

GAO

Testimony

Before the Subcommittee on Readiness, Committee on Armed Services, House of Representatives

For Release on Delivery Expected at 10:00 a.m., EST Thursday March 26, 1992

DEPOT MAINTENANCE

Issues in Management and Restructuring to Support a Downsized Military



146301

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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss depot maintenance Activities and the role of the depot maintenance system in the future restructured and downsized military departments. While my statement focuses primarily on the Air Force, I will also be discussing related Navy and Army depot maintenance issues.

Drawing on past and ongoing work, my testimony today will address

- the Air Force depot maintenance system--past, present, and future,
- Defense Management Report initiatives to improve depot maintenance activities,
- additional opportunities to generate management efficiencies in Air Force depot maintenance operations, and
- some related Army and Navy depot maintenance issues.

THE AIR FORCE DEPOT MAINTENANCE  
SYSTEM--PAST, PRESENT, AND FUTURE

The Air Force conducts depot-level maintenance--its most complex maintenance tasks--at five Air Logistics Centers, two specialized repair centers, and hundreds of contractor facilities. The Air Force Logistics Command (AFLC) manages the depot maintenance program, with a yearly depot maintenance, modification, and overhaul work load including about 1,300 aircraft, 7,000 engines, and 1.1 million reparable components. Depot maintenance activities also include repair and modification at operating bases by field teams and combat logistics squadrons. Other repair work that might be conducted at depots is now accomplished by military personnel in intermediate level maintenance facilities that have been augmented with depot plant equipment.

Air Force depots are large--with business activities that would make them one of the top 10 industrial corporations in the United States. The fiscal year 1992 Air Force depot maintenance work load is estimated at about \$3.7 billion: activities valued at about \$2.5 billion are expected to be accomplished in government facilities with the remaining work load to be contracted out.

The Air Force depot system is now sized and organized to support a European land battle and a simultaneous regional contingency. The current operation is sized to support a wartime or emergency surge to 160 percent of the peacetime work load and to be able to sustain the total force for many months until U.S. industry could ramp up to deliver new equipment.

The Air Force depot maintenance system responded readily to support Desert Shield/Desert Storm requirements--accelerating the repair of

70 aircraft and 106,515 parts from August 1990 through February 1991. The acceleration of parts repair was about a 19-percent increase over the average monthly peacetime work load for the 6-year period ending September 1990. AFLC officials told us the depots did this without significant strain and with little increased activity.

The ease with which Desert Shield/Desert Storm requirements were met in combination with (1) the downsizing of the Air Force to reflect changes in the threat and budget constraints, (2) the recent aircraft modernization program designed to produce more reliable and less maintenance-intensive aircraft, and (3) the potential transition of more maintenance to the private sector or other government operations are factors that will greatly influence future Air Force depot maintenance capability and capacity requirements.

While the Air Force is already initiating improvements in its maintenance management and operations, we are concerned that it may not be considering all viable alternatives and options and that in some cases the initiatives it selects may not be well thought out, practicable, or represent the most cost-effective solutions to meet required readiness.

#### DEFENSE MANAGEMENT REPORT AND OTHER INITIATIVES

Several of the ongoing Defense Management Report Decisions (DMRDs) affect the organization, work load, and work force required for Air Force depot operations. Two of these directives--the defense supply depot consolidation and corporate information management--have already been discussed in our earlier testimony.

The DMRD having the greatest effect on depot maintenance is number 908--Strengthening Depot Maintenance Activities. This initiative directs the Air Force to save \$1.1 billion from fiscal year 1991 to 1995 by reducing the cost of depot maintenance operations. The Air Force developed a business plan and strategy for generating these savings. Sixty percent are to be generated by increasing competition. Other savings are expected in such areas as reducing labor (16 percent), reducing equipment and supplies (8 percent), improving material management (6 percent), and increasing capacity utilization (2 percent). It is too early to evaluate the Air Force's success in achieving these savings, although we plan to do so as a part of our response to this Committee's direction that by 1994 we evaluate the implementation and cost-effectiveness of DOD depot maintenance work loads that are performed through competitive procedures. However, as part of other ongoing work we have done some limited analysis in this area.

### Savings Targeted Through Increased Competition

The Air Force plans to achieve most savings in its depot maintenance operations through a comprehensive public/private competition program for depot maintenance work. Public/private competition was first initiated by the Navy in fiscal year 1988 and was formally adopted by the Department of Defense (DOD) in fiscal year 1991 as a strategy to reduce depot maintenance costs. I will have several comments to make about the Navy's program later in this statement.

As a part of the public/private competition program, the Air Force awarded five contracts valued at \$33.5 million during fiscal year 1991. Three contracts were awarded to the private sector. The Air Force estimates the total savings from these competitions will be \$14.1 million between fiscal years 1992 and 1995. During fiscal year 1992 the Air Force plans to award 10 contracts and is currently identifying work load competition candidates for fiscal year 1993.

DOD targeted savings for the Air Force through increased competition for fiscal years 1992 and 1993 are \$66 million and \$111.5 million, respectively. Air Force officials state that they cannot achieve these savings through public/private competition alone because the amount of work that can be competed is limited by congressional direction in last year's authorization bill. The limit is 10 percent of the depot work load that is excess to service core depot maintenance requirements. Therefore, the Air Force projects that the difference between targeted savings and the expected savings from public/private competition will be \$33.5 million for fiscal year 1992 and \$47 million for fiscal year 1993.

Independent of the public/private program, we believe that the Air Force has other opportunities to generate savings through increased competition. The total value of depot maintenance work load that was contracted out in fiscal year 1991 was \$1.1 billion, with the expected value of contracts for fiscal year 1992 increasing to \$1.2 billion. While the Air Force was not able to provide us detailed information regarding the percentage of contracted work load that was awarded competitively, one official estimated this percentage to be between 40 and 50 percent--leaving an estimated \$600 million to \$720 million awarded noncompetitively.

We reported<sup>1</sup> to Congress in 1984 that DOD should develop a more effective strategy for managing commercial maintenance activities for military systems and equipment and that the department should

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<sup>1</sup>GAO Testimony before the House Government Operations Committee, Subcommittee on Legislation and National Security, Mar. 14, 1984.

strive to compete a greater percentage of its commercial maintenance contracts. We also reported that when non-competitive contracting methods are used, increased oversight efforts are needed to ensure the government negotiates reasonable prices. These views seem equally appropriate today in trying to achieve greater savings in the \$1.2 billion Air Force depot maintenance work load that is being contracted out.

Changes in Air Force Maintenance Will Impact Depot Operations, Readiness, and Support Costs

Aircraft maintenance currently takes place at three levels: organizational, intermediate, and depot. Organizational and intermediate maintenance are generally performed by Air Force military personnel on Air Force bases, while depot maintenance-- which requires more extensive facilities than available at the bases--is conducted at either government or contractor industrial facilities.

Organizational-level maintenance is usually performed at operational bases and includes such functions as inspecting, servicing, lubricating, adjusting, and replacing parts, minor assemblies and subassemblies. Intermediate maintenance usually takes place in shops on operational bases and includes such functions as calibration, repair, or replacement of damaged or unserviceable parts, components, or assemblies; the emergency manufacture of non-available parts; and technical assistance to using organizations.

Emphasizing the improvements in reliability and maintainability of newer aircraft and the need to reduce military force structure and the investment in intermediate level test equipment, the Air Force is planning to change to two levels of maintenance. The objective is to transfer intermediate level maintenance currently done at operational units all over the world to one of the five Air Force depots. Our preliminary findings indicate that the Air Force may not yet have adequately tested the two-level maintenance concept to support this decision at this time.

Air Force weapons acquired over the past 10 to 15 years were evaluated using maintenance engineering analysis to determine the relative cost-effectiveness of two versus three levels of maintenance for individual components. The results of this analysis determined the technical data, support equipment, and spare and repair parts that would be needed to support the chosen maintenance concept. It now appears that the Air Force will decide to go to two levels of maintenance without going through a similarly rigorous analysis to confirm the cost-effectiveness of this decision.

The Air Force has, however, conducted two operational tests. The Strategic Air Command conducted a two-level maintenance test in

1989, and the Tactical Air Command completed its two-level test in March 1992. Both tests involved the participation of the Air Force Logistics Command and tested the feasibility of consolidating intermediate repair of selected items at depots.

The Strategic Air Command study concluded that the concept is viable and could reduce personnel and equipment costs. However, the report cautioned that care should be taken to ensure that the reliability and availability of spare parts are considered when designing the implementation of two-level maintenance.

To increase efficiencies while avoiding lengthy depot processing times and retaining operational flexibility, the Strategic Air Command consolidated intermediate maintenance at three regional repair centers rather than centralizing the repair at the depot. According to Air Force officials, the regional repair center approach achieved cost savings through consolidation while minimizing an increased pipeline of spare parts due to increased depot processing time.

The Tactical Air Command test evaluated the feasibility of repairing 32 different F-16 (block 40) avionics black boxes at Ogden Air Logistics Center rather than at the two operational units involved in the test. Preliminary results indicated that intermediate repairs can be conducted at a depot. However, the major questions appear to be whether making these repairs at the depots would be cost-effective in peacetime and would support required operational readiness objectives during a conflict. Our limited analysis indicates the test conditions did not appear realistic and the results may not be achievable on a large scale under normal operational conditions. Furthermore, the size and duration of the test program were very limited. Finally, given that the avionics equipment from the F-16 are some of the Air Force's most reliable, the results from this test may not be representative.

The Air Force is also convening a working level meeting of major commands, reserve, guard, depot, and air staff personnel to examine the implementation of intermediate maintenance at depots, rather than continuing this maintenance at regional repair facilities or operational bases. In working this issue, the Air Force has an ambitious schedule, with plans to brief the Chief of Staff and Secretary of the Air Force in July 1992 regarding the implementation plan.

Performing intermediate maintenance at depots, under current depot systems, may require additional funds for more spare parts and more transportation. One study estimated that moving to two-level maintenance could add additional spares requirements to support the longer depot repair pipeline--with estimates ranging from \$111 million to \$1.1 billion. Additional spare parts would reduce the savings that might be generated by decreasing personnel and

test equipment. One way to reduce the supply pipeline would be to decrease the amount of time required to move parts between operational bases and depots. However, premium transportation also increases costs.

Another initiative, the Stock Funding of Reparables (DMRD 904), moved Army and Air Force depot-level reparable--both new procurement and repairs--to the stock fund. Costs of reparable will now be charged to customers ~~in the operating~~ commands as an incentive to reduce costs. In the past, reparable spares were issued free to operational units. Projections of savings that are anticipated as a result of this initiative are based on the premise that base level repair units will fix more items locally instead of returning them to the depots for repair--decreasing depot level repairs by an estimated 10 percent.

Our ongoing review of the implementation of stock funding indicates that the current Air Force initiative to reduce the levels of maintenance from three to two will directly counter this objective. By decreasing the capability and capacity of operational units to accomplish repairs, the number of unserviceable spares that will be returned to depots for repair will increase rather than decrease. Consequently, it is questionable whether expected cost savings from the implementation of stock funding will be achieved. In a December 1991 report<sup>2</sup> we also questioned these savings because neither the Army nor Air Force had systems in place to accurately account and bill for reparable items. Therefore, they were likely to encounter problems and might not realize the \$2.1 billion in related savings that DOD had estimated as a result of this DMRD.

Furthermore, changing from three to two levels of maintenance might also have operational impacts. Many veterans of Desert Shield/Desert Storm noted that the efficiency and effectiveness of maintenance personnel in the operational units and the establishment of intermediate maintenance capabilities in the Persian Gulf region and at bases in Europe contributed significantly to the Air Force's success in consistently generating mission capability rates of 93 to 95 percent during this conflict. Had these capabilities not been available, assets that could not be repaired at the operational level would have had to be returned to a U.S. depot for repair.

Given the massive implications of the changes involved in a decision to transition to two-level maintenance, we believe additional time is needed for more strenuous and objective study, evaluation, and testing of the costs and benefits of the various options available. We will continue to evaluate the implications

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<sup>2</sup>Financial Management: DOD Faces Implementation Problems in Stock Funding Repairable Inventory Items (GAO/AFMD-92-15, Dec. 26, 1991).

of two-level maintenance and related issues, such as the stock funding of reparable, and will report our findings to the Committee as information becomes available.

#### OPPORTUNITIES TO GENERATE OTHER EFFICIENCIES IN AIR FORCE DEPOT MAINTENANCE OPERATIONS

Based on prior and current work, we believe there are several opportunities to improve the efficiency and cost-effectiveness of Air Force depot maintenance operations.

##### Expedite Transition of Interim Contractor Support To Depots

The Air Force defines interim contractor support (ICS) as temporary logistics support provided by a contractor for new weapon systems, equipment, and modifications. ICS is used when an in-house maintenance capability is planned but is not yet in place--usually because the system design is not stable or because the required support resources such as equipment, technical data, and trained personnel are not available when the system is initially fielded. The Air Force should consider mission requirements, costs, depot work loads, and existing capabilities in deciding to support these items in-house rather than depending upon permanent contractor support. DOD policy requires that ICS be planned well in advance and kept to a minimum, both in amount and duration.

In a 1983 hearing,<sup>3</sup> Congress criticized the Air Force for increasing ICS costs and the length of time some systems required this "temporary" support. Several contributing factors were cited, including (1) poor up-front planning, (2) deferral of support items to cover funding shortfalls in production, (3) concurrent development and production efforts resulting in systems fielded before testing was complete and the design stable, (4) program managers lacking control over some support elements, and (5) managers not held accountable for actions adversely impacting long-term support requirements.

Our ongoing review of ICS has identified some of the same conditions. Total ICS costs have tripled since 1983 to an estimated \$328 million in fiscal year 1992. ICS is extended over a long period of time for some systems like the B-1B, which is expected to continue some type of interim contractor maintenance for at least 17 years at a cost of over \$1.5 billion. Inadequate logistics support planning, concurrent development and production, problems in achieving design stability, and budget reductions in

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<sup>3</sup>Hearing before House Appropriations Committee, Subcommittee on Defense, May 10, 1983.



support resources contributed to the B-1B transition problems. The Secretary of the Air Force testified recently that savings of \$700 million are possible on the B-1B if in-house capability were expedited. While this amount appears to be an overstatement of potential savings, we believe savings are achievable.

Similarly, it was only recently that the Air Force began actively planning the transition to depot maintenance capability for the C-17. Officials currently estimate that ICS for depot-level repairs will be required for at least 8 years after the C-17 is fielded in 1993. Nonetheless, maintenance officials identified items they could begin repairing at the depot almost immediately if the required resources were put in place.

ICS can be an effective tool in minimizing Air Force facility investment until system design is stable and requirements are established. However, a failure to obtain a timely in-house capability can increase costs. During our ongoing review we found that the Air Force has undertaken some initiatives to improve ICS planning and management. While some of these appear to have merit, additional efforts are needed to ensure that in-house capability is attained economically and timely. We expect to have several recommendations in this area when our report on ICS is issued later this year.

#### Repair Unserviceables to Reduce Procurement of New Spares

We recently reported<sup>4</sup> that the Air Force had unserviceable spare parts valued at about \$11.4 billion. While some of these assets may be obsolete, many others could be repaired to meet current requirements for spares. On average, the cost of repair is estimated to be about 17 percent of the cost of buying a new item.

In our ongoing review of the management of unserviceable spares, we found that the AFLC planned to buy spares for fiscal year 1992 estimated to cost about \$82 million when unserviceable spares of the same types were available to be repaired. Our preliminary analysis indicates that about \$69 million could have been saved had the Air Force used available unserviceable spares. Using these spares also would reduce unserviceable inventories and the risk of obsolescence, and would avoid the inventory holding costs<sup>5</sup> for these items, approximately \$8 million.

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<sup>4</sup>Financial Audit: Aggressive Actions Needed for Air Force to Meet Objectives of the CFO Act (GAO/AFMD-92-12, Feb. 19, 1992)

<sup>5</sup>Holding costs include the cost of capital, cost of obsolescence (including pilferage and breakage), and the cost of storage.

AFLC officials told us depots were unable to repair all unserviceable spares to meet requirements primarily because repair funding had not kept pace with computed requirements. For example, during the first 8 months of fiscal year 1991, the Oklahoma City Air Logistics Center received repair funding for 77 percent of its stated repair requirement over that period. Furthermore, lack of repair funding has created a backlog of unmet repair requirements estimated to be \$160 million for the 5 Air Force depots. Air Force officials noted that unserviceable spares decreased as a result of increased repair funding made available to support Desert Shield/Desert Storm operations.

In this ongoing review, we also found that the Headquarters, AFLC was not allowing the Air Logistics Centers flexibility between buy versus repair of reparable as envisioned by DOD under the stock funding of reparable concept. Because of our inquiry and the clarification of implementation procedures under the stock funding of reparable concept, this funding flexibility has now been increased.

#### Implement Reliability Centered Maintenance

The objective of reliability centered maintenance is to reduce maintenance requirements and costs by repairing only those items needing repair. The concept was an outgrowth of maintenance programs developed by the commercial airline industry. A June 1991 report<sup>6</sup> by the DOD Office of the Inspector General stated that the Air Force had not fully implemented or sustained reliability centered maintenance for all aircraft requiring depot maintenance. The Inspector General reported that full implementation by the Air Force could reduce depot maintenance costs by up to \$76.8 million annually--and \$460.8 million over the 6-year Future Years Defense Program.

The Air Force response to this report noted that it would not realize the 14 percent savings estimated by the Inspector General. However, Air Force officials noted they are planning to validate aircraft depot level maintenance tasks using reliability centered maintenance methodology for nine aircraft systems. Although some of these studies have already begun, the Air Force reports that efforts to date have not identified substantial savings.

At congressional direction we have initiated an assessment of (1) the progress made by the Air Force in fully implementing its reliability centered maintenance procedures and (2) an analysis of cost savings data provided by the Air Force in its fiscal year 1993 budget.

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<sup>6</sup>Aircraft Depot Maintenance Programs (Audit Report, DOD Office of the Inspector General, Report Number 91-098, Jun. 17, 1991).

## Improve the Depot Maintenance Requirements Determination Process

An essential factor in managing a large, complex industrial operation such as the depot maintenance system lies in the accuracy, timeliness, and availability of required data generated by current information systems. We have reported on several occasions that the Air Force needs to improve its ability to more accurately determine its depot maintenance requirements because these requirements are overstated, have inaccurate data, and are of little direct use to the Air Force.

The process of computing depot maintenance requirements is complex and lengthy: it involves the calculation and validation of data from several data management systems for thousands of individual repair items. The process involves predicting the quantities of items that will fail and be returned to the depot by the users and how many will be needed to support future operations. These predictions are made years in advance. Air Force requirements for a specific program year are recalculated and revalidated many times between initial computation and the completion of work several years later. During this time changes in the program, funding, policies, and factors used to compute requirements cause significant fluctuations in both the total requirement and its composition. As a result, repairs accomplished during a fiscal year might be significantly different than the projected and budgeted repairs for that year.

We believe that one critical factor essential to enhancing the credibility of the depot repair requirements determination process is improving the accuracy of the initial requirements computation and validation of subsequent computations. In September 1989, we reported<sup>7</sup> that the Air Force had efforts under way to improve depot maintenance requirements determination process by modernizing AFLC's logistics management system and studying the current requirements determination process.

Since 1984, the Logistics Management System Modernization Program, at an estimated cost of about \$1 billion, has been striving to correct many serious deficiencies in AFLC's automated systems for computing requirements, managing the depot maintenance work load, budgeting, and assessing results. Completion of this program is now scheduled for 1994. In an ongoing review of Air Force financial management and internal controls, we found indications that these efforts may not be sufficient to ensure that reliable data are developed and used for Air Force budget requests and purchase decisions.

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<sup>7</sup> Depot Maintenance: Air Force Defines Backlog Better, but Additional Efforts Are Needed (GAO/NSIAD-89-211, Sep. 26, 1989).

This review is also showing that Air Force efforts to resolve existing system problems have lacked an overall plan and sufficient management oversight to help ensure success. These efforts have been fragmented and lacked continuity. The Air Force's fiscal year 1991 Financial Integrity Act report to the President and Congress did not adequately disclose internal control weaknesses in Air Force systems used to generate requirements. Without adequate disclosure of these system problems and the breakdown in internal controls, we believe that AFLC has not brought to top management's attention important problems that adversely affect the Air Force's operations.

Regarding the determination of maintenance requirements for the F-108 engine, we reported<sup>8</sup> in June 1991 that the Air Force invested in unnecessary depot and intermediate maintenance facilities. We found that the Air Force had used estimated engine removal rates for several years in its calculations, although actual reliability data indicated the estimated removal rates were too high. As a result, the Air Force purchased too much support equipment and prematurely activated F-108 maintenance facilities. Although the depot acquired enough support equipment to repair an average of 34 F-108 engines per year, from 1986 through 1990, it annually repaired an average of only five engines--using about 15 percent of its capacity. We reported that the Air Force was using some of its excess support equipment for other programs, was attempting to sell some equipment to a foreign government, and had closed two intermediate maintenance facilities.

#### Improve Other Accounting and Internal Controls at Depots

We have previously identified a number of problems in internal controls that adversely affect the efficiency of operations in Air Force depots. For example, in February 1990, we reported<sup>9</sup> that the Air Force must strengthen controls relating to the issuing and accounting for materials and for the accountability, depreciation, and disposal of equipment used to repair items at depots. Controls at that time did not ensure proper safeguarding of these materials and equipment or the proper reporting of the results of the depot maintenance services operations.

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<sup>8</sup>Commercial Practices: Opportunities Exist to Reduce Aircraft Engine Support Costs (GAO/NSIAD-91-240, Jun. 28, 1991).

<sup>9</sup>Financial Audit: Air Force Does Not Effectively Account for Billions of Dollars of Resources (GAO/AFMD-90-23, Feb. 23, 1990).

In April 1991, we again reported<sup>10</sup> that internal controls and accounting procedures were not sufficient to provide adequate and reliable financial information for effective management and reporting of depot resources. We reported that use of financial information as an aid in managing inventories was even further hindered by Air Force policies for valuing unserviceable and obsolete inventories and that financial reports did not account for the cost to repair unserviceable items. Therefore, unserviceable and obsolete items were valued the same as new items. Air Force officials told us that changes have been made and that unserviceable items are now valued at the last acquisition cost minus the unit repair cost and obsolete or excess items at 2.2 percent of their acquisition cost.

We are currently reviewing three Defense Business Operations Fund initiatives that are designed to improve the Air Force's control over managing the cost of aircraft systems--including associated depot operations. Our study focused on the F-15 system and one of our preliminary findings is that weak financial controls adversely impact F-15 depot maintenance operations at Warner Robins Air Logistics Center. For example, financial management systems at this center do not provide accurate cost data on repairing and modifying individual F-15 aircraft primarily because of weaknesses in financial management controls. Thus, the F-15 program manager cannot ensure that the prices for F-15 repair work are accurate or that established prices support the underlying premise of the industrial fund--which is to break even. As a result, the F-15 repair program incurred a loss of about \$8.7 million in fiscal year 1991.

F-15 program officials at Warner Robins have agreed to take action on the weaknesses and have initiatives underway to identify the reasons for the loss. While recognition of these specific weaknesses is encouraging, we believe depots need to continue to work on improving financial management and internal controls.

#### NAVY AND ARMY DEPOT MAINTENANCE ISSUES

These depot maintenance issues are not all unique to the Air Force. The other military departments are confronted with similar issues as they downsize. Now, I would like to discuss our related work on Navy and Army depot maintenance issues.

#### Successes and Limitations in Navy Public/Private Competition

As we previously noted, the public/private competition program originated in the Navy. In the past we have identified numerous

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<sup>10</sup>Financial Audit: Financial Reporting and Internal Controls at the Air Logistics Centers (GAO/AFMD-91-34, Apr. 5, 1991).

problems with the implementation of this program for the Navy's depot level ship maintenance and modernization work. Additionally, preliminary findings of our ongoing review of the Navy aviation program indicate that, while cost savings have been achieved, improved administration of the program would have resulted in even greater savings.

Since fiscal year 1985, defense appropriations acts have included provisions for competition between public and private shipyards for a portion of the Navy's depot level ship maintenance and modernization work. We reported in 1988<sup>11</sup> and 1990<sup>12</sup> that inherent differences precluded public and private shipyards from competing on an equal footing. In 1990 we also noted that this program had resulted in limited competition, with both types of shipyards submitting proposals on less than half the vessels competed. We concluded that this occurred in part because private shipyards could price proposals below expected costs, whereas public shipyards were required to include a proportionate share of all expected costs. According to the Navy, when commercial shipyards are competing for ship repair work, the Navy gets the initial work at a lower rate because of competition. However, because subsequent work is negotiated in a sole-source environment, the Navy then pays a premium rate.

At your request, we are currently reviewing the Navy's public/private competition on the F-14 airframe--the first major aircraft maintenance work competed under this program. Preliminary findings are that the competition, won by the depots, has provided an incentive for the Navy depots to streamline production processes and minimize costs--which has helped reduce the Navy's F-14 overhaul costs. Average overhaul costs, adjusted for inflation, have declined about 23 percent since fiscal year 1987, the year before the start of the F-14 competition. However, we also have found that if the Navy's administration of the F-14 competition program had been more effective, even more savings would have resulted. More specifically, on the first 24 overhauls, the depots incurred more costs to perform the work than had been approved by the contract administrator. The cost overrun, which may exceed \$6.9 million, was primarily caused by (1) inconsistent contract administration guidance, (2) lack of top management attention to resolve problems, (3) contract disputes, (4) problems in the

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<sup>11</sup>Navy Maintenance: Competing Vessel Overhauls and Repairs Between Public and Private Shipyards (GAO/NSIAD-88-109, Mar. 25, 1988).

<sup>12</sup>Navy Maintenance: Status of the Public and Private Shipyard Competition Program (GAO/NSIAD-90-161, Sep. 26, 1990).

depots' cost accounting system, and (5) to some degree, depot inefficiency.

The Navy plans to expand its competition program over the next three years to meet the savings goal of the DMR initiative. Through fiscal year 1995, the Navy's goal is to save over \$550 million through increased competition of depot maintenance of eight types of aircraft and four types of engines. To ensure that the benefits of this program are fully realized, we believe the Navy should correct problems identified in its administration of the F-14 program.

#### Invalid Navy Aviation Depot Labor and Materials Costs

Another area where the Navy needs improvement relates to the pricing of component and engine repairs in its aviation depots. Our prior reviews<sup>13</sup> of Navy aviation depot operations concluded that the depots had charged their customers about \$120 million more for labor and material costs related to engine and component repair work than was justified by actual expenditures. Reasons cited for the overcharges generally related to the lack of effective management review and controls, and pricing practices that relied on the use of labor standards that were out-dated or unsupported and material estimates that were developed inappropriately. We also noted that the Naval Air Systems Command had not reviewed and approved the depot labor and material estimates and the quality of each depot's standards program. As a result of our work, the Navy initiated several actions to correct identified deficiencies. We have not yet assessed the Navy's success in implementing required improvements.

#### Uneconomical Repair of Some Navy Depot Level Reparables

Generally, repairs are less costly and take less time than purchasing new items. Navy policy requires that broken or defective items be repaired unless (1) they can be replaced at a lower cost or (2) the Navy already has an excess of the items. However, we found that the inventory control points were not following this guidance.

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<sup>13</sup>Navy Maintenance: Improvements Needed in the Aircraft Engine Repair Program (GAO/NSIAD-90-193BR, Jun. 18, 1990).

Navy Maintenance: Aviation Component Repair Program Needs Greater Management Attention (GAO/NSIAD-89-171, Jul. 6, 1989).

In December 1991, we reported<sup>14</sup> that the Navy was incurring unnecessary costs by repairing two categories of items--those that were excess to current needs and those that could be purchased at a lower cost. From April to September 1990, the Navy made 8,250 repairs costing \$9.2 million for items that were excess to current needs. Further, we analyzed 25 randomly selected reparable items from a universe of 1,157 items where the repair costs equaled or exceeded replacement costs and found that 18 items could have been more economically replaced than repaired. The combined unit replacement costs for the 18 items totaled \$17,415, while the combined unit repair costs totaled \$25,986.

We found that in some instances, only the Navy's depots were furnished information on excess items. Neither the Navy, other services, or commercial repair facilities received this type of information, resulting in their repairing items in excess of actual requirements. We also found that many reparable items were not reviewed to determine if they could be more economically replaced. While the Navy conducted some economy-of-repair reviews to determine whether items could be more economically replaced than repaired, many items were excluded from review.

#### Concerns with Army Depot Maintenance Requirements

In our July 1990 report,<sup>15</sup> we questioned the way the Army computes its depot maintenance requirements. Like the Air Force's, the Army's system is dynamic and complex. A multitude of factors, with the aid of computerized data systems, must be considered in determining requirements for individual items. Like the Air Force's, Army depot maintenance requirements presented in budget requests were overstated. We reported that the primary reason for this overstatement was the Army's inclusion of prior-years unfunded requirements, a portion which was no longer valid.

In August 1990, we reported<sup>16</sup> that the Army's two buying commands lacked effective controls to ensure that repair programs at Army depots were based on current requirements. Specifically, requirements for some depot repair programs at these commands had been established using outdated data. We noted that basing program

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<sup>14</sup>Navy Supply: Some Aircraft and Ship Parts Should be Replaced Rather than Repaired (GAO/NSIAD-92-40, Dec. 2, 1991).

<sup>15</sup>Army Maintenance: Concerns Over the Validity of Depot Requirements and Backlogs (GAO/NSIAD-90-194BR, Jul. 24, 1990).

<sup>16</sup>Army Maintenance: Clearer Guidance Needed to Ensure Programs Reflect Current Requirements (GAO/NSIAD-90-229, Aug. 13, 1990).



decisions on such data had resulted in the expenditure of funds in some cases to repair more items than were needed to satisfy current requirements. We concluded that the Army's controls for ensuring that planned maintenance programs are based on the most current available information could be strengthened. We recommended that the Army clarify its guidance to specifically require the major subordinate commands to base requirements for depot maintenance programs on the latest available information.

#### Improving Repair Decisions for Army Depot Level Repairables

In September 1991, we reported<sup>17</sup> that Army policies and procedures for selecting the most cost-effective alternative when deciding to either repair or buy depot-level repairable spare parts were not effectively implemented by three buying commands we reviewed. Noting that management controls did not provide sufficient oversight and top-level Army managers could not ensure that the buying commands were economically meeting the Army's requirements for depot-level spare parts, we recommended corrective actions.

In another September 1991 report, we observed<sup>18</sup> that the Army was purchasing new items when there were unserviceable assets of the same types that should have been made available for repair to meet the requirement. This occurred when the return rate of unserviceables dropped below the Army's minimum acceptable rate of 85 percent. We found that four of the Army's six inventory control points were buying between \$369 million and \$815 million of assets that would have not been needed if the return rate had been at the 85 percent goal. We made several recommendations to the Army to help ensure that assets needing repair are returned promptly.

#### MANY QUESTIONS NEED TO BE ANSWERED

Improving the efficiency of depot maintenance operations and management is a key factor in the military departments' ability to reduce operation and management costs without adversely impacting readiness. While DOD has initiated some efforts to implement management improvements and achieve cost savings in its depot operations, we are concerned in some cases about the military departments' ability to generate some of the planned savings, given the implementation plans and activities we have seen to date. Additionally, we are concerned that DOD's improvement initiatives may not always be well thought out and based on a thorough and complete cost-benefit analysis.

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<sup>17</sup>Army Maintenance: More Effective Implementation of Maintenance Expenditure Limits Needed (GAO/NSIAD-91-270, Sep. 18, 1991).

<sup>18</sup>Army Logistics: Low Returns of Repairable Assets Are Costing the Army Millions (GAO/NSIAD-91-272, Sep. 25, 1991).

Of greater concern, however, is the fact that even if these planned savings are realized, they will only scratch the surface of the savings which will be required in the future. The department will have to do more if the services are to achieve required levels of readiness and support while cost-effectively responding to international changes and budget constraints. There are many unanswered questions which must be addressed if the department is to reach this goal with respect to its depot maintenance program. These include:

- What maintenance should be conducted by field units and what maintenance by depots?
- What are the capability and capacity requirements to support depot modernization requirements in each military department and in DOD as a whole?
- How much of this requirement should be accomplished in-house by government personnel, how much should be contracted out, and how should this work load mix be allocated?
- How much work load should be accomplished through interservicing?
- Since the depots are now underutilized, how can increasing any work going to private contractors be economically justified without simultaneously downsizing the depots?
- To downsize government facilities, should the departments decrease the capability and capacity of all depots or close one or more of them?
- How should the future modernization of government depot maintenance facilities be managed?
- How can the departments assure they get accurate and reasonable prices for their commercially-contracted maintenance work loads and what actions are needed to improve the cost-effectiveness of in-house depot maintenance and operations?

We will continue to identify and evaluate other issues that need to be addressed if the military departments are to achieve required readiness objectives while downsizing and decreasing the maintenance infrastructure and budget. We will also continue to review DOD's implementation of its current management improvement initiatives in this area and keep you informed of our findings.

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Mr. Chairman, that concludes my prepared testimony. I would be pleased to answer questions at this time.

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