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Report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, House of Representatives

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DEPOT MAINTENANCE

Air Force Defines Backlog Better, but Additional Efforts Are Needed

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National Security and
International Affairs Division

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

Dear Mr. Chairman:

This report, which was prepared at the former Chairman's request, discusses our evaluation of the Air Force depot maintenance backlog for fiscal years 1988 and 1989. It discusses efforts by the Department of Defense and the Air Force to improve the credibility of depot maintenance backlog estimates, requirements, and funding requests. We make a recommendation to the Secretary of the Air Force to improve backlog identification and reporting.

As arranged with your Office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after its issue date. At that time we will send copies to appropriate congressional committees; the Director, Office of Management and Budget; the Secretaries of Defense and the Air Force; and other interested parties.

This report was prepared under the direction of Harry R. Finley, Director, Air Force Issues. Other major contributors are listed in appendix III.

Sincerely yours,

Frank C. Conahan
Assistant Comptroller General

Executive Summary

Purpose

Depot maintenance involves complex repairs including major overhauls and complete rebuild of parts. The total Air Force depot maintenance backlog was relatively small and considered manageable until the Air Force began preparing estimates to be included in the budget requests for fiscal years 1988 and 1989. These estimates, which were submitted to the Congress in February 1988, showed a substantial increase in the projected Air Force depot maintenance backlog. In fiscal years 1988 and 1989, the projected backlog was $1 billion and $1.5 billion, respectively.

The Chairman, Subcommittee on Readiness, House Committee on Armed Services, requested that GAO evaluate the Air Force's reported backlog for fiscal years 1988 and 1989 and determine whether (1) backlog estimates are identified to specific repairs and overhauls, (2) effects of the backlog on the readiness and sustainability of Air Force units are measured, and (3) changes are underway that would better identify requirements and the backlog.

Background

The Air Force spends about $3 billion annually for depot-level maintenance. The Air Force Logistics Command manages the depot maintenance program, and most repairs are accomplished at the five Air Logistics Centers and contractor facilities.

Needed repairs that were not accomplished were referred to as backlog. The backlog estimates for several fiscal years before fiscal year 1988 were relatively small. However, the large increases in the backlog estimates for fiscal years 1988 and 1989 caused questions to be raised by the Congress, the Office of the Secretary of Defense, and the Air Force about the credibility of the estimates.

Results in Brief

Before fiscal year 1988, the Air Force could not identify the individual items that composed the reported backlog because the backlog was the calculated difference between total requirements and available funding. In December 1987 the Logistics Command introduced the term "unfunded backlog," which requires the Logistics Centers to identify the individual items specifically.

The establishment of this new term and definition resulted in the Logistics Centers providing improved data on individual items needing repair. Based on the new definition, the Logistics Centers reported that the unfunded backlog at the end of fiscal year 1988 was $185.7 million.

Although the new definition resulted in a substantially lower reported backlog, the Logistics Command did not establish adequate implementing procedures for determining and reporting the unfunded backlog. Additional efforts are needed to ensure accuracy of the reported unfunded backlog because the Logistics Centers, in determining the reported fiscal year 1988 backlog, included some items that should not have been reported and did not verify the accuracy of reported data.

The Air Force cannot currently measure the effect of maintenance backlog on readiness and sustainability but is working to quantify these effects. The Air Force has acted to minimize adverse effects on readiness. Indicators used to measure logistical support to operational forces generally remained high in fiscal year 1988. In late fiscal year 1988, some operating commands reported parts shortages that could eventually degrade capability.

The Air Force and the Office of the Secretary of Defense are taking actions to better identify valid requirements and improve budget submissions, but additional efforts are needed. The Air Force is addressing the validity of the process for determining depot maintenance requirements, not just the relatively small portion identified as backlog. Because the Air Force recognized that its requirements computation systems generally overstate needed repairs, it did not rely on the systems to determine requirements for fiscal years 1989 and 1990.

Principal Findings

Backlog Better Identified, but Inaccuracies Exist

The Air Force defines the total depot maintenance backlog as the gross difference between yearly requirements and available funding. In December 1987 Logistics Command officials introduced the term unfunded backlog, which is more restrictive than the difference between total requirements and funding. The unfunded backlog is to include only on-hand items at Logistics Centers and contractor facilities for which a valid repair requirement exists but are not repaired because of a lack of funding. Since the Logistics Command did not establish implementing procedures to determine the unfunded backlog, the Logistics Centers developed procedures based on the definition. The Logistics Centers reported that $185.7 million was needed at the end of fiscal year 1988 to repair items in the unfunded backlog. This was substantially less than previous estimates.

Air Force actions resulted in improved data on individual items needing repair. However, the Air Force's reported unfunded backlog data contains inaccuracies due to a lack of adequate implementing procedures for identifying and calculating the unfunded backlog. GAO determined that the Logistics Centers included some items that should not have been reported as backlog, did not verify data on items in the backlog, and relied on depot and contractor inventory records that GAO and others have found to be questionable.

At two Logistics Centers, GAO reviewed 20 items with estimated repair costs totaling $23 million in the unfunded backlog and questioned the accuracy of reported data for 15 of these items. For example, the use of an incorrect unit repair cost for one item overstated the fourth quarter unfunded backlog by more than $1 million. GAO also noted that one Logistics Center added $16.1 million to the reported unfunded backlog. The Logistics Center added this amount because it believed the Logistics Command definition of backlog was too restrictive. The $16.1 million should not have been reported as part of the unfunded backlog because, even if funds had been available, repairs could not be accomplished, since needed repair parts were not available.

Readiness and Sustainability Effects Unclear

The Air Force is working to better link repair requirements to readiness and sustainability levels and to quantitatively assess the extent that the backlog degrades capability. Furthermore, to mitigate potential readiness problems, the Air Force prioritized the depot maintenance work load and allocated funds to repair items needed to support peacetime operations and maintain readiness, transferred some of the depot work load to the operating commands, and used parts from grounded aircraft or war reserve stock to continue operations.

Readiness indicators, such as the percent of time aircraft are mission capable, remained high during fiscal year 1988. For example, the Tactical Air Command reported that operational fighters were mission capable 88 percent of the time, an all-time high. However, in late fiscal year 1988, operating commands began reporting some shortages in repair parts that could degrade capability.

Improvements Underway

Better-supported Air Force depot maintenance budget requests would assist the Congress and the Department of Defense in effectively allocating funds. In 1988 the Office of the Secretary of Defense began developing uniform measures of depot maintenance requirements as a basis for

establishing and monitoring funding priorities. It is revising budget guidance and requiring reporting formats to define terms and present information more consistently and clearly.

The Air Force is improving its requirements computation process and modernizing its logistics management information systems. Air Force officials acknowledge that existing systems generally overstate requirements that can be accomplished and have undertaken studies to determine the reasons for the overstatement. The Air Force reestimated requirements for fiscal years 1988 and 1989 and projected budgeted requirements for fiscal years 1990 and 1991 without relying on those systems. The reestimated projections were based on fiscal year 1988 funding plus estimates of future unfunded requirements. These estimates of total requirements and unfunded requirements were lower than earlier estimates computed by the requirements determination system.

Recommendation

GAO recommends that the Secretary of the Air Force direct the Commander of the Air Force Logistics Command to prescribe the procedures and processes to be used in determining and verifying reported unfunded repairs.

Agency Comments

The Department of Defense agreed with GAO's findings and recommendation and said the Secretary of the Air Force or his designee will issue a memorandum to the Commander of the Air Force Logistics Command by September 30, 1989, directing the implementation of GAO's recommendation (see app. II).

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Abbreviations

AFLC	Air Force Logistics Command
ALC	Air Logistics Center
GAO	General Accounting Office
OSD	Office of the Secretary of Defense
TAC	Tactical Air Command
WRM	war reserve material

Chapter 1

Introduction

The Air Force conducts depot-level maintenance—its most complex maintenance tasks—at five Air Logistics Centers (ALC) and at hundreds of defense contractor facilities. The Air Force Logistics Command (AFLC), which manages the depot maintenance program, spends about $3 billion annually for depot-level maintenance. AFLC estimates the amount of depot-level maintenance needed by computing requirements by categories, such as aircraft, missiles, and reparable parts.[1] Historically, depot-level requirements have exceeded funding levels, resulting in unaccomplished needed repairs, often referred to as the depot maintenance backlog. From 1980 to 1987, the depot maintenance backlog was small and considered manageable. However, in February 1988 Air Force projected backlog estimates for fiscal years 1988 and 1989 were much larger than estimates from previous fiscal years, and raised concerns about the credibility of these estimates.

Air Force Depot Maintenance

The Air Force services and repairs its aircraft and equipment to maintain and improve its war fighting capability. Aircraft, weapon systems, and equipment in the Air Force's inventory require maintenance throughout their useful life spans. Required maintenance ranges from routine oil changes to inspections, calibrations, and component replacement to modification or complete rebuild.

The Air Force has a three-level system for conducting maintenance, and the complexity of the maintenance task determines which level is employed. The least complex maintenance tasks, which include inspecting and servicing aircraft on the flight line and replacing damaged or unserviceable parts, are performed in the field by the using organization. More complex tasks, such as repairing and replacing components and parts, are performed at the intermediate level by military, Department of Defense civilian, or contract personnel in shops at the main operating bases. The most complex maintenance tasks, known as depot maintenance, include major aircraft overhauls, modifications, and complete rebuilds of reparable parts and end items. These tasks typically require more extensive shop facilities, equipment, and more technically skilled personnel and are performed at the ALCs (also referred to as depots), contractor facilities, or by specialized depot or contractor teams deployed to operational sites.

[1] Parts can be divided into two categories: those that are thrown away after they are used and fail and those that are repaired and reused. The latter category is referred to as "reparable parts."

AFLC manages the Air Force's depot maintenance program and spends about $3 billion annually to maintain, modify, repair, and overhaul aircraft, missiles, engines, support equipment, and related parts. Funding for Air Force depot maintenance supports more than 2 million flying hours; 6,000 aircraft; thousands of aircraft engines, gas turbine engines, and gear boxes; and $28 billion worth of reparable parts.

Depot maintenance directly contributes to Air Force readiness (its ability to go to war today) by modernizing weapon systems, maintaining aircraft and engines in an operational status, and repairing parts needed to keep aircraft flying. Peacetime operations are structured to maintain a desired level of readiness. Depot maintenance also contributes to Air Force sustainability (its ability to sustain war fighting capability) through the repair of parts needed to fill war reserve material stocks. These stockpiles include equipment, parts, and material needed to maintain wartime operations. Repairs and maintenance not accomplished could adversely impact readiness by decreasing the availability of equipment and reparable parts. Sustainability could be degraded if parts are not repaired for war reserve material and by increased withdrawals of war reserve material stock to satisfy peacetime operations.

Determining Requirements and Funding Requests

AFLC determines depot maintenance requirements by using specific methodologies to compute requirements for aircraft, missiles, engines, reparable parts, and others. These methodologies employ engineering reviews, computer models, and estimates based on past experience. Flying hours and the number, age, and type of aircraft in the inventory are common factors driving overall requirements.

The Air Force's process to determine depot maintenance requirements is complex and lengthy, involving 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. The prediction is made years in advance and based on factors for each individual item including past usage, the expected rate at which an item fails, and the number of items that will not be economical to repair. Other factors that are also considered in determining total requirements for an item include serviceable items on hand, base and depot repair capacities, and required time to repair items. The total requirements include pipeline requirements (the number needed in the base and depot supply systems to keep end items fully operational), safety level requirements (the number needed in

stock in case of unusual or unexpected demands), and war reserve material requirements.

Air Force requirements for a specific program year are recalculated and revalidated many times between the initial computation and the completion of the 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 repairs for that year.

To prepare its budget request, the Air Force tabulated its total depot maintenance requirements based on computed requirements for the upcoming fiscal year plus a carryover of those requirements not funded in the previous fiscal year. The carryover of requirements occurs because estimated repair requirements exceeded available funding, creating unfunded requirements, also referred to as depot maintenance backlog. Air Force officials then determined how much of the unfunded requirement was considered valid for the budget request. Air Force officials reduced the unfunded requirement by about 20 percent to recognize changed or eliminated requirements and added the balance into the next fiscal year's program.

Depot Maintenance Requirement and Backlog Estimates Questioned

The depot maintenance backlog indicates that needed repairs are not being accomplished, which can affect the Air Force's war fighting capability. From 1980 through 1986 the Air Force depot maintenance backlog was relatively small, ranging from $0 to about $180 million, and was generally considered manageable. In fiscal year 1987 the backlog increased to $435 million. However, in February 1988 the Air Force estimated that total depot maintenance requirements would exceed available funding by about $1 billion and $1.5 billion in fiscal years 1988 and 1989, respectively. This projected large backlog raised questions about the credibility of how the depot maintenance backlog and requirements were determined.

The Congress and the Office of the Secretary of Defense (OSD) have questioned the accuracy of depot maintenance requirements and backlog estimates from the Air Force and the other services. These concerns arose because the services

- made large and frequent changes in computed requirements with resulting repairs differing from those projected in the budget;

- reported a decline in planned work from initial estimates to completion;
- frequently reprogrammed and shifted funds from the depot maintenance account to other accounts;
- did not link requirements to expected levels of readiness and sustainability, which could demonstrate the consequences of having a backlog;
- did not identify those individual items needing repair that were part of the unfunded requirements; and
- was not consistent in how unfunded requirements were carried forward from one fiscal year into the requirements for subsequent years.

In fiscal year 1989 congressional actions addressing concerns about the depot maintenance backlog included (1) establishing a minimum amount to be spent on depot maintenance by the Air Force and other military services, (2) directing the Department of Defense to review the system used to determine the depot maintenance backlog to produce a verifiable backlog, instead of a calculated backlog that is adjusted each year based on funding, and (3) requiring the Assistant Secretary of Defense (Comptroller) and the Assistant Secretary of Defense (Production and Logistics) to review and approve service depot maintenance backlog estimates annually.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Readiness, House Committee on Armed Services, requested that we review the Air Force's reported backlog for fiscal years 1988 and 1989 and determine whether (1) backlog estimates are identified to specific repairs and overhauls, (2) effects of the backlog on readiness and sustainability of Air Force units are measured, and (3) changes are underway that would better identify requirements and the backlog.

Our work focused on the aircraft depot purchased equipment maintenance accounts, which comprise about 90 percent of the total depot maintenance program. We performed our work at OSD and Air Force Headquarters, Washington, D.C.; AFLC Headquarters and the Logistics Operations Center, Wright-Patterson Air Force Base, Ohio; San Antonio ALC, Texas; Warner Robins ALC, Georgia; and Headquarters and 1st Tactical Fighter Wing, Tactical Air Command, Langley Air Force Base, Virginia. We interviewed officials, obtained reports, identified program policies and procedures, reviewed readiness and sustainability data on capability, and identified OSD and Air Force efforts to modernize logistics management systems and reporting.

To determine whether needed repairs were identified in the backlog, we obtained data on total requirements, funding, and the backlog for fiscal years 1988 and 1989 and determined the major reasons for changes shown by these data. We reviewed AFLC actions, which redefined the backlog, thereby affecting its size and composition. We discussed the procedures used to implement the newly defined backlog with ALC officials. We obtained data on the items in the fiscal year 1988 backlog. We also selected the 10 reparable items with the largest total repair costs at the two ALCs visited from the ending fiscal year 1988 reported backlog and determined how, when, and why these items became part of the backlog. Our results are applicable to the items we reviewed and might not represent all items reported in the depot maintenance backlog.

To identify potential impacts on readiness and sustainability, we reviewed Air Force reports on and projections of capability. We identified Air Force assessment systems and reviewed management indicators of logistics support. We interviewed officials at Air Force Headquarters, AFLC, and the Tactical Air Command to obtain their perspectives on operational experiences and problems attributed to the backlog. We also reviewed data from the Strategic Air Command and Military Airlift Command regarding operational experiences and problems attributed to the backlog.

To document Air Force and Department of Defense efforts either underway or planned, we reviewed several Department of Defense and contractor studies identifying deficiencies and problems in requirements, budgets, and the backlog. We discussed plans with Air Force and OSD officials to improve budget presentations, increase the accuracy of requirements, and modernize logistics management systems.

We performed our work between September 1988 and June 1989 in accordance with generally accepted government auditing standards. The Department of Defense's official comments on a draft of this report are in appendix II.

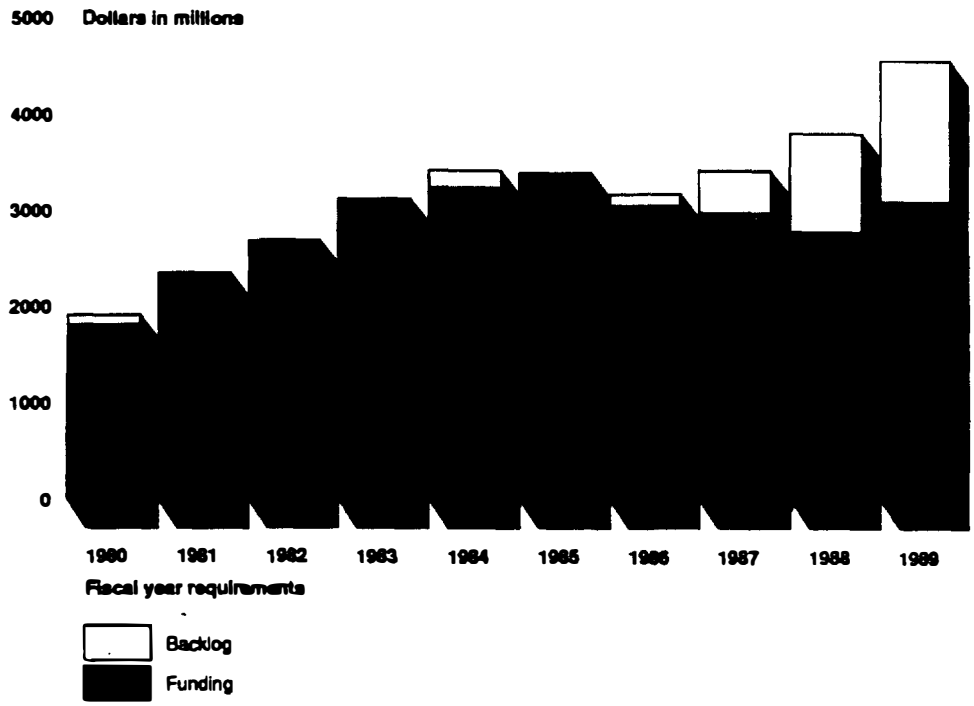
Actions to Identify and Define Backlog Better

In response to backlog estimates that were generally viewed as unrealistic, OSD and the Air Force have taken actions that would better identify and define parts that need repairs but remain unrepaired because of a lack of funding. OSD is implementing uniform terms and definitions that would better identify needed depot maintenance repairs. In December 1987 AFLC established a new term and definition to better identify and track individual items needing repair. The ALCs used this new definition to report an unfunded backlog of $185.7 million at the end of fiscal year 1988—substantially less than previous estimates of the backlog. The establishment of the new term and definition provided improved data on individual items needing repair. However, AFLC did not establish specific implementing procedures for identifying and calculating the backlog. Additional efforts are needed to ensure accuracy of the reported backlog because items included in the backlog did not meet AFLC's definition and data on included items were not verified and were based on inventory records, which we and others have found to be questionable.

Backlog Estimates Viewed as Unrealistic

The total Air Force depot maintenance backlog was relatively small and considered manageable until the Air Force began preparing estimates to be included in the budget requests for fiscal years 1988 and 1989. These estimates, which were submitted to the Congress in February 1988, showed a substantial increase in the projected Air Force depot maintenance backlog. In fiscal years 1988 and 1989, the projected backlog was $1 billion and $1.5 billion, respectively. These amounts are much greater than the backlog in previous fiscal years, as shown in figure 2.1.

Figure 2.1: Air Force Total Backlog
(Unfunded Requirements)



Note: Data shown are actual for fiscal years 1980 through 1987 and estimated for fiscal years 1988 and 1989.

While Air Force systems projected unprecedented increases in unfunded requirements, Air Force officials did not believe these estimates of computed requirements were realistic or credible. Accordingly, officials revised requirements based on an executable level of work for fiscal years 1988 and 1989, which reduced unfunded requirements. Table 2.1 shows the change in the estimated backlog for fiscal years 1988 and 1989 when constrained by a level of work believed to be executable—$3.2 billion annually.

Table 2.1: Revision of Estimated Backlog

Dollars in millions

Fiscal year	Unconstrained estimate	Constrained estimate
1988	$1,017	$773
1989	$1,464	$559

Air Force officials stated that the constrained estimates represented the Air Force's best known assessment at the time of the amended budget submission. Individual items needing repair were still not identified in the constrained estimate.

Changed Definition Improves Backlog Identification

As revisions of estimated fiscal years 1988 and 1989 requirements were being made, AFLC addressed concerns about the credibility of backlog estimates and the need to identify individual items requiring repair in a December 1987 letter to the ALCs. The letter defined backlog more restrictively and instituted a new format for reporting fiscal year 1988 backlog. As a result, the ALCs identified more realistic unfunded repair requirements and specifically identified individual items needing repairs.

AFLC's letter introduced the term "unfunded backlog" to be used for reporting backlog instead of the total unfunded requirement (i.e., the difference between the cumulative requirement and budgeted funding). Unfunded backlog is defined as the verifiable on-hand reparable items, either at an ALC or contractor's facility, for which a valid repair requirement exists but cannot be repaired due to a lack of funds. The letter also prescribed a quarterly reporting format but did not establish specific implementing procedures for identifying and calculating the unfunded backlog. Therefore, ALC officials developed and implemented procedures to identify and calculate the unfunded backlog. Generally, for reparable parts the ALCs

- identified the quantities to be repaired based on computed and validated requirements,
- subtracted the quantities funded and inducted for repair to determine total unfunded repair quantities,
- compared unfunded repair quantities to the recorded on-hand quantities at depot and contractor facilities,
- recorded the lesser amount as the unfunded backlog quantities, and
- multiplied the reported backlog quantities by unit repair cost to compute total repair costs.

Table 2.2 shows the total repair costs reported by AFLC for the ending fiscal year 1988 unfunded backlog.

Table 2.2: Unfunded Backlog as of September 30, 1988

Dollars in millions

	ALC					
	Oklahoma City	Ogden	San Antonio	Sacramento	Warner Robins	Total[a]
Aircraft	$0.6	$0	$1.0	$0.4	$1.3	**$3.2**
Missiles	0	6.0	0	0	0	**6.0**
Engines	22.0	0	8.0	0	0	**30.0**
Other equipment	0	0	0.5	0	0	**0.5**
Reparables	25.0	14.5	42.6	20.0	44.0	**146.0**
Total[a]	**$47.5**	**$20.5**	**$52.0**	**$20.4**	**$45.3**	**$185.7**

[a]Totals may not add due to rounding.

The unfunded backlog is not static and can change throughout the year. For example, Warner Robins reported unfunded backlog for reparables of $38.6 million and $44 million for the third and fourth quarter, respectively. Although the costs increased, the number of different items in the backlog declined from 1,652 to 1,302. The third quarter backlog included 1,049 items with a repair cost of $21 million that were not in the fourth quarter backlog, whereas the fourth quarter backlog included 698 items with a repair cost of $9.9 million that were not in the third quarter backlog.

Additional Effort Needed to Identify Unfunded Backlog Better

We identified inaccuracies in the reported unfunded backlog for the end of fiscal year 1988. Some items included in the backlog did not meet AFLC's definition, and some items and amounts were not verified. We reviewed the 10 reparable items in the unfunded backlog with the largest repair cost at the end of fiscal year 1988 at Warner Robins and San Antonio ALCs—the items at Warner Robins had repair costs of $6.6 million and those at San Antonio had a repair cost of $16.4 million (see app. I for details). We identified inaccuracies in the quantities and associated repair costs included for 15 of the 20 items. The reported quantities for 7 of the items were inaccurate because some parts were not repaired for reasons other than a lack of funds. In addition, we noted that data on the items included in the ending fiscal year 1988 reported backlog had not been verified and were based on inventory records of questionable accuracy. Adequate data verification could have changed the information in the reported backlog for 11 items, including 3 items that were included in the 7 items discussed above.

Inappropriate Items Included in the Unfunded Backlog

AFLC defined the unfunded backlog to include only those items not repaired due to a lack of funds. Items not repaired due to systemic capability constraints, such as a lack of repair capacity, facilities, parts, or personnel, were not to be included in the reported backlog. Air Force officials said these items should not be included in the backlog because, even if funds were available, they could not be repaired. The officials added that such items should have been eliminated by earlier reviews and not included in the budget request.

Of the 20 items that we reviewed at Warner Robins and San Antonio ALCs, some quantities for 7 items were not repaired because of capability constraints as opposed to lack of funds. ALC officials could not always identify the portion of these quantities that could not be repaired due to capability rather than funding constraints. Examples are discussed below.

- San Antonio officials reported an unfunded fourth quarter backlog of 237 nozzle controls with a repair cost of $977,333. This has been a critical item since 1980 because of parts shortages, lack of organic test capability, and lack of funds. ALC officials said that in fiscal year 1988 they experienced problems with two of the three contractors used to repair the nozzle control—one was unable to produce as required and had its contract quantity reduced, and the other experienced parts problems and did not produce until September 1988. Documents indicate that the third contractor did not have the capability to increase its production enough to compensate for the other two contractors in fiscal year 1988.
- Warner Robins ALC officials computed a third and fourth quarter requirement of 419 parts for a C-130 hub blade and negotiated repairs of 169 parts, leaving a unfunded repair balance of 250. Because only 160 reparable hub blades were on-hand at the depot at the end of the fourth quarter, officials reported an unfunded backlog of the 160 blades with a repair cost of $1.5 million. During fourth quarter negotiations, however, an official noted that 154 blades could not be repaired due to parts shortages, not because of a lack of funding. The official confirmed that this item had parts problems and that these 154 blades should not have been included in the unfunded backlog.
- San Antonio ALC officials reported an unfunded backlog of 216 engine combustion chambers with repair costs of about $2.5 million. The total requirement was 888 chambers, and the negotiated funded repair was 672. The combustion chamber has been a critical item since 1980 because of parts shortages. ALC officials stated they experienced problems with one contractor during fiscal year 1988 due to underproduction and inaccurate technical data. Although additional repairs were ordered

from this contractor in September 1988, they were later reduced because of the contractor's unsatisfactory production schedule. Another contractor was not qualified until June 1988 and did not produce the items until mid-September 1988. However, ALC officials believed that if 100 percent of the funds had been available at the beginning of the fiscal year, they could have pursued additional sources to meet requirements.

- Warner Robins ALC officials reported an unfunded backlog of 1,111 bomb-rack ejectors with repair costs of about $560,000. This backlog was based on requirements for 1,945 ejectors and negotiated repairs for 834. An official originally negotiated repairs for the fourth quarter for the full requirement of 1,241 ejectors—indicating that funds were available for this item—but later reduced the quantity to 550 because of shortages in the parts needed to repair these items. Accordingly, the backlog would appear to be attributable more to a shortage of repair parts instead of funding.

In addition to the 20 items reviewed in detail, we determined that the unfunded backlog reported by Warner Robins ALC to AFLC included $16.1 million of reparable items awaiting parts. These include items that have been inspected for repair, but the parts needed to repair them are not available and have not been available for at least 90 days. In its fourth quarter report, Warner Robins ALC included items totaling about $161 million in acquisition costs with estimated repair costs of $16.1 million (10 percent of acquisition costs). In the previous three quarters, Warner Robins did not include those items in its reported backlog. AFLC officials expressed concern about including items awaiting parts because these items would overstate the backlog and, if carried forward, might result in these items being counted twice in the next year's requirements.

The Deputy Director of the Resources Management Division at Warner Robins, who submitted the fourth quarter backlog report, agreed that those items included in the $16.1 million do not meet AFLC's definition of unfunded backlog because the items could not have been inducted for repair even if funds had been available. However, the Deputy Director stated that AFLC's definition is too restrictive and does not accurately reflect unfunded requirements. He noted that if the needed repair parts become available during the next year, and the requirement for these repairs still exists, the $16.1 million will be required for repairs. He also said $16.1 million was included because the fourth quarter backlog is used as carryover to justify funds for fiscal year 1989 and could increase Warner Robins' funding. He said that AFLC officials know his position on the inadequacy of the backlog definition.

Reported Backlog Was Not Verified

AFLC defines the unfunded backlog as verifiable on-hand assets, either at the ALCs or contractor facilities, for which a valid requirement exists but cannot be repaired due to lack of funds. Even though verification may have occurred at some level, ALC officials responsible for reporting the unfunded backlog to AFLC said they did not verify the accuracy of the information used in backlog reports and did not adjust backlog reports when requirements changed.

Our review showed inaccuracies in the reported amounts for 11 items at Warner Robins and San Antonio ALCs. Examples are discussed below.

- At Warner Robins ALC, fourth quarter data on three of the items we reviewed had not been updated from the third quarter report. The backlog for two items had decreased, and one had increased since the third quarter report. Because requirements and on-hand quantities had changed, the reported fourth quarter backlog was inaccurate, resulting in a net $350,000 overstatement of the reported unfunded backlog.
- At San Antonio ALC, an incorrect unit repair cost was used to calculate the unfunded backlog for the combustion chamber, overstating the fourth quarter unfunded backlog by $1,161,000. The information used to calculate the unfunded backlog shows a unit repair cost of $6,136, but officials used a unit repair cost of $11,511 by mistake.
- At Warner Robins ALC, a fourth item, a radome for a C-130 aircraft, was incorrectly reported. The backlog report showed requirements of 298 units, 60 of which were negotiated for repair, leaving a total backlog of 238. After allowances were made for capacity problems and repair part shortages, the report showed an unfunded backlog of 173 items with a repair cost of $437,344. However, source documents showed requirements of 108 units, 4 of which were negotiated for repair, for a total backlog of 104 and a repair cost of $262,912. Capacity problems could have further reduced the reported unfunded backlog. An official agreed the reported backlog was incorrect and could not identify a source for the numbers shown on the backlog report.
- At San Antonio ALC, seven jet engine test stands with repair costs of $758,758 were included in the unfunded backlog. ALC officials agreed that these items should not have been reported as backlog, because this type of test stand is to be replaced by a new model in 1990 or later. The existing test stands are to be repaired in the field and only returned to the ALC when no longer needed. ALC officials also stated that test stands will not be reported as backlog in 1989 because they are not valid depot maintenance requirements.

AFLC officials also did not conduct a physical inventory to verify the quantities of on-hand assets at the ALCs and contractor plants. AFLC officials stated that they discussed conducting physical inventories of the items in the fourth quarter unfunded backlog with ALC officials. Each ALC reported to AFLC its physical inventories of 10 items included in its third quarter backlog. However, the ALCs did not conduct complete inventories of fourth quarter backlogs because of time, expense, and lack of staff. Instead, the ALCs used inventory records for determining on-hand assets at the ALCs and contractor-reported data for on-hand assets at contractor facilities to calculate the unfunded backlog.

The Air Force's problems with records accuracy—how often the inventory record and the on-hand balances agree—and inventory control have been previously reported by us and others. In May 1988 we reported[2] that even though the Air Force has made considerable progress in improving inventory control, record accuracy continues to be a problem. In November 1987 we reported[3] on questionable control and records accuracy of items at contractor facilities. The Department of Defense and the Air Force Inspectors General and the Air Force Audit Agency have also reported[4] on accuracy and control problems in ALC and contractor inventories. According to AFLC data, physically verified on-hand assets did not agree with the inventory records for 18 percent of the items reviewed during fiscal year 1988. In addition, AFLC officials questioned the accuracy of inventory data maintained at contractor facilities. According to AFLC records, about one-third of the reported unfunded backlog at the end of fiscal year 1988 was at contractor facilities.

[2]Inventory Management: Air Force Inventory Accuracy Problems (GAO/NSIAD-88-133, May 12, 1988).

[3]Inventory Management: Air Force Items Being Returned for Repair but Not Promptly (GAO/NSIAD-88-21, November 25, 1987).

[4]Report on the Audit of Controls Over Property At Repair and Overhaul Contractor Plants, Department of Defense Inspector General Audit Report, No. 85-013, October 25, 1984. Special Inspection of Supply System Vulnerability, Office of Air Force Inspector General, February 26, 1986. Management of Wholesale Inventory Adjustment, Air Force Audit Agency, September 12, 1984.

Further Changes in Backlog Definitions Planned

In addition to Air Force efforts to define the backlog better, OSD has studied backlog terms and definitions used by the Air Force and other military services. In an October 1988 report,[5] the Under Secretary of Defense (Acquisition) recommended that use of the term backlog be discontinued because it is misleading. The report states that the term is misleading because many think it refers to equipment awaiting repair at the maintenance shop, when actually a large portion of the backlog represents maintenance that is deferred due to capacity constraints at the depot, operational commitments in the field, or lack of funding. The Deputy Secretary of Defense has accepted this recommendation and is in the process of implementing uniform terms and definitions (see table 2.3).

Table 2.3: OSD Recommended Terms and Definitions

Term	Definition
1. Total depot maintenance requirement	Valid requirements regardless of constraint.
2. Operationally deferred requirement	Unexecutable depot maintenance requirements that are deferred because of operational commitment of assets.
3. Capability deferred requirement	Unexecutable depot maintenance requirements that are deferred because of capability constraints such as lack of organic or contractor facilities, equipment, personnel, or parts.
4. Other unexecutable requirement	Unexecutable depot maintenance requirements that are deferred for reasons other than operational or capability constraints.
5. Executable requirement	Total requirement that could be executed if funds were available. (Term 1 minus terms 2, 3, and 4.)
6. Funded requirement	That portion of the executable requirement for which funding is programmed.
7. Unfunded deferred requirement	Executable depot maintenance requirements that are deferred solely because of lack of funding. (Term 5 minus term 6)

The impact of these proposed changes on the unfunded backlog that the Air Force reported for fiscal year 1988 is not known; however, AFLC's definition of unfunded backlog and OSD's definition of unfunded deferred requirement are similar.

[5]Enhancing the Credibility of Depot Maintenance Requirements Process: A Report to the Deputy Secretary of Defense, Under Secretary of Defense (Acquisition), October 1988.

Conclusion and Recommendation

The Air Force has made progress in better identifying the backlog of needed repairs; however, terms and definitions without adequate implementing procedures can result in reported inaccuracies. In addition, further changes in definition and reporting may occur due to proposed changes by OSD. To prepare for the planned OSD and subsequent Air Force changes and to ensure that the backlog is consistently and accurately reported by the ALCs, we recommend that the Secretary of the Air Force direct the Commander, AFLC, to prescribe the procedures and processes to be used in determining and verifying reported unfunded repairs.

Agency Comments

The Department of Defense agreed with our recommendation and stated that the Secretary of the Air Force or his designee will issue a memorandum to the Commander, AFLC, by September 30, 1989, directing that specific procedures and processes be used, incorporating some procedures already in place, to determine and verify reporting of unfunded repairs.

Readiness and Sustainability Effects Are Unclear

Effects on readiness and sustainability caused by the fiscal year 1988 depot maintenance backlog are unclear because (1) the Air Force took actions at the ALCs and operating bases intended to reduce or delay potential effects, (2) readiness and sustainability indicators did not show significant logistics support problems throughout fiscal year 1988, and (3) Air Force officials said that parts shortages and supply problems began to emerge at operating bases in late 1988. Other factors also make it difficult to measure directly and assess the effects of the depot maintenance backlog on readiness and sustainability. For example, maintenance funding shortfalls might not be manifested as a supply problem for a number of months. In addition, isolating specific effects due to the backlog from other supply factors is difficult. The Air Force has studies underway to improve its capability to measure the effects of depot maintenance backlog.

Air Force Actions to Reduce Effects

Faced with shortfalls in fiscal year 1988 depot maintenance funding, AFLC officials prioritized the depot maintenance work load and allocated funds to support peacetime operations and maintain readiness. Officials at the operating commands increased base-level repairs, including depot tasks that had been transferred to the field. Also, the bases retained more reparable items, previously returned to the depots, that could not be repaired because needed repair parts were not available. Officials said these actions helped reduce operational effects from the funding shortfalls and maintained readiness levels for the short term by allowing the depots to accomplish higher priority work.

AFLC Prioritizes Work

In an October 1, 1987, letter and in subsequent correspondence, AFLC officials asked the ALCs to review repair requirements and determine those that could be deferred or eliminated. The ALCs were asked to defer or eliminate tasks for aircraft and missiles that were not essential or safety related and establish reduced funding levels for engines, other major equipment items, and depot maintenance support to bases. The ALCs were also asked to identify the different segments comprising the total requirement for each reparable item so certain segments could be eliminated. For example, the total repair requirement for a reparable item includes some repair items used to support peacetime operations, for safety levels (stock levels of an item needed only in case of unusual or unexpected demands), and to fill war reserve material (WRM) stocks.

AFLC used this information to prioritize repairs and develop a strategy for allocating funds. AFLC's primary goal was to maintain readiness by

supporting peacetime operations. AFLC took the following actions to achieve this goal.

- AFLC's funding priorities for aircraft maintenance eliminated certain tasks such as painting and inspections, extended intervals for some scheduled maintenance, and deferred some modifications and some aircraft damage repair.
- AFLC's priorities provided that repairs to other major equipment items and depot support to bases would be funded at 75 percent of the budgeted requirement. Stock-levels increases for engines were deferred, and only a portion of the spare engine requirement needed to meet wartime requirements was to be repaired.
- AFLC gave priority to reparable parts needed to support the peacetime flying hour program, critical items, and problem parts causing aircraft to be grounded. Safety levels and parts needed to add to WRM were given low priorities.

Although officials said that using depot maintenance funds on high-priority items enabled the Air Force to maintain daily operations at required levels despite funding shortfalls, they also acknowledged that sustainability might be hurt by forcing units to use WRM.

Maintenance Work Shifted to Operating Commands

The operating commands also helped mitigate the problems caused by the backlog. During fiscal year 1988 a portion of the depot work load was shifted to operating bases. Operating commands reported accomplishing depot-level tasks that they had not previously been authorized to do. Bases also retained more reparables that could not be repaired because needed repair parts were not available. Instead of sending these reparable items to the ALCs for repair, the bases retained the items and ordered the needed repair parts.

Efforts by the Tactical Air Command (TAC) to reduce or delay the effects of depot maintenance funding shortfalls included retaining and repairing some items previously repaired at the depots. In January 1988 TAC decided to perform maximum maintenance at the field level because, according to TAC officials, sending items to the depot did not make sense if these items would have to wait to be repaired. Thus, officials decided to keep more broken items at bases. TAC units reported holding, on average, twice as many reparables awaiting parts in November 1988 as in 1987. As a result, TAC officials reported a significant increase in the percent of problems that were satisfied by base repair of an item awaiting

parts; for example, F-15 base-level repairs increased from 3 to 9 percent during fiscal year 1988.

TAC also accomplished some programmed depot maintenance work, modification work, and other repairs previously done by the ALCs. For example, in fiscal year 1987 TAC submitted 443 repair requests for unscheduled maintenance—primarily for structural failures—to AFLC, which spent $8.4 million to make the repairs. In fiscal year 1988 TAC accomplished some of these repairs in the field. Although the number of repair requests in the field increased to 514, AFLC repair cost was reduced to about $4.1 million.

TAC officials said bases might take longer to perform some of the tasks previously done by depots, but base repairs saved depot funds and allowed AFLC to concentrate depot maintenance repair dollars on high-priority items. On the other hand, TAC officials said these actions have increased TAC's repair costs and also created a significant work load to store and manage these parts.

The Strategic Air Command and the Military Airlift Command also reported increased repairs and retention of broken items during fiscal year 1988. Air Force officials said that the logistics system has a substantial degree of "elasticity," which gives the Air Force flexibility in reacting to and coping with changes in depot maintenance funding and work load. The officials said that elasticity helped reduce the problems caused by fiscal year 1988 funding shortfalls but that a continued backlog could strain the system.

Air Force Assessments of Readiness and Sustainability Effects

Air Force officials said the fiscal year 1988 depot maintenance backlog had degraded readiness and sustainability, but specific measures of degradation do not exist. The Air Force is developing the assessment capability to link depot maintenance requirements more directly to levels of readiness and sustainability and determine how specific quantities of unrepaired parts would degrade the Air Force's capability. The Air Force has contracted for ongoing studies to (1) relate depot maintenance funding shortfalls to readiness and sustainability and (2) assess the requirements determination process.

In the absence of specific measures, effects of and problems stemming from shortfalls may be reflected in the indicators used by the Air Force to measure logistics support and assess combat capability. Indicators generally remained high throughout fiscal year 1988; however, officials

reported some slight declines late in the fiscal year. Operating commands reported increasing parts shortages and supply problems, which officials attributed in part to the fact that needed parts were not being repaired. Officials expect the problems to continue during fiscal year 1989 but believe that improved funding for 1989 will help alleviate some of the problems caused by the fiscal year 1988 funding shortfalls.

Indicators Show Improved Readiness

AFLC's Weapon Systems Management Information System is an automated management tool for assessing the capability of weapons systems to conduct effective combat missions. The system makes readiness and sustainability assessments based on assets currently available to Air Force units. Readiness assessments include reporting current aircraft status, flying hours, mission capable rates (the percent of available aircraft capable of performing their mission), and problem parts that affect mission capability. Sustainability assessments project aircraft availability during combat and identify wartime limiting factors (the specific items that might limit aircraft availability). Sustainability assessments evaluate operating units' WRM assets on hand, project logistical support through the first 30 days of a conflict, and estimate aircraft status on day 30. The assessments indicate capability problems when available peacetime assets and WRM available to Air Force units decrease substantially.

AFLC officials who operate the Weapon Systems Management Information System said that the readiness and sustainability assessments during fiscal year 1988 for TAC, the Strategic Air Command, and the Military Airlift Command had not indicated any significant effects or problems that might be attributed to depot maintenance funding shortfalls. Our review of Air Force reports substantiates these statements. For example, mission capable rates were high: the total Air Force mission capable rate was over 80 percent, an increase from prior years. In addition, Air Force reports on sustainability assessments showed no significant decrease in the staying power of operational units.

However, some indicators started to decline in late fiscal year 1988, according to AFLC officials. For example, the officials said the B-52 aircraft mission capable rate held steady at about 80 percent, but they noted some increases in the numbers of problem parts affecting capability, some decrease of stock levels, and some increases in the use of WRM. One assessment projected the B-52 mission capable rate would decline to about 77 percent in fiscal year 1989 with increased supply problems.

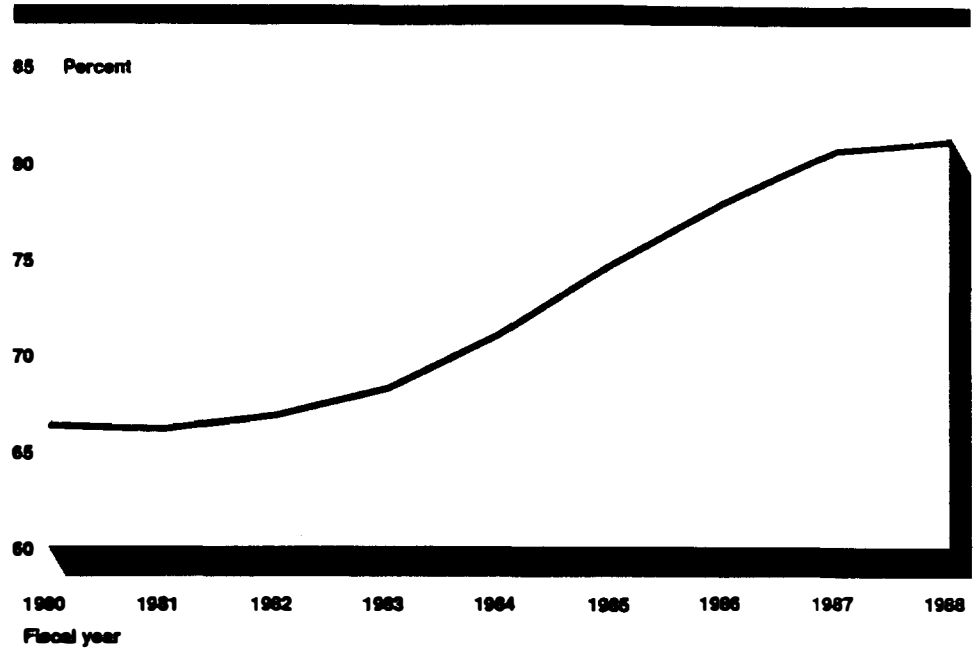
Data for the C-141 showed a similar pattern; although the mission capable rate remained high, cannibalization rates (using parts from a grounded aircraft on another aircraft to keep it operational) were increasing, and WRM assets were decreasing. Cannibalization and WRM withdrawals are ways that operating units acquire needed spare parts when they are not readily available.

Air Force officials agreed that it was difficult to assess specific effects due to depot maintenance funding shortfalls because (1) the Weapon Systems Management Information System is not designed to assess the effects on combat capability caused by a backlog of maintenance and repairs, (2) indicators may be kept high by field workarounds, including base-level repairs, using WRM, and cannibalizing, (3) other factors such as shortfalls in spare parts procurement and transportation also effect capability, and (4) a time lag (possibly 1 to 3 years) occurs before the effects of maintenance funding shortfalls might be reflected in the indicators.

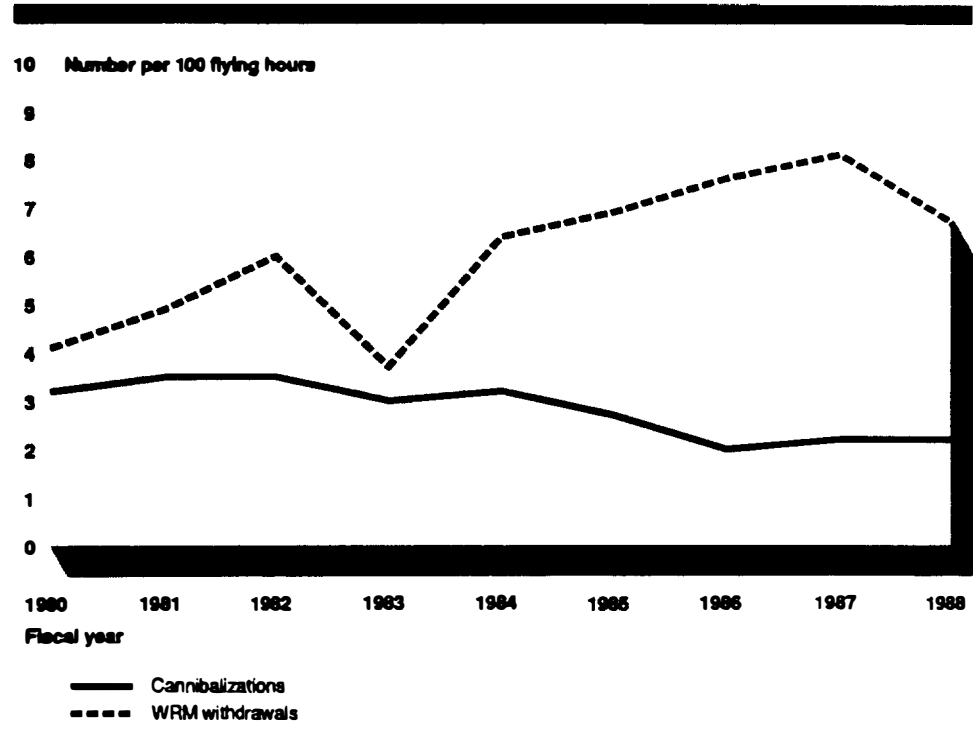
Air Force Headquarters officials provided data aggregated for the total Air Force to measure logistics support to flying operations. Aggregated data included mission capable rates, WRM withdrawals, and cannibalization rates. For example, mission capable rates during fiscal year 1988 were slightly higher than fiscal year 1987 rates, continuing the favorable upward trend experienced during the 1980s. Cannibalization rates were essentially unchanged from fiscal year 1987 rates and also reflect favorable trends during the 1980s. The overall trend in WRM use is upward; however, the use of WRM decreased in 1988 compared to 1987. According to officials, the overall upward trend in use of WRM may be due to giving units increased authority to use WRM assets to meet current needs. Figure 3.1 shows data on these indicators from fiscal years 1980 through 1988.

Figure 3.1: Air Force Readiness and Sustainability Indicators

Mission Capable Rates



Cannibalizations and WRM Withdrawals



Readiness Problems Reported by Operating Commands

Air Force officials said that parts shortages and supply problems began to emerge at operating bases in late fiscal year 1988. Officials said that operational units had not been affected by the shortages and the problems through most of fiscal year 1988 because the units had been adequately supported by the first two quarters of depot maintenance production (which had been at normal levels) and by existing stocks. However, in late fiscal year 1988, problems became more evident and were expected to continue during fiscal year 1989. The officials attributed the problems partly to the effects of the backlog but acknowledged that other factors, such as funding shortfalls for spare parts procurement and transportation, may have contributed.

AFLC's strategy for fiscal year 1989 is essentially the same as for 1988, although Air Force officials believe the increased funding for 1989 will enable them to meet current needs and begin to complete work deferred or not done in 1988. Funding for fiscal year 1989 is $3,134 million, which is $378 million more than fiscal year 1988 funding. The primary goal in fiscal year 1989 is to maintain readiness through support of peacetime operations, just as in fiscal year 1988.

AFLC Observations

An AFLC team visited the headquarters and operating units of TAC, the Strategic Air Command, and the Military Airlift Command in November 1988 to determine the operational effects due to the fiscal year 1988 funding shortfalls and investigate methods for measuring effects from future funding shortfalls. The team reported that the three operating commands were experiencing increased problems and downturns in certain indicators in late 1988, including increased cannibalization rates, increased use of WRM, reduced stock inventories, and increased carcasses (assemblies and engines stripped of parts) and hangar queens (aircraft grounded in not mission capable status used to obtain needed parts for other aircraft).

The team also reported that other indicators such as mission capable rates and combat readiness ratings were not indicating logistics support problems and that some indicators were at record high levels. However, an official said these were lagging indicators that may not timely show the effects of depot maintenance funding shortfalls. The official also said that units will cannibalize and use WRM to maintain good ratings.

Air Force officials partly attributed these parts and supply problems to the effects of depot maintenance funding shortfalls. An AFLC official said specific effects are difficult to assess because there is not a direct

link between requirements and capability, and the problems caused by depot maintenance funding shortfalls cannot be easily isolated from other contributing factors, such as funding shortfalls in spare parts procurement and transportation budgets. He also said that the maintenance and supply systems have great elasticity and can absorb some problems while adequately maintaining readiness. The operating commands were able to do more repairs and accomplish other workarounds by "working harder and smarter." Commands reported that some elasticity was still left but that a continued backlog would strain them.

TAC Reports Emerging Problems

TAC officials said TAC's readiness had greatly improved during the 1980s and was the best it had ever been in fiscal year 1988. For example, TAC's mission capable rates for its operational fighters was at an all-time high of 88.2 percent in fiscal year 1988 compared to 59.1 percent in 1980. Also, the percent of fighters assessed as fully mission capable by combat readiness ratings increased from 67 to 77 percent between October 1987 and September 1988.

According to TAC officials, although overall readiness was at an all-time high, the effects from depot maintenance funding shortfalls were becoming more evident in late fiscal year 1988. Some indicators at the unit level were showing that spare parts problems were affecting readiness. For example, cannibalization rates for operational fighters increased from 6.3 percent in May 1988 to 15.3 percent in September 1988. Overall, TAC's fiscal year 1988 cannibalization rate was 8.9 percent, up from 7.8 percent in fiscal year 1987. TAC officials cited other indications, including

- the probability of finding a needed part, as measured by the stock and issue effectiveness indicators, was declining,
- the length of time needed to obtain a part was increasing, and
- the use of WRM was increasing and depleting sustainability assets.

TAC officials attributed these problems partly to the effects from depot maintenance funding shortfalls. For example, they said that 7 of the top 20 problem parts affecting the F-15 were the result of depot maintenance funding shortfalls. They felt the unit-level indicators were better, more timely measures of problems than the higher-level indicators such as mission capable rates and combat readiness ratings. TAC officials said it takes time before supply and parts problems affect higher-level indicators, if ever. Units will cannibalize and use WRM to maintain high

rates. Intensive management and field workarounds can mask these indications of readiness problems in the short term.

The TAC Commander summarized TAC's performance in an October 27, 1988, letter to the Air Force Chief of Staff. He reported that fiscal year 1988 marked new all-time highs for TAC and that TAC was in its best shape ever. However, he also reported that leading logistics indicators were turning downward after years of steady improvement and cited increased cannibalization, reduced serviceable stock, and slower response time to fix problem parts as reasons for this decline. He said that lagging indicators (such as mission capable rates) had not yet changed due to TAC's ability to absorb much of the funding shortfall through an increased work load and cannibalization. He thought unfavorable trends due to the fiscal year 1988 funding shortfall would continue through much of 1989 but that the 1989 fiscal year budget provides more adequate funding.

Reports From Other Commands Indicate Emerging Problems

In a December 19, 1988, letter, the Commander of the Military Airlift Command also reported to the Air Force Chief of Staff that the effects of aircraft parts shortages were just beginning to surface. He said that top-line indicators such as mission capable rates and combat readiness ratings of WRM remained good with no downward trends, but, in the last 6 months, Military Airlift Command units had experienced decreases in stock effectiveness and WRM fill rates and increases in cannibalization, WRM use, and the numbers of items meeting critical item criteria. He was concerned that the logistics system was beginning to lose its elasticity and believed that the Air Force needed to take actions to address problems before mission capable rates and the flying hour program were affected.

Conclusion

Although indicators did not show significant logistics support problems during fiscal year 1988, the Air Force will continue assessing effects from the backlog during fiscal year 1989. Operating commands reported increased problems in late 1988 that officials attributed partly to the backlog. Officials stated that indicators may not show the effects from the backlog in a timely manner and that management workarounds may mask the effects.

Improving Requirements Process and Budget Requests

OSD and the Air Force have questioned the validity of the depot maintenance requirements estimates used to request funding. The general consensus is that the AFLC requirements computation systems generally overstate requirements that can be accomplished, especially for reparables. OSD and the Air Force have efforts underway to improve the depot maintenance requirements determination process and enhance the credibility of budget requests. An accurate, supportable, and executable requirement results from emphasizing the front end of the process—requirements determinations—instead of the relatively small back end of the process—unfunded requirements. The key to enhancing the credibility of the requirements determination process is to improve the accuracy of the initial requirements computation and to validate subsequent computations. Better-supported requirements could assist the Congress and the Department of Defense in reviewing funding requests and allocating funds effectively.

OSD Begins Implementing Improvements

At the prompting of the Congress, OSD began efforts in July 1988 to develop uniform measures of depot maintenance requirements as a basis for establishing and monitoring funding priorities. In an October 1988 report,[6] the Under Secretary of Defense (Acquisition) recommended revising planning instructions and budget guidance to make terms and definitions uniform and reporting formats consistent and more informative. The Under Secretary also recommended improvements for estimating executable and unfunded deferred requirements. As discussed earlier, these improvements included discontinuing the use of the term backlog because of its varied and misleading connotations.

The study recommended improving procedures for estimating total requirements and categories of these requirements. The study also recommended that the military services develop improved procedures for estimating requirements that are not accomplished solely because of a lack of funding. In that regard, the services should develop the capability to quickly reflect changes in their estimates of unfunded requirements as the amount of available funds change, and they should empirically determine how much of the unfunded requirement in the current year will still be valid in the subsequent year. For example, if the repair requirement for an item will not be valid in the subsequent year because the item becomes obsolete and will be removed from the inventory, the estimate should be reduced. Also, if maintenance is deferred because of a lack of funds, the depot maintenance schedule for

[6]See footnote 5.

the item should be adjusted in the item's future requirements. A November 1988 memorandum to the Deputy Secretary of Defense from the Under Secretary of Defense (Acquisition) states that the recommendation to use empirical data for determining unfunded requirements to be carried forward to the subsequent year by the services is significant and is the "hub of the credibility issue."

In January 1989 the Deputy Secretary of Defense accepted the recommendations of the October 1988 report. In a March 1989 memorandum the Under Secretary of Defense (Acquisition) asked the Secretaries of the Air Force, the Army, and the Navy to review the report and comment on the proposed changes. The Air Force is in the process of reviewing the changes.

According to OSD officials, a defined timetable for the implementation of the recommendations has not been established; however, they plan to use revised planning instructions and budget guidance in the next planning cycle and to eliminate the term backlog from the fiscal year 1990 budget submission. The March 1989 memorandum also noted that OSD will continue efforts to develop a baseline for establishing depot maintenance funding priorities and a means for monitoring compliance and a macro-level planning model that relates depot maintenance funding levels to effects on readiness.

Air Force Efforts Underway

The Air Force has efforts underway to improve depot maintenance requirements determination and budget requests. It is modernizing AFLC's logistics management system, studying the current requirements determination process, and developing linkages between funding requests and readiness and sustainability. However, until these efforts are further along, the Air Force will be using estimates as its basis for budget requests instead of detailed requirements computed from its systems. For example, requirements for fiscal years 1990 and 1991 are based on fiscal year 1988 experience.

Modernizing Logistics Management Systems

The Air Force's Logistics Management Systems Modernization Program is intended to correct many of the serious deficiencies in AFLC's automated systems for computing requirements, managing the depot maintenance work load, budgeting, and assessing results. We recently reported[7]

[7]Air Force ADP: Logistics Systems Modernization Costs Continue to Increase (GAO/IMTEC-89-7FS, December 28, 1988).

costs for the program have continued to increase, the overall schedule for completing the program has been extended by 4 years, and the program's scope has been reduced since the program was established in 1984. Completion of the entire program is now scheduled for September 1994. The last project to be completed—the Requirements Data Bank—is one of the most important to improving the requirements determination process. The Requirements Data Bank system is to be used to compute worldwide requirements, budgets, and plans for spare and repair parts and equipment needs. This system is being designed to have the capability to simulate options or possible results through "what if" scenarios. These simulations are expected to provide Air Force managers with accurate readiness assessments and the impacts of these assessments.

Studying Aspects of the Requirements Determination Process

AFLC is studying ways to identify and change inaccurate factors used to compute requirements and determine why requirements decline. AFLC has continuing efforts to identify "dirty data" (inaccurate estimating factors used to compute reparable repair requirements) and to replace these factors with more accurate and realistic ones. AFLC and ALC officials are also determining why fiscal year 1988 executable requirements declined from budget estimates. Reasons for decreases, as reported by the ALCs in January 1989, include

- decreased or delayed weapon system programs and modifications;
- overestimated computational factors, such as the rate at which failed items are returned to the depot;
- phased-down older systems, such as the F-4 aircraft, being replaced by newer, more reliable and maintainable aircraft, such as the F-16;
- decreased stock levels and reduced WRM requirements;
- overestimated repair costs for new items entering the inventory; and
- delayed contracting efforts.

AFLC is also developing better methods for estimating and prioritizing repair requirements. These efforts focus more attention on maximizing depot maintenance support to weapon systems and war-fighting capability rather than on a more supply-oriented system with an emphasis on management of items. One AFLC model prioritizes repairs and distributes assets to maximize aircraft availability, and another model component computes WRM requirements to maximize aircraft availability. Another software program identifies requirements segments (e.g., base and depot safety stocks) and allocates funds based on priority of needs.

Linking Funding Requests to Readiness and Sustainability

As discussed previously, the Air Force is working to link depot maintenance requirements more directly to levels of readiness and sustainability and to measure quantitatively the impact of backlog caused by funding shortfalls. Air Force officials said that these capabilities would be extremely useful for preparing budgets and supporting funding requests. The Air Force has study contracts and in-house efforts underway to develop these capabilities.

The Air Force and OSD have undertaken studies with the Logistics Management Institute, Synergy, and the Rand Corporation to relate depot maintenance funding shortfalls to readiness and sustainability and assess the requirements determination process. The Logistics Management Institute and Synergy are both pursuing how funding shortfalls affect operational capability. According to an Air Force official, the Institute is taking a micro-level approach by relating funding shortfalls to specific items, whereas Synergy is approaching the issue from a macro-level or system perspective. The Rand Corporation is analyzing the reasons depot-level requirements and expenditures change over time. An Air Force official estimated that the Air Force probably would not have a reliable model to predict the impact of depot maintenance funding on readiness for 1 or 2 years.

Without such linkages and related assessment capabilities, it is difficult for the Congress, OSD, and the Air Force to evaluate depot maintenance budget requests and make funding decisions based on the levels of readiness and sustainability that can be afforded. There appears to be some level of backlog that the Air Force can accrue and still maintain adequate capability. The AFLC Commander said that a backlog in the $300 million to $500 million range was acceptable and could be quickly worked in a crisis. Air Force Headquarters officials said they were developing the fiscal years 1990/1991 budget with the assumption that a depot maintenance backlog under $500 million was manageable.

Revised Projections of Requirements

In past budget submissions, the Air Force budgeted for depot maintenance based on data from AFLC's requirement computation systems and subsequent management reviews. However, for the fiscal years 1990/1991 budget submission, the Air Force estimated requirements primarily based on a projection of fiscal year 1988 funding and backlog rather than using substantiated, detailed data from the requirements computation systems. As discussed earlier, Air Force officials considered computed requirements to be overstated.

These revised Air Force projections resulted in significantly reduced estimates of fiscal years 1988 and 1989 requirements in the fiscal years 1990/1991 budget and reduced fiscal years 1990 and 1991 requirements from earlier estimates. Table 4.1 shows changes in fiscal years 1988 and 1989 total requirements from three successive budget submissions.

Table 4.1: Changes in Fiscal Years 1988 and 1989 Budgeted Requirements

Dollars in millions

	President's budget submission for fiscal year		
	1988/1989	Amended 1988/1989[a]	1990/1991[b]
Fiscal year 1988 requirements	$3,358	$3,809	$3,030
Fiscal year 1989 requirements	$3,305	$4,570	$3,404

[a]The amended fiscal year 1988/1989 budget was submitted in February 1988.

[b]The amounts shown in this budget for fiscal years 1988 and 1989 are to provide a historical perspective on prior year's requirements.

To determine the fiscal year 1988 requirement of $3,030 million, Air Force officials added the work accomplished during the year, as measured by total fiscal year 1988 funds applied to depot maintenance ($2,756 million), to their estimate of the unfunded requirements ($274 million). The unfunded requirements, as shown in table 4.2, includes AFLC's reported unfunded backlog, unfunded requirements in maintenance accounts for interim contractor support and a classified program, and other projected unfunded requirements.

Table 4.2: Estimated Fiscal Year 1988 Unfunded Requirements

Dollars in millions

Element	Amount
Unfunded backlog	$185
Other maintenance	18
Other projected requirements	71
Total	**$274**

[a]Air Force officials used $185 million rather than the $185.7 million reported by AFLC and shown in table 2.2.

In preparing the September 1988 budget estimate submission, the Air Force reported an unfunded requirement of $274 million. This budget estimate was prepared before the ending unfunded backlog of $185 million was identified by the ALCs. To support the earlier estimate of $274 million, Air Force officials stated they added an estimate of $71 million for reparable items in transit from operating bases to depots at the end of fiscal year 1988 and other reparable items that could have been

returned to the depots but were not returned because of other funding shortfalls.

According to Air Force officials when they reduced the 1989 requirements estimate from $4,570 to $3,404 million, they used the fiscal year 1988 funding and backlog to revise the estimated fiscal year 1989 requirements, adjusted for inflation, and added the unfunded requirements from fiscal year 1988. They then subtracted estimated available funds for fiscal year 1989 from this estimated fiscal year 1989 requirement to compute an estimated unfunded requirement for fiscal year 1989 of $269 million. The Air Force used this same method to estimate total requirements and unfunded requirements for fiscal years 1990 and 1991. Air Force officials told us that these calculated estimates for fiscal years 1990 and 1991 unfunded requirements were reduced from earlier estimates computed by using the requirements computation systems.

In commenting on a draft of this report, the Department of Defense acknowledged that depot maintenance requirement projections made in calendar year 1987 and early 1988 were overstated, but added that the causes of these overstatements have been corrected. Our work showed that while the Air Force has revised computed requirements to compensate for overstatements and is working to correct problems in the requirements determination process, all the causes for the overstatements have not been identified and corrected.

Conclusions

The key to enhancing the credibility of depot maintenance requirements determination process is improving the accuracy of the initial requirements computation and validating subsequent computations of depot maintenance requirements. Although OSD and the Air Force are working to enhance the credibility of depot maintenance requirements and resolve related issues such as backlog, the fiscal year 1990 budget request is based on estimates of requirements and backlog rather than substantiated, detailed repair data as generated by requirements determination systems. Furthermore, these estimates include a projection of future unfunded requirements based on the fiscal year 1988 unfunded backlog, which was also partly estimated. Our work raised questions about the validity of the $185 million unfunded backlog reported by AFLC, and we were not able to identify a sound basis for the Air Force's addition of $71 million to the unfunded backlog. Better-supported Air Force depot maintenance requirements would assist the Congress and Department of Defense in reviewing budget requests and effectively allocating funds.

Data on 20 Items From Ending Fiscal Year 1988 Backlog

	Quantities					
Warner Robins ALC	**Requirement[a]**	**Repairs funded[a]**	**Repairs unfunded**	**On hand**	**Reported backlog[b]**	**Repair costs of reported backlog**
Hub blade	419	169	250	160	160	$1,531,680
Aft cowl	150	34	116	74	74	1,301,364
Fighter aircraft gun	129	0	129	274	129	638,808
Petal door	14	5	9	27	9	601,443
Ejector (bombrack)	1,945	834	1,111	2,289	1,111	559,944
TV camera	165	138	27	53	27	466,749
Radome	298	60	238	173	173	437,344
Aft cowl	164	37	127	26	26	388,622
Cowl ring	229	109	120	67	67	354,296
Power supply	315	0	315	315	315	340,515
Total						**$6,620,765**
San Antonio ALC						
Turbine rotor	715	480	235	116	116	$3,860,596
Fan rotor	235	60	175	80	80	2,650,880
Combustion chamber	888	672	216	904	216	2,486,376
Nozzle segment	6,429	7	6,422	6,149	6,422	1,589,445
Turbine blade	25,221	15,709	9,512	10,756	9,512	1,455,336
Augmenter liner	758	512	246	389	246	1,023,904
Nozzle control	1,568	1,331	237	664	237	977,333
Fuel control	433	356	77	74	74	844,192
Test stand	7	0	7	17	7	758,758
Fan blade	1,743	400	1,343	2,404	1,343	749,394
Total						**$16,396,214**

[a]The backlog report shows requirements and repairs funded for the last two quarters of fiscal year 1988, although in some cases it shows requirements and repairs funded for four quarters.

[b]Reported backlog is the amount of either repairs unfunded or quantities on hand, whichever is less.

Comments From the Assistant Secretary of Defense for Production and Logistics

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D C 20301-8000

PRODUCTION AND
LOGISTICS
(L/MD)

September 5, 1989

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and
International Affairs Division
General Accounting Office
Washington, DC 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) Draft Report, "DEPOT MAINTENANCE: Air Force Better Defines Backlog, But Additional Efforts Are Needed," dated June 30, 1989 (GAO Code 392445, OSD Case 8050). The Department concurs with the GAO findings and recommendation.

The Air Force recognizes the need for reporting accurate and credible figures concerning depot maintenance requirements. In 1987, the Air Force Logistics Command introduced the term "unfunded backlog," which led to improved reporting of Fiscal Year 1988 requirements. The Air Force Logistics Command is also working to improve the link between repair requirements and readiness and sustainability levels, as well as modernizing its logistics management information systems. The Office of the Secretary of Defense is revising budget guidance and requiring reporting formats to define terms and present information more consistently and clearly. Although some improvements are still needed, the DoD is well underway towards achieving better requirements reporting.

Detailed DoD comments are provided in the enclosure. The Department appreciates the opportunity to comment on the draft report.

Sincerely,

R.L. Beckwith
Major General, USMC
Military Deputy to ASD(P&L)

Enclosure

GAO DRAFT REPORT - DATED JUNE 30, 1989
(GAO CODE 392445) OSD CASE 8050

"DEPOT MAINTENANCE: AIR FORCE BETTER DEFINES BACKLOG, BUT ADDITIONAL EFFORTS ARE NEEDED"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

- **FINDING A: Background: Air Force Depot Maintenance.** The GAO reported that the Air Force spends about $3 billion annually for depot-level maintenance to maintain and improve its war fighting capability. The GAO explained that the Air Force Logistics Command manages the depot maintenance program, with most repairs being accomplished at the five Air Logistics Centers and at contractor facilities. The GAO described the process used by the Air Force to determine depot maintenance requirements and commented that, historically, total depot maintenance requirements have exceeded available funding, resulting in a depot maintenance backlog. The GAO observed that postponing needed repairs could adversely affect readiness and sustainability by decreasing the availability of equipment and parts. The GAO found that, during the period FY 1980 through FY 1986, the depot maintenance backlog ranged from $0 to about $180 million and was generally considered manageable. According to the GAO, in 1987, however, the backlog increased to $435 million and was estimated to exceed available funding by about $1 billion in FY 1988 and $1.5 billion in FY 1989. The GAO indicated that these increases raised congressional concerns about the credibility of how the depot maintenance backlog and requirements were determined. (p. 2, pp. 9-14/GAO Draft Report)

  DoD RESPONSE: Concur.

Now on pp. 2, 8-11.

- **FINDING B: Backlog Estimates Viewed As Unrealistic.** The GAO reported that the total Air Force depot maintenance backlog was relatively small and considered manageable until estimates were prepared to be included in the budget requests for FY 1988 and FY 1989. According to the GAO, the estimates that were submitted to the Congress in February 1988 showed a substantial increase in the projected depot maintenance backlog when compared to the actual backlog in previous years. The GAO further reported that the Air Force projected an unprecedented unfunded requirement of

Enclosure

$3.3 billion in FY 1994. The GAO observed that these estimates were not considered to be realistic or credible and were revised for FY 1988 and FY 1989, based on an executable level of work of $3.2 billion annually. The GAO reported that, as a result of that constraint the FY 1988 depot maintenance estimated backlog decreased from $1.0 billion to $773 million, while the FY 1989 estimated backlog was reduced from $1.5 billion to $559 million. The GAO noted that individual items needing repair were not identified in the constrained estimate. (pp. 2-3, pp. 16-18/GAO Draft Report)

Now on pp. 2, 13-15.

DoD RESPONSE: Concur.

- **FINDING C: Changed Definition Improves Backlog Identification.** The GAO reported that, in December 1987, the Air Force Logistics Command introduced the term "unfunded backlog," which was to be used for reporting backlog instead of the total unfunded requirement. According to the GAO, the unfunded backlog is the verifiable on-hand repairable items, either at an Air Logistics Center or at a contractor facility, for which a valid repair exists but which cannot be repaired due to a lack of funds. The GAO noted that, while the Air Force Logistics Command established a quarterly reporting format, specific implementing procedures for identifying and calculating the unfunded backlog were not provided. The GAO found that the Air Logistics Centers developed and implemented procedures to identify and calculate the unfunded backlog. The GAO concluded that, as a result, more realistic unfunded requirements and individual items needing repair were identified for FY 1988. (pp. 3-4, pp. 18-20/ GAO Draft Report)

Now on pp. 3-4, 15-16.

DoD RESPONSE: Concur.

- **FINDING D: Additional Effort Needed To More Accurately Identify Unfunded Backlog.** The GAO found that the Air Logistics Centers reported that $185.7 million was needed at the end of FY 1988 to repair items in the unfunded backlog. The GAO reviewed 20 repairable items in the unfunded backlog, with the largest repair cost at the end of FY 1988 at the Warner Robins and San Antonio Air Logistics Centers—the items at Warner Robins had repair costs of $6.6 million and those at San Antonio had repair costs of $16.4 million. The GAO identified inaccuracies in the quantities and associated repair costs included for 15 of the 20 items, noting that the reported quantities for seven of the items were inaccurate because some parts were not repaired for reasons other than a lack of funds. The GAO found that some of the items included were not repaired because of systemic capacity constraints, such as a lack of repair capacity, facilities, parts,

or personnel. The GAO concluded that, in these cases, even if funds were available, the items could not be repaired.

The GAO also determined that, in addition to the 20 items reviewed in detail, the unfunded backlog reported by the Warner-Robins Air Logistics Center included $16.1 million of reparable items awaiting repair, but the parts needed to repair them were not available and had not been available for at least 90 days. (The GAO observed that, although not included in the previous three quarters, the Warner-Robins Air Logistics Command included these items in its fourth quarter report.) The GAO reported that Air Force Logistics Command officials expressed concern about including items awaiting parts because the items would overstate the backlog and, if carried forward, might result in double counting in the next year's requirements. While the Deputy Director of the Resources Management Division at Warner-Robins (who submitted the fourth quarter backlog report) agreed that those items included in the $16.1 million do not meet the Air Force Logistics Command definition of unfunded backlog (because the items could not have been inducted for repair even if funds had been available), he contended that the definition of unfunded backlog was too restrictive and, thus, did not accurately reflect unfunded requirements. He pointed out to the GAO that, if the needed repair parts become available during the next year and the requirement for the repairs still exists, the $16.1 million will be required for repairs. The Deputy Director further advised the GAO that his position on the inadequacy of the backlog definition is well known to Air Force Logistics Command officials. The GAO noted that the $16.1 million was not identified to individual parts, but instead was a percent of the acquisition cost of those items not being repaired because needed repair parts were not available.

The GAO further found that the Air Force Logistics Command officials did not conduct a physical inventory to verify the quantities of assets on hand at the Air Logistics Centers and contractor plants. According to the GAO, a complete inventory of fourth quarter backlogs was not completed; instead, inventory records and contractor reported data was used to calculate the unfunded backlog. The GAO pointed to Air Force problems with

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records accuracy that have been reported in the past.[1/] The GAO further pointed out that Air Force Logistics Command data indicated that physically verified on-hand assets did not agree with the inventory records for about 18 percent of the items inventoried by the Command in FY 1988. In addition, the GAO noted that the Air Force Logistics Command questioned the accuracy of inventory data maintained at contractor facilities. (The GAO explained that about one-third of the reported unfunded backlog at the end of FY 1988 was at contractor facilities.) The GAO concluded that, while verification may have occurred at some level, the overall unfunded backlog was not verified for accuracy and was based on data of questionable accuracy. (p. 4, pp. 20-26/ GAO Draft Report)

Now on pp. 3-4, 16-20.

DoD RESPONSE: Concur. It should be recognized, however, that the Air Force Logistics Command does not require a special inventory for backlog reports, due to the time and expense involved and the lack of staff. Each Air Logistics Center was tasked to perform a physical inventory on sample items included in the third quarter backlog report. The results of this sampling validated that report and a decision was made not to conduct a special inventory for the fourth quarter backlog report. The May 1988 GAO report indicated that the Air Force had made substantial improvements in inventory control. In addition, routine operating procedure requires the Air Logistics Centers to perform a physical inventory every three years for every National Stock Numbered item managed by the Air Force.

- **FINDING E: Planned Changes in Backlog Definition.** The GAO reported that, in addition to Air Force efforts, the DoD has studied backlog terms and definitions used by the Services and has recommended discontinued use of the term "backlog" because of the connotation that it refers to equipment awaiting repair at the maintenance shop, when in actuality it represents in large part

1/ GAO/NSIAD-88-133, "INVENTORY MANAGEMENT: Air Force Inventory Accuracy Problems" dated May 12, 1988, OSD Case 7526; and

GAO/NSIAD-88-21, "INVENTORY MANAGEMENT: Air Force Items Being Returned for Report but Not Promptly" dated November 25, 1987, OSD Case 7400.

maintenance that is deferred because of (1) capacity constraints at the depot, (2) operational commitments in the field, or (3) lack of funding. The GAO explained that the DoD is in the process of implementing uniform terms and definitions, which the GAO listed. The GAO observed, however, that the impact of the proposed changes on the unfunded backlog reported by the Air Force for FY 1988 is undetermined. (pp. 26-28/GAO Draft Report).

Now on p. 21.

DoD RESPONSE: Concur.

- **FINDING F: Air Force Actions to Reduce Effects of the Depot Maintenance Backlog.** The GAO reported that, to help mitigate potential readiness problems caused by the FY 1988 depot maintenance funding shortfall, the Air Force Logistics Command prioritized the depot maintenance workload. Specifically, the GAO reported that:

  - funding priorities for aircraft maintenance eliminated certain tasks, such as (1) painting and inspections, (2) extended intervals for some scheduled maintenance, and (3) deferred some modifications and some aircraft damage repair;

  - repairs to other major equipment items and depot maintenance support to bases was funded at 75 percent of the budgeted requirement;

  - stock-level increases for engines were deferred and only a portion of the spare engine requirement needed to meet wartime requirements was to be repaired; and

  - priority was given to (1) repairable parts needed to support the peacetime flying hour program, (2) critical items, and (3) problem parts causing an aircraft to be grounded.

  The GAO noted that operating commands also increased base-level repairs, including depot tasks that had been transferred to the field, and retained more repairable items (which had previously been returned to the depots but which could not be repaired because needed repair parts were not available). The GAO concluded that these actions helped to reduce the operational effects from the funding shortfalls and maintained readiness levels for the short term by allowing the depots to accomplish higher priority work. (p. 4, pp. 29-32/GAO Draft Report)

Now on pp. 4, 23-25.

DoD RESPONSE: Concur.

- **FINDING G: Air Force Assessments of Readiness and Sustainability Effects.** The GAO reported that readiness indicators such as the percent of time that aircraft are mission capable, remained high during FY 1988. The GAO further reported, however, that late in the fiscal year, some slight declines in the indicators were reported. The GAO commented that it is difficult to assess specific effects due to depot maintenance shortfalls because:

  - the Weapon Systems Management Information System is not designed to assess the effects on combat capability caused by a backlog of maintenance and repairs;
  - indicators may be kept high by field workarounds, including base-level repairs, using war reserve material and cannibalization;
  - other factors, such as shortfalls in spare parts procurement and transportation, also effect capability; and
  - a time lag of 1 to 3 years can occur before the effects of a maintenance funding shortfall is reflected in the indicators.

  The GAO reported that the Air Force is developing the assessment capability (1) to link depot maintenance requirements to levels of readiness and sustainability more directly and (2) to determine how specific quantities of unrepaired parts would degrade capability. The GAO noted that the Air Force has contracted for studies to relate depot maintenance funding shortfalls to readiness and sustainability and assess the requirements determination process. (p. 5, pp. 33-36/GAO Draft Report)

  Now on pp. 4, 25-28.

  DoD RESPONSE: Concur.

- **FINDING H: Readiness Problems Reported By Operating Commands.** The GAO found that operating commands began reporting increasing parts shortages and supply problems late in FY 1988. The GAO reported that the problems were attributed, in part, to the effects of the maintenance backlog, but it was also acknowledged that other factors, such as funding shortfalls for spare parts procurement and transportation, may have contributed to the problems. The GAO observed that the problems are expected to continue during FY 1989, but that improved funding for 1989 will permit the Air Force to meet current needs and begin to complete work deferred or not done in FY 1988. (p. 5, pp. 36-40/GAO Draft Report)

  Now on pp. 4, 29-31.

  DoD RESPONSE: Concur.

- **FINDING I: The DoD Begins Implementing Improvements.** The GAO reported that, at the prompting of the Congress, the Department of Defense took steps to develop uniform measures of depot maintenance requirements as a basis for establishing and monitoring funding priorities. According to the GAO, in an October 1988 report entitled, Enhancing the Credibility of Depot Maintenance Requirements Process: A Report to the Deputy Secretary of Defense, the Under Secretary of Defense (Acquisition) recommended revising planning instructions and budget guidance to make terms and definitions uniform and reporting formats consistent and more informative. The GAO reported that, although a defined timetable for the implementation of the report recommendations had not been established, the Department plans to use revised planning instructions and budget guidance in the next planning cycle and to eliminate the term backlog from the FY 1990 budget submission. The GAO also noted that the DoD will continue efforts to develop a baseline (1) for establishing depot maintenance funding priorities, (2) for monitoring compliance, and (3) for developing a macro-level planning model that will relate depot maintenance funding levels to effects on readiness. (p. 5, pp. 41-43/GAO Draft Report)

Now on pp. 4-5, 32-33.

DoD RESPONSE: Concur.

- **FINDING J: Air Force Efforts Underway.** The GAO reported that the Air Force is (1) improving the requirements computation process, (2) modernizing the Air Force Logistics Command logistics management system, and (3) developing linkages between funding requests and readiness and sustainability. The GAO commented that the Air Force Logistics Management Systems Modernization Program is intended to correct many of the serious deficiencies in the Air Force Logistics Command automated systems for computing requirements, managing the depot maintenance work load, budgeting, and assessing results. The GAO pointed out, however, it had recently reported that, since the program was established (1) the costs for the program have continued to increase, (2) the overall schedule for completing the program has been extended, and (3) the scope has been reduced.2/ The GAO observed that existing systems

2/ GAO/IMTEC-89-7FS, "AIR FORCE ADP: Logistics Systems Modernization Costs Continue to Increase" dated December 28, 1988, OSD Case 7885

Now on pp. 5, 33-37.

generally overstate requirements that can be accomplished. The GAO reported that, as a result, the Air Force re-estimated requirements for FY 1988 and and FY 1989 and projected budgeted requirements for FY 1990 and FY 1991 without relying on the existing systems. They explained that the re-estimated projections were based on FY 1988 funding, plus estimates of future unfunded requirements, and were lower than earlier estimates computed using the requirements determination systems. (p. 5, pp. 45-49/GAO Draft Report)

DoD RESPONSE: Concur. The Department of Defense acknowledges that improvements in automated requirements systems are needed. The Air Force uses the automated requirements system primarily to compute operational requirements, as well as budgetary requirements. Operational requirements are the actual requirements needed to support Air Force activities, while a budgetary requirement is a request for funding. It excludes items that cannot be repaired due to parts problems, capacity constraints, or any reason other than funds. The Air Force routinely excludes requirements that cannot be repaired for the reasons stated and sends forward only budgetary requirements it believes are fully executable. These adjustments are made normally as part of the transition from the comprehensive operational requirements to the stated budgetary request. The Air Force acknowledges that requirements projections made in the CY 1987 and early CY 1988 time frame were overstated. The causes for the overstatements have been corrected.

* * * * *

RECOMMENDATION

Now on pp. 5, 22.

- **RECOMMENDATION:** The GAO recommended that the Secretary of the Air Force direct the Commander, Air Force Logistics Command, to prescribe the procedures and processes to be used in determining and verifying reported unfunded repairs. (p. 28/GAO Draft Report)

DoD RESPONSE: Concur. The Secretary of the Air Force or his designee will issue a memorandum to the Commander, Air Force Logistics Command, by September 30, 1989, directing that specific procedures and processes be used, incorporating some procedures already in place to determine and verify reporting of unfunded repairs.

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