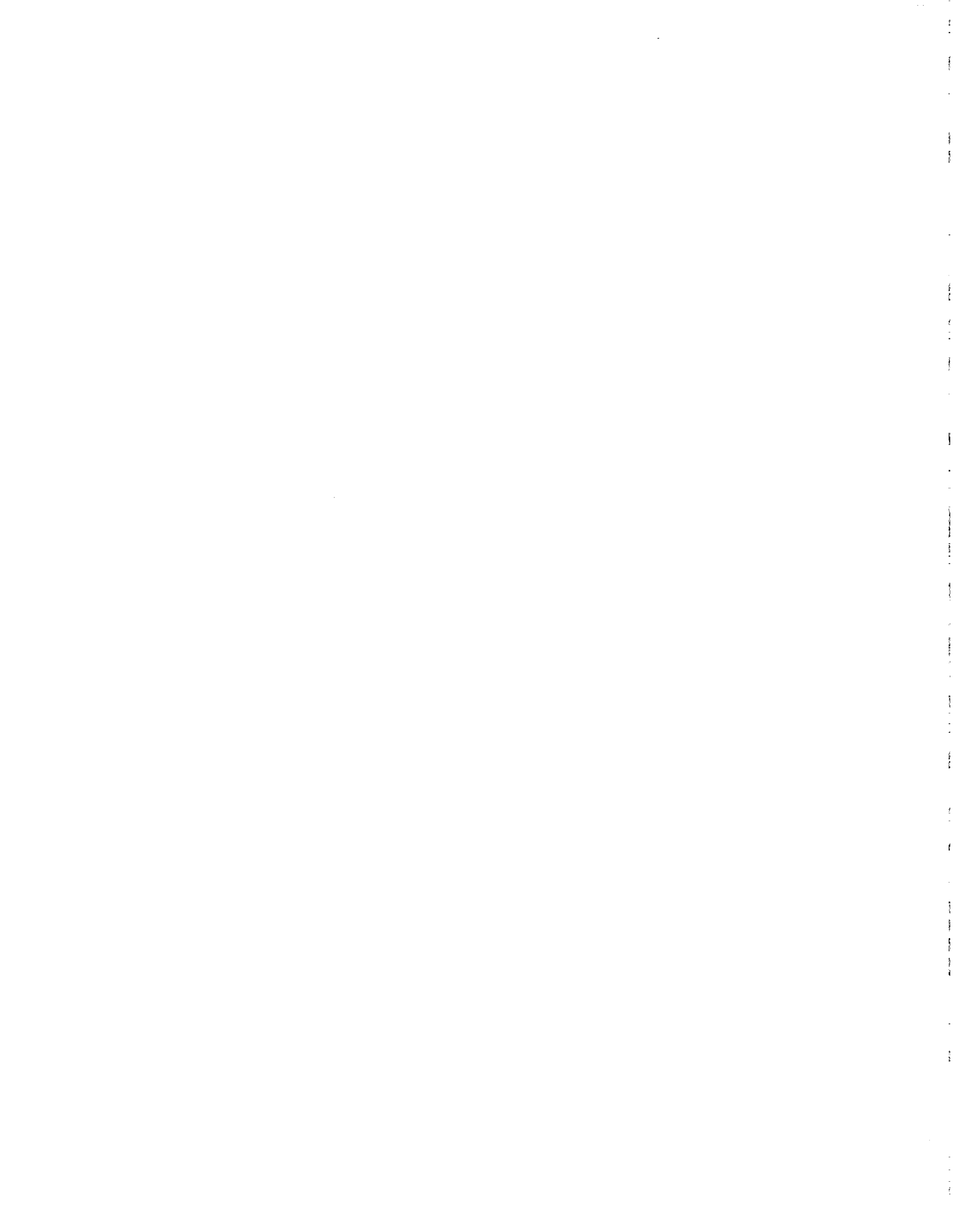
Dollars in thousands

Depot	Maintenance work	Amount billed customers	Actual cost	Profit realized	Loss incurred
Anniston	Overhaul of heavy tanks (7 work orders)	\$11,372	\$11,863		\$491
		4,168	4,202		34
		872	1,130		258
		315	289	26	
		600	334	266	
		8,598	9,039		441
		313	96	217	
Corpus Christi	Overhaul of helicopter engines and components (work orders for 6 customers)	12,088	9,874	2,214	
		407	96	311	
		1,717	735	982	
		154	97	57	
		16	22		6
		51	60		9
Letterkenny	Overhaul of howitzers	1,154	1,485		331
	Overhaul of 2-1/2 ton trucks	7,065	7,759		694
	Overhaul of howitzers	9,915	11,246		1,331
	Overhaul of howitzer launchers	2,778	2,846		68
	Overhaul of hawk field management equipment	156	73	83	
Tooele	Overhaul of 2-1/2 ton trucks (7 work orders)	2,250	2,636		386
		1,000	748	252	
		1,225	1,067	158	
		1,650	1,985		335
		2,355	2,878		523
		650	771		121
		9,263	10,457		1,194
Total				\$4,566	6,222

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