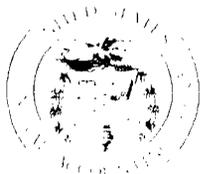


Briefing Report to the Chairman,
Subcommittee on Readiness, Committee
on Armed Services, House of
Representatives

July 1990

ARMY
MAINTENANCE

Concerns Over the
Validity of Depot
Requirements and
Backlogs



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**National Security and
International Affairs Division**

B-226358

July 24, 1990

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

Dear Mr. Chairman:

This report responds to your request that we evaluate the validity of the Army's depot maintenance requirements and backlogs as reported in its fiscal year 1990 budget submission to the Congress. It also explains the Army's depot maintenance requirements determination process. This report summarizes the results of our May 1990 briefing to your staff.

Background

The Army's depot maintenance program is the principal source of the repair of secondary items, such as transmissions and engines, and the overhaul and modification of major end items, such as tracked vehicles, trucks, and helicopters. The Army's fiscal year 1990 depot maintenance program, funded at over \$1.8 billion, included the repair of 80,900 secondary items and 17,700 major end items.

For planning purposes, the Army includes in its budget only those requirements that could be met if funding were available. It refers to these requirements as "executable" requirements. The Army estimates and requests funding to be applied toward the executable requirement. The difference between executable requirements and funding is termed "unfunded requirement," or more commonly, the "depot maintenance backlog."

Army depot maintenance requirements are generally compiled once a year for inclusion in the annual budget submission to the Congress. Each budget shows depot maintenance requirements, funding, and backlog data for the prior fiscal years, the current budget year, and the next year.

The Army's fiscal year 1990 budget showed that maintenance backlogs have been increasing over the years. The Congress and the Army expressed concerns over the potential impact of such backlogs on readiness. The fiscal year 1990 backlog that the Army presented in the fiscal year 1990 President's budget was \$513 million. To reduce that backlog,

the Congress increased the Army's fiscal year 1990 depot maintenance appropriation by \$150 million.

Results in Brief

Several problems call into question the validity of depot maintenance backlogs, including how they are computed. For example, the Army's backlog for fiscal year 1990 decreased by \$423.2 million when the Army recalculated this figure in its fiscal year 1991 budget submission. According to the Army Materiel Command (AMC), which has overall responsibility for determining the Army's depot maintenance program, this large decrease occurred primarily because prior-year backlogs, which were added to current-year requirements, often did not materialize.

Also, the Army included information in the fiscal year 1990 budget presented to the Congress that was outdated because events caused some of its requirements to increase or decrease. While AMC cannot always predict when requirements will change, it was aware of many of the changes before the Army submitted its fiscal year 1990 budget. However, it did not update the budget to reflect the changes that had occurred.

The Army advised us that it is currently attempting to correct some of the practices that have resulted in questionable requirements' being included in the backlog. It is making changes to ensure that prior-year backlogs, when added to the budget year's requirements, represent valid depot maintenance programs the Army needs to carry out for that year. However, according to the Army, it is difficult to update the budget with current information once a change in requirements occurs. Army officials stated that the budget process does not readily allow for changes once total depot maintenance requirements for the initial budget have been determined.

Prior-Year Backlogs Have Not Materialized as Anticipated

To determine the reasons for major decreases in fiscal year 1990 backlogs between the 1990 and 1991 budget submissions, AMC analyzed the changes. It determined that the decreases generally resulted because prior-year requirements often did not materialize; for example, demands were lower than expected, or unserviceable assets were not returned. Without determining the validity of the backlogs beforehand, the Army had been adding prior-year backlogs to the current year's requirements to arrive at a total depot repair requirement for the budget year.

During our review, Army officials questioned this practice because many of the requirements could not be justified. We also question this practice on the basis of our analysis of the U.S. Army Tank-Automotive Command's fiscal year 1990 backlog of \$93.8 million, including \$90.7 million in unfunded requirements that had been carried forward from fiscal years 1988 and 1989. We reviewed items accounting for \$74.8 million of these prior-year requirements and found that \$54.2 million no longer represented valid fiscal year 1990 requirements because the depot-level repair of these items had been (1) financed prior to fiscal year 1990, (2) eliminated because the items were no longer necessary, or (3) delayed until future years.

The Army is aware of difficulties in establishing valid requirements after adding prior-year backlogs to budget-year requirements. To address the validity of prior-year backlogs, the Army is planning to develop a methodology for determining what portion of the prior-year backlog should be included as a requirement in the budget year. We were told that until such a methodology is developed, the Army will discontinue the practice of adding prior-year backlogs to budget-year requirements.

Requirements Determination Process Not Responsive to Changes in Requirements

AMC's analysis also concluded that most of the changes in requirements could not have been foreseen because they stemmed from factors outside of its control, such as decreases in anticipated asset usage or the increased reliability of Army equipment. Our review of selected items included in AMC's analysis generally substantiated the reasons it cited for changes in the fiscal year 1990 requirements and backlogs. However, AMC did know of many of these changes before the final President's budget was submitted to the Congress. The Army's Tank-Automotive and Aviation Systems Commands' decreased requirements totaled \$224.5 million. Of the \$145.7 million in requirements we reviewed, \$89.5 million was based on events that had taken place prior to the submission of the fiscal year 1990 President's budget in January 1989.

Changes to the Army's depot maintenance requirements that occur after initial budget estimates have been prepared are not reflected in the budget. According to AMC officials, it is impractical to incorporate numerous changes into the consolidated Army-wide depot maintenance requirements budget because of the complexities and time involved in updating a budget consisting of requirements for thousands of different items.

The results of our review are more fully discussed in appendixes I and II. We obtained informal oral comments from agency officials on this report. Department of Defense and Army officials agreed with the report's contents, and we have included their comments where appropriate. Our objectives, scope, and methodology are described in appendix III.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days from its date. At that time, we will send copies of this report to various congressional committees, the Secretaries of Defense and the Army, and the Director of the Office of Management and Budget. Copies will be made available to others upon request.

Please call me at (202) 275-4141 if you have any questions about this report. Major contributors to this report are listed in appendix IV.

Sincerely yours,

A handwritten signature in cursive script that reads "Richard Davis".

Richard Davis
Director, Army Issues

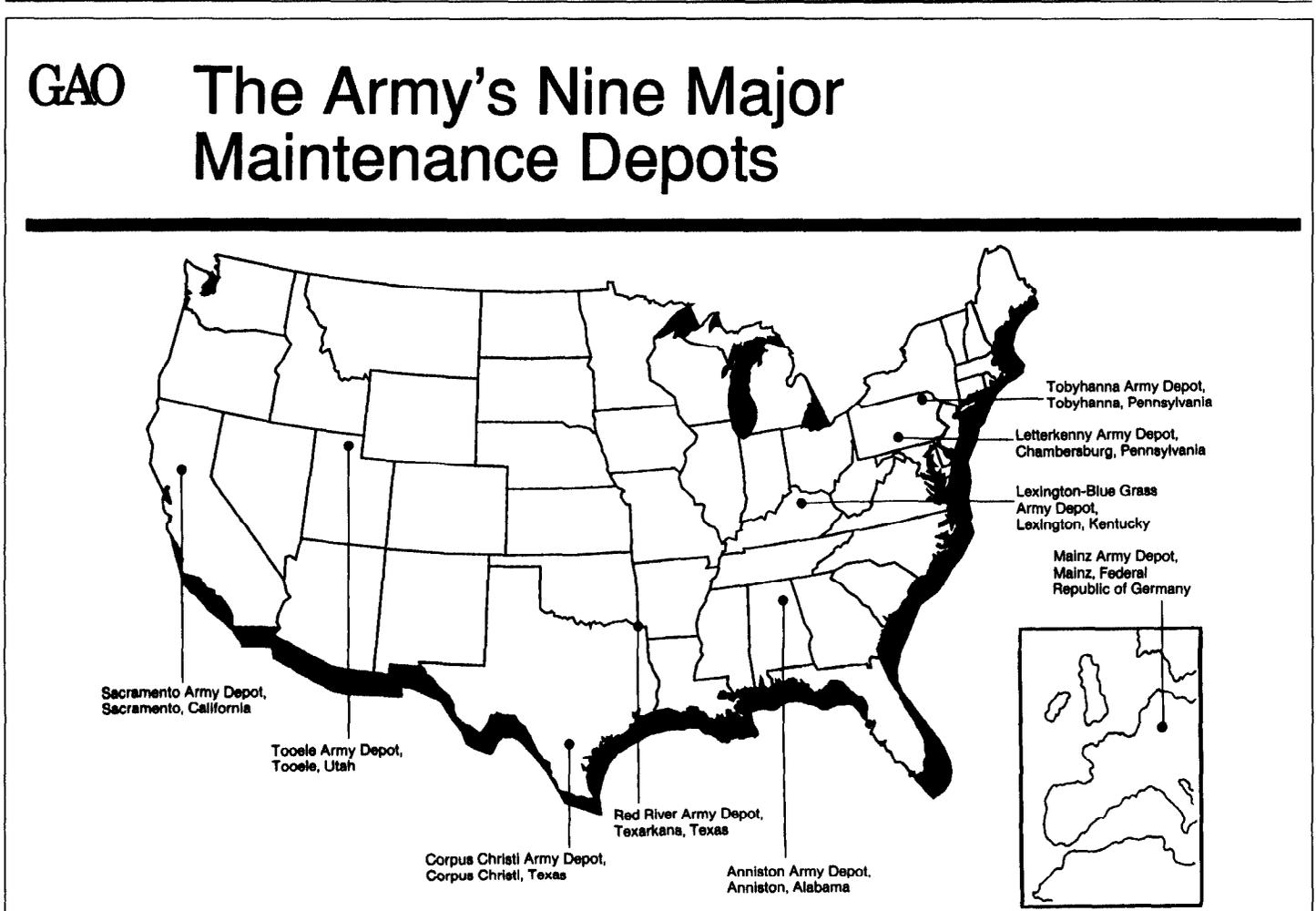
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Abbreviations

ABO	Army Budget Office
AMC	Army Materiel Command
AMCCOM	Armament, Munitions and Chemical Command
AVSCOM	Aviation Systems Command
CECOM	Communications-Electronics Command
DCSLOG	Deputy Chief of Staff for Logistics
DESCOM	Depot System Command
DOD	Department of Defense
GAO	General Accounting Office
MICOM	Missile Command
MSC	major subordinate command
OP	operational plan
OSD	Office of the Secretary of Defense
TACOM	Tank-Automotive Command
TROSCOM	Troop Support Command

Process for Determining Depot Maintenance Requirements



Army depot maintenance, which involves the overhaul of secondary repair parts and major end items, is performed at nine major maintenance depots—eight throughout the United States and one in Europe. The Army's depot maintenance program is the principal source of the repair of secondary items, such as transmissions and engines, and the overhaul, repair, and modification of major end items, such as tracked vehicles, trucks, and helicopters. The Army's fiscal year 1990 depot maintenance program, funded at about \$1.9 billion, included the repair of about 80,900 secondary items and 17,700 major end items.

The process for computing depot maintenance requirements is dynamic and complex. A multitude of factors, with the aid of computerized data

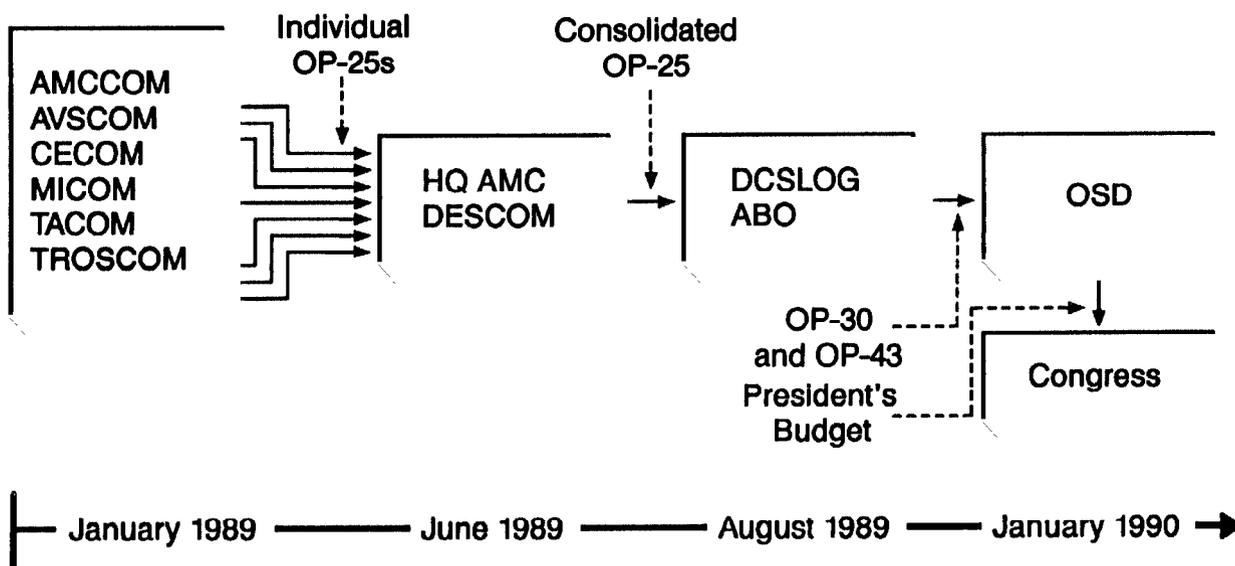
**Appendix I
Process for Determining Depot
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systems, must be considered in determining requirements for individual items. For major end items, the Army must consider factors such as vehicle fleet size or in-use inventory, the planned operational tempo expressed in miles driven or hours flown, and work load capacities.

For depot-level repairable secondary items, the Army forecasts the number of unserviceable assets that are expected to be returned for depot maintenance, including assets that will be necessary to complete end-item overhaul programs. The requirement is reduced by the number expected to be condemned or uneconomical to repair. Depot maintenance requirements for secondary items are limited to assets that are "unserviceable," that is, items that need repair. Most end items, on the other hand, are scheduled for depot maintenance when they are still operational.

The Army forecasts its depot maintenance requirements quarterly. With each new forecast, the factors used in the processes are updated, and the requirements are changed accordingly. The requirement for any future period depends on the number of items projected for maintenance during that period. Changes in depot maintenance requirements are to be expected because the further into the future a projection is made, the more likely any or all factors used in the complex determination process will change.

GAO Requirements Determination Process for the Budget



Source: AMC.

The Army Materiel Command (AMC), through its six major subordinate commands (MSC),¹ has overall responsibility for determining the Army's depot maintenance requirements. The MSCs' mission includes determining depot maintenance requirements for the commodities they manage. Working with the MSCs, the Depot System Command (DESCOM) assigns repair work loads to the depots and monitors the progress of the repairs. Other major departments and commands that are a part of the

¹The six major subordinate commands include the Armament, Munitions and Chemical Command (AMCCOM); the Aviation Systems Command (AVSCOM); the Communications-Electronics Command (CECOM); the Missile Command (MICOM); the Tank-Automotive Command (TACOM); and the Troop Support Command (TROSCOM).

depot maintenance requirements determination and budget process include the Office of the Deputy Chief of Staff for Logistics (DCSLOG), the Army Budget Office (ABO), and the Office of the Secretary of Defense (OSD).

Each MSC defines its depot maintenance requirements in an individual operational plan document, called an OP-25. The requirements determination process for any given year is initiated in January and ends with the President's budget submission in the following January.

The Army includes in its budget only those requirements that could be met if funding were available. It refers to these requirements as "executable" requirements. The Army excludes requirements constrained by factors other than funding, such as the lack of organic (in-house) or contractor facilities, equipment, people, or spare parts. Using Department of Defense (DOD) budget guidance, the Army estimates and requests funding to be applied toward the executable requirement. The difference between executable requirements and funding is termed the "unfunded requirement," or more commonly, the "depot maintenance backlog."

According to DOD, the term "backlog" gives the impression that equipment is physically on hand at the depot waiting to be repaired. In the Army, items deferred for maintenance due to a lack of funding do not appear at the depot as a physical backlog. End items deferred for funding reasons, for example, continue to operate in the field until they can be scheduled for future maintenance. Beginning with the January 1991 budget submission for fiscal year 1992, the Army will use DOD-wide terminology to clarify the meaning of its depot maintenance requirements and backlogs.

Presenting Depot Maintenance Requirements in the OP-25

The Army summarizes individual command requirements data and presents an OP-25 showing a 4-year period—2 years prior to the budget year, the current budget year, and the subsequent budget year. The data displayed in the OP-25 depicts requirements for both secondary and end item pieces of equipment. The depot-level repair of this equipment is categorized as follows:

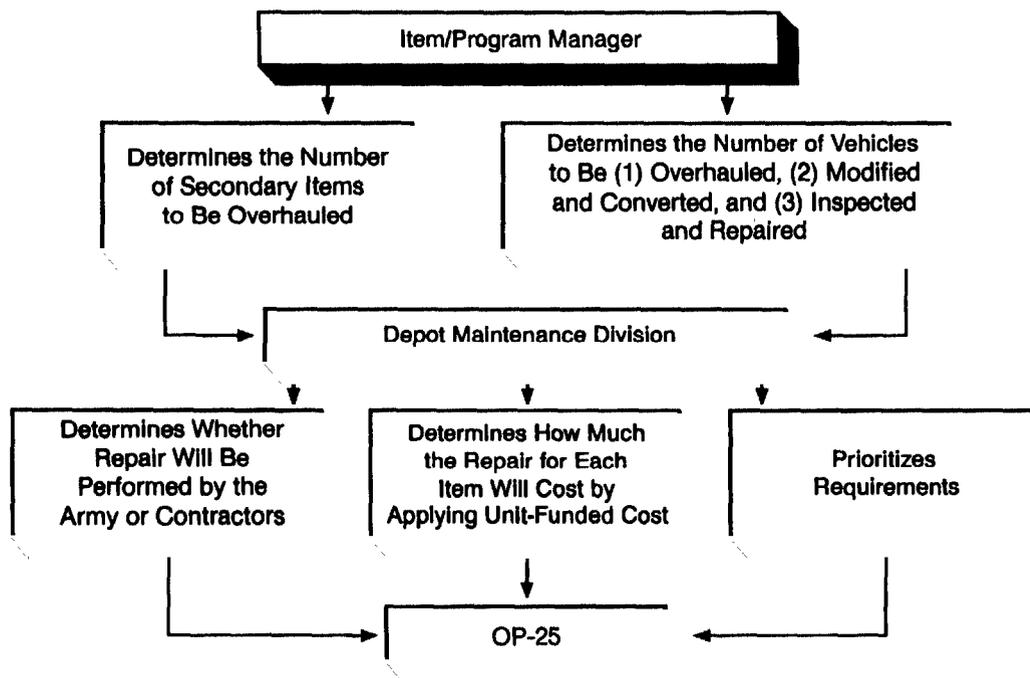
- Inspect and repair as necessary. Items placed in this category are inspected and repaired as necessary to restore them to a serviceable condition. They were previously rendered unserviceable by wear, failure, or damage.

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Process for Determining Depot
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-
- Overhaul. Items placed in this category must qualify as having structural deficiencies. Once sent to the depot, these items are disassembled, tested, and inspected to determine and accomplish the necessary repair or are rebuilt to attain the desired performance.
 - Modification and Conversion. Items placed in this category must be physically altered in accordance with approved technical direction or, in some cases, converted to such an extent as to change the mission, performance, or capability.

In January of each year, AMC issues guidance to be followed by each of the MSCs in developing their depot maintenance requirements.

GAO Depot Maintenance Requirements Process



At TACOM, the requirements determination process includes a description of how managers at this command (1) determine quantitative and dollar requirements, (2) decide where the work should be done, and (3) prioritize the work based on the level of funding they receive. As a result of this process, the command management produces its OP-25 and then submits it to AMC.

TACOM's item and program managers base their determinations of depot maintenance requirements as follows:

Combat Vehicle Overhauls for Major End Items. Overhaul candidates are determined by combat vehicle evaluation teams. Listings of qualified

vehicles and projected quantities of future candidates are given to the item or program managers. This information is used as a basis for determining projected overhaul requirements for the OP-25. TACOM's combat vehicle overhaul program for fiscal year 1990 was projected at \$62 million.

Modifications and Conversions. These requirements are generally based on programs approved by the Department of the Army to modify or convert a given vehicle. The numbers of modifications and conversions projected for a given fiscal year are also driven by planned procurements and deliveries of kits necessary to accomplish the modification or conversion. For example, a program to convert 100 personnel carriers to a different configuration must coincide with the arrival of 100 kits at the depot where the work is to be done. Modifications are also coordinated with scheduled overhauls. For example, when a vehicle is in the depot for overhaul, the needed modifications and conversions should be accomplished at the same time. TACOM's combat and automotive program for modifications and conversions for fiscal year 1990 was projected at \$57.0 million.

Procurement funds are used to pay for modification and conversion kits. Depot maintenance funds are used to pay for the installation of the kits. Effective with fiscal year 1990, funding for modification and conversion programs was transferred from the operation and maintenance appropriations to the applicable procurement appropriation accounts. Therefore, the depot maintenance account will no longer contain funds for modifications or conversions. Instead, the maintenance depots will charge the applicable procurement appropriation account for the costs to install the kits.

Inspect and Repair of Combat and Automotive Vehicles. These requirements are directly related to the modification and conversion program requirements. Vehicles sent to depots for modification are inspected to identify repairs needed to bring them to a fully serviceable condition. The repairs are made while modification kits are being installed. TACOM's inspect and repair program for fiscal year 1990 was projected to cost about \$56.0 million.

Overhaul of Depot-Level Repairable Secondary Items. Projections of overhauls for secondary depot-level repairable items, such as engines and transmissions, are based on supply control studies, which consider

numerous variables that affect the supply position of the item. Important factors used in projecting overhauls are (1) the number of serviceable assets on hand, (2) the number of unserviceable assets awaiting repair, (3) the projected number of unserviceable returns of assets from field activities, and (4) unserviceable asset washout rates (the percentage of items that cannot economically be repaired). TACOM's overhaul of secondary items for fiscal year 1990 was projected at \$231.0 million.

Beginning with the fourth quarter of fiscal year 1991, depot maintenance of secondary items will be transferred to and paid from the Army stock fund. Therefore, these funds will no longer be reflected in the depot maintenance account.

Once program or item managers determine the quantitative depot maintenance requirements, they pass these requirements on to TACOM's Depot Maintenance Division, which compiles TACOM's OP-25. The Depot Maintenance Division performs the following functions:

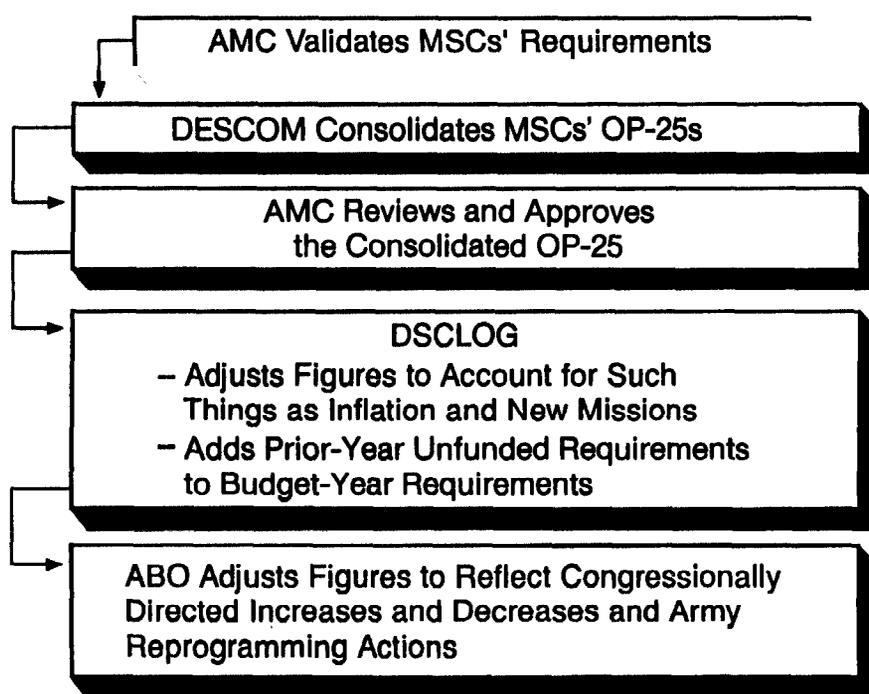
Determines Repair Source. Generally, depot maintenance repair is performed at the Army's depots. Exceptions occur when the depots lack the capability or capacity to do the work in-house. In those instances, the Army will assign the work to qualified private contractors.

Applies Unit-Funded Cost. Unit-funded costs are costs for depot or contractor labor, overhead, and materials. These costs are applied to the quantitative requirements to arrive at dollar requirements for each item. The depot's unit-funded costs are provided by DESCOM, which estimates them based on historical costs and estimates provided by the depots. Contract unit repair costs are generally based on prior repair contracts or contracts for similar items.

Prioritizes Depot Maintenance. Requirements quantities are broken down into funded and unfunded requirements. These determinations are made according to AMC's funding guidance. If AMC's funding levels are less than the total depot maintenance requirement, the Maintenance Division prioritizes the programs to be funded in the following order:

1. Overhaul of Secondary Items.
2. Modifications and Conversions for Performance and Safety Upgrades.
3. Overhaul Repair for Force Modernization Equipment.
4. All Other Overhaul Repair.

GAO Adjustments to the MSCs' OP-25s



After the MSCs have completed each of their OP-25 documents, they submit them to AMC. In 1989, as part of its oversight role, AMC visited the MSCs in May or June to discuss and review their depot maintenance requirements in greater detail. According to AMC officials, this exercise helped to reduce invalid requirements. They plan to perform similar on-site reviews in 1990.

After the 1989 visits had been completed and changes had been made, DESCOM, which maintains the depot maintenance database for AMC, prepared a consolidated OP-25, which it sent to AMC. AMC officials told us that once the consolidated OP-25 document has been prepared (generally by

July), requirements are not normally updated until the OP-25 document supporting the following year's budget submission is prepared.

Preparation of the President's Budget Submission

Around August of each year, AMC submits the consolidated OP-25 to DCSLOG. At this point, DCSLOG and ABO make adjustments to the data in preparing the final depot maintenance requirements figures, which are included in the President's budget submission.

Each year, the President's budget submission contains detailed information supporting funded and unfunded depot maintenance requirements. The exhibits used to display this data are the OP-30 for "other depot maintenance," which is defined as all inspect and repair and overhaul requirements, and the OP-43, which displays data for modifications and conversions. The total of these two exhibits represents the Army's depot maintenance program, to be financed with operation and maintenance appropriations.

Adjustments can generally be separated into two categories—those related to gross requirements, which are made by DCSLOG, and those related to funding levels, which are made by the ABO. The types of changes DCSLOG makes include adjustments to account for inflation, to add a new mission, and to add unfunded requirements from prior years to current budget-year requirements. DCSLOG believes that, to the extent that unfunded requirements from previous years are still valid, they must be added into the budget-year requirements.

ABO makes adjustments to reflect changes in levels of funding such as congressionally directed increases and decreases and Army reprogramming actions.

GAO Budget Submission Changes for Depot Maintenance

- Modernization and conversions moved to Procurement Account
- Funding for secondary items transferred to the Army Stock Fund

The Army is making the following changes to its depot maintenance requirements determination process for budgetary purposes.

Modernization and Conversions. Before the fiscal year 1991 budget submission in January 1990, the cost of modernization and conversion kits was included in procurement appropriations. The cost of installing the kits was included as depot maintenance requirements and funded with operation and maintenance appropriations. Beginning with the fiscal year 1991 budget submission, the cost of installing the modernization and conversion kits for fiscal year 1990 has been moved to the procurement appropriation account. Thus, the entire modernization and conversion costs are now to be covered by the procurement appropriations.

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The OP-43 document, which was used to support the modernization and conversion portion of depot maintenance, will no longer be used.

Repair of Secondary Items. Funding for repairing secondary items is being transferred from the depot maintenance appropriation account to the Army stock fund. This initiative, which will begin in the fourth quarter of fiscal year 1991, will require users to pay for new and repaired items that were previously issued free. DOD believes that this policy will give users an incentive to repair rather than purchase new items and thus result in savings.

In our opinion, the impact of these changes on the maintenance work load at the Army's depots should be minimal. However, the way in which depot maintenance requirements will be presented to the Congress will change dramatically with the fiscal year 1992 budget submission. Placing requirements for modernization and conversions and the depot repair of secondary items into other appropriation accounts could present difficulties to congressional decisionmakers who are trying to review and fund the Army's depot maintenance program because these requirements will be fragmented throughout the budget and could possibly lose their identity.

Concerns About Depot Maintenance Backlogs

Budget data the Army provided to the Congress in January 1989 in support of its operation and maintenance appropriation, depot maintenance (P7M) account, for fiscal year 1990 showed that depot maintenance requirements and backlogs had increased from 1988 to 1991 by \$827.8 million and \$162.8 million, respectively. Table II.1 shows depot maintenance requirements, funding, and backlogs, as reflected in the fiscal year 1990 budget.

Table II.1: Depot Maintenance Requirements Reflected in 1990 Budget

Depot maintenance levels	Fiscal year			
	1988	1989	1990	1991
Requirements	\$1,835.9	\$2,206.5	\$2,397.4	\$2,663.7
Funding	1,414.6	1,825.4	1,884.1	2,079.6
Backlog	\$421.3	\$381.1	\$513.3	\$584.1

The sizes and increases in depot maintenance backlogs have been of concern to both the Army and the Congress. During congressional hearings on fiscal year 1990 budget appropriations, an Army official stated that the large increases in the depot maintenance backlogs could primarily be attributed to the Army's force modernization efforts. The official also said that, during modernization, a lot of the older systems (such as the M-60 series tank and the UH-1 helicopters) have remained in the Army's inventory. He stated further that these systems will be overhauled and, in some cases, modified and redistributed to reserve components or lower priority active units. Thus, he stated, as the equipment gets older and requires more maintenance, the requirements for depot maintenance will also increase because the modernized systems will have been fielded for 6 to 7 years and will begin to undergo depot maintenance.

According to Army policy, funding priority is to be given to secondary items because they are field-replaceable and have the greatest impact on readiness. As a result, the depot maintenance backlog is composed almost exclusively of end-item overhauls and modernizations. According to the Army, all fiscal year 1990 secondary items were funded, while the overhaul or modification of end items, such as M1 tanks and Bradley Fighting Vehicles, were funded at about 58 percent of total requirements. Army officials stated that the sustainability (maintainability) of equipment gradually erodes as it awaits depot maintenance. They added that the lack of total funding for major repair work places an additional burden on field units to continue maintaining their equipment until additional funding for depot work is approved. According to the Army,

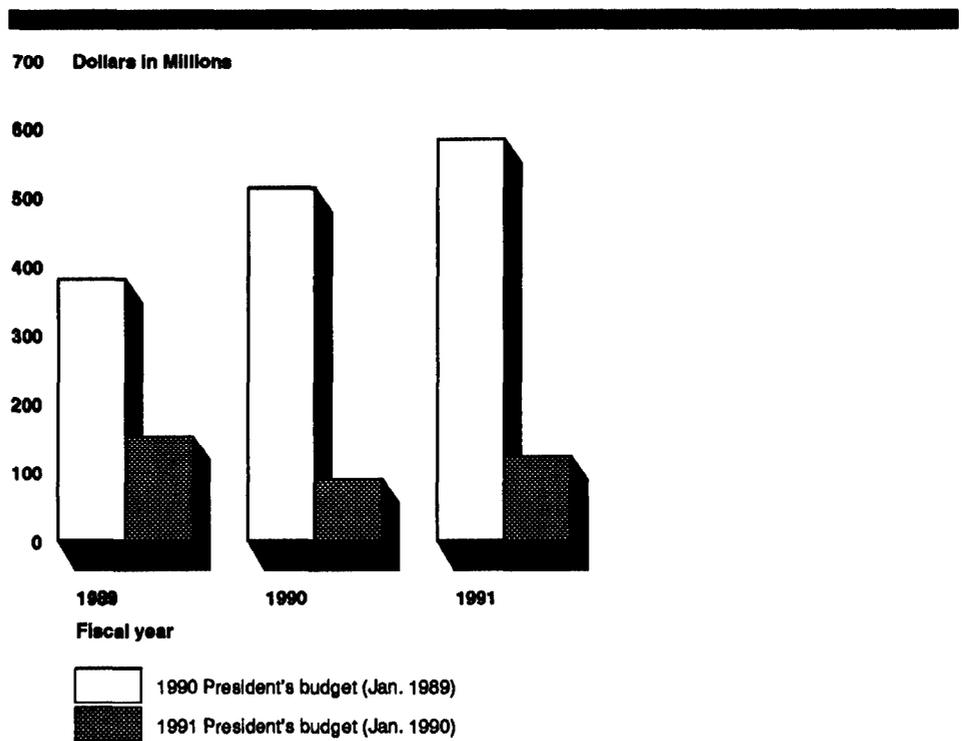
while its depot maintenance backlog is not creating a readiness problem at this time, it could in the future.

Congressional concerns—expressed in both the House and Senate fiscal year 1989 Appropriation Committees' reports—have centered around the validity of the Army's estimates of depot maintenance backlogs. In addition, concerns were also expressed in the fiscal year 1990 House Committee on Appropriations' hearings that since fiscal year 1984, the Army's funding for depot maintenance had increased by 44 percent, whereas the backlog had increased by 144 percent. To help reduce the large and increasing depot maintenance backlogs, the House and Senate Appropriations conferees in November 1989 agreed to increase the Army's 1990 depot maintenance appropriation by \$150 million.

Although large backlogs are serious concerns, several problems made us question the validity of depot maintenance backlogs, including how they are computed. Our analysis showed that the size of the backlogs had decreased sharply from the President's fiscal year 1990 budget submission in January 1989 to the President's fiscal year 1991 budget submission in January 1990.¹ Figure II.1 shows the sharp decreases in depot maintenance backlogs between the budget submissions in January 1989 and 1990. Specifically, the fiscal year 1990 backlog decreased by \$423.2 million by the time of the 1990 submission. This decrease consisted of a \$370.9 million decrease in requirements and a \$52.3 million increase in funding.

¹The budget submission in January 1989 was for fiscal year 1990 and also included data on fiscal years 1988, 1989, and 1991. The budget submission in January 1990 was for fiscal year 1991 and contained updated figures from the prior budget submission for fiscal years 1989, 1990, and 1991.

Figure II.1: Decreases in Army Maintenance Backlogs



Note: The President's 1991 budget does not include modernization and conversion backlogs. However, we included this information to show differences between fiscal years 1990 and 1991.

Reasons Backlogs Decreased From 1989 to 1990 Budget

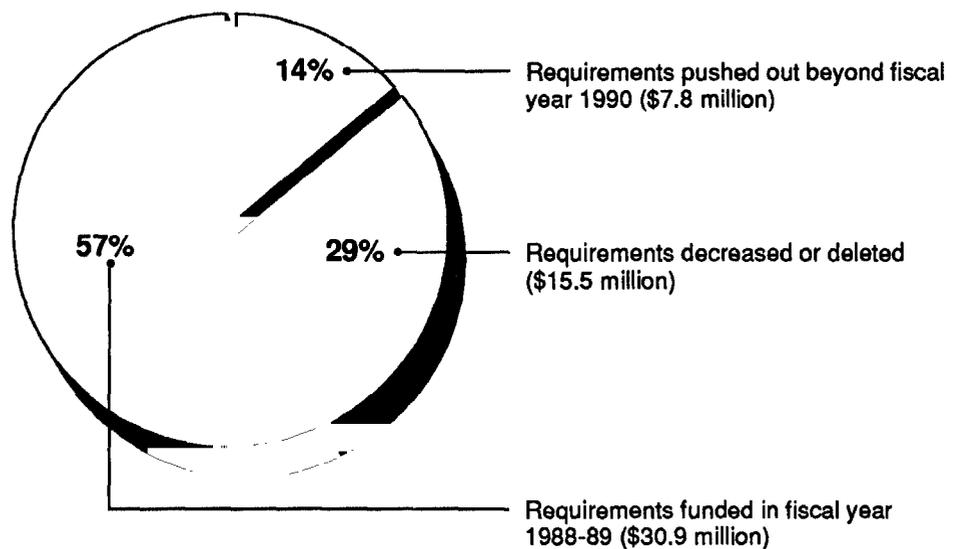
To determine the reasons for major decreases in requirements for fiscal year 1990, AMC reviewed changes to the fiscal year 1990 requirements and backlogs that occurred between the President's fiscal years 1990 and 1991 budget submissions. AMC found that decreases in requirements occurred primarily in prior-year backlogs for fiscal years 1988 and 1989, which were combined with the current-year requirements by the Army to arrive at the total requirements presented in the fiscal year 1990 budget.

Some Army officials have questioned the practice of combining prior-year backlogs with current-year requirements because they believe that it results in an overstatement of budget-year requirements and therefore the backlogs. They believe that a portion of the prior-year backlog no longer represents a maintenance requirement because some forecasted demands for items and equipment to be repaired do not materialize as planned. Their belief was supported by AMC's and our analyses. Both

analyses demonstrate that the fiscal year 1990 backlog decreased substantially because prior-year requirements included in the fiscal year 1990 budget did not materialize as fiscal year 1990 requirements.

To test the validity of the requirement for specific items included in the fiscal year 1990 backlog, we analyzed TACOM's portion of that backlog. From TACOM's backlog of \$93.8 million,² we analyzed selected items totaling \$74.8 million. As indicated in figure II.2, our analysis showed that \$54.2 million in reported backlogs no longer represented fiscal year 1990 requirements because specific items in that backlog had been (1) financed prior to fiscal year 1990 (\$30.9 million), (2) dropped from requirements (\$15.5 million), or (3) pushed into requirements in outyears beyond fiscal year 1990 (\$7.8 million).

Figure II.2: Reduction in TACOM's Backlog



An example involving the M548 Cargo Carrier and the M577 Command Post Carrier illustrates how backlogs decrease. TACOM's fiscal year 1990 backlog included \$21.1 million in prior-year requirements to upgrade the cooling and suspension systems for these two vehicles. Our review showed that \$10.7 million of this backlog, or 51 percent, no longer represented a fiscal year 1990 requirement. About \$1.0 million of this amount

²This figure includes \$90.7 million from fiscal years 1988 and 1989.

was funded with prior-year funds. The other \$9.7 million in requirements did not materialize when modification program schedules slipped because of contractor delinquencies in the production and delivery of kits needed to do the work. As problems with kits became known and program slippages occurred, \$4.7 million of the \$9.7 million in backlog requirements was extended beyond fiscal year 1990, and the remaining \$5.0 million in requirements was dropped from program requirements.

Process Does Not Incorporate Unforeseen Changes

According to AMC, many of the decreases in requirements could not have been foreseen because they stemmed from factors that were outside of AMC's control. Examples cited by AMC of such changes included the decreased use of equipment, better system reliability, fewer returns of unserviceable items, and canceled depot maintenance programs.

Our review of selected TACOM and AVSCOM items included in AMC's analysis showed that the changes in the fiscal year 1990 requirements cited by AMC were generally beyond its control. However, of the \$145.7 million in requirements we reviewed, \$89.5 million (consisting of \$82.8 million in decreases and \$6.7 million in increases) had to do with changes that the Army had known about prior to the submission of the fiscal year 1990 President's budget in January 1989. We were told by AMC officials that, although the Army knew about the changes, the budget was not updated because the budget process does not facilitate the incorporation of changes after the initial budget has been prepared.

Table II.2 provides details on the reasons for changes in TACOM's and AVSCOM's requirements.

**Appendix II
Concerns About Depot Maintenance Backlogs**

Table II.2: Changes in TACOM and AVSCOM Requirements That Occurred Prior to but Were Not Reflected in the President's Fiscal Year 1990 Budget Submission

Dollars in millions

Type of item	Total dollar requirement change	Date change documented	Reason for requirement change
M60 tank engine and transmission	-\$9.4 -4.2	09/88 11/88	Reduction in engine and transmission repair programs in Europe because of declining fleet of M60 tanks in Europe and adequate supply of usable engines and transmissions.
M60 A1/A3 tank	-14.0 -2.6	07/88 09/88	The forecasted overhaul requirements were too high because of M60A3s moving out of the active Army into reserve components, which resulted in less usage.
M1 components	-1.9 0.2	11/88 10/88	M1 components changed for the following reasons: — reduction in average monthly demand in the U.S. for the transmission and — increase in U.S. requirements for other M1 components.
Bradley Fighting Vehicle (M2/M3 family)	-23.4	06/88	The Bradley conversion program experienced slippages because of changing hardware specifications, which resulted in slippages in kit availability.
Bradley Fighting Vehicle (M2/M3 family)	-21.6	10/88	The Bradley conversion program experienced further slippages because of a congressional funding cut in the Bradley modification line, resulting in a reduction in kit purchases.
National Training Center M551 tank	4.0 2.5	06/88 12/88	The forecasted overhaul requirements increased because of increased usage of the M551/M551A1 tanks at the National Training Center.
UH-60 blade	-5.7	06/88	Contract price decreased. According to AVSCOM, the exact source for the contract price in the budget is not known.
Total decrease	-\$82.8		
Total increase	+\$6.7		

According to Army officials, the budget process does not readily allow for changes once total depot maintenance requirements have been agreed to by AMC and the MSCs. This agreement is normally reached in the April or May preceding the budget submission the following January. AMC officials said that they normally do not make changes that occur after initial budgets have been prepared because making all the changes would involve the preparation and review of a new OP-25. They added that they should make individual changes that come to their attention when these changes amount to about \$5 million. However, AMC did not make any changes to fiscal year 1990 requirements after these requirements were agreed to in May and June 1989.

Army Actions to Ensure Valid Depot Maintenance Backlogs

The Army is aware of the difficulties in ensuring that the President's budget contains valid depot maintenance backlog information. AMC and DCSLOG have determined that including prior-year backlogs in the budget year's requirements overstates that year's requirements because a portion of the backlogs is no longer valid. To address the validity of prior-year backlogs, the Army is planning to develop a methodology for determining what portion of the prior-year backlog should be included as a requirement in the budget year.

AMC has partially remedied the problem. It has directed the MSCs, in preparing their fiscal year 1991 budgets, not to show any unfunded requirements for the "current" year, that is, revised fiscal year 1989 requirements and backlogs contained in the 1991 budget submission. It directed further that any valid unfunded requirements from that year should be included in the requirements for the year in which that depot maintenance work will be accomplished. AMC officials explained that because the "current" year (fiscal year 1989 in this case) has already been completed, unfunded requirements cannot be executed at that point and should not be shown as requirements for that year.

As of May 1990, the Army had not developed a methodology for determining what portion of the prior-year backlog was still valid. In our opinion, until such a methodology is developed, the Army will not be sure that the budget-year depot maintenance requirements are valid.

Objectives, Scope, and Methodology

The Chairman of the Subcommittee on Readiness, House Committee on Armed Services, requested that we (1) evaluate the Army's fiscal year 1990 depot maintenance requirements and backlogs as reported to the Congress and (2) provide an explanation of the Army's depot maintenance requirements determination process.

To meet these objectives, we talked with officials of and collected information from the Office of the Army Deputy Chief of Staff for Logistics, Washington, D.C.; the Army Materiel Command, Alexandria, Virginia; the Army Budget Office, Washington, D.C.; the Depot System Command, Chambersburg, Pennsylvania; the Red River Army Depot, Texarkana, Texas; the U.S. Army Tank-Automotive Command, Warren, Michigan; and the U.S. Army Aviation Systems Command, St. Louis, Missouri.

We examined selected items from AMC's evaluation of fiscal year 1990 depot maintenance requirement changes that occurred between submissions of the fiscal years 1990 and 1991 budgets. These items are managed by TACOM and AVSCOM.

We selected these two commands because they accounted for about \$362.4 million, or 72 percent, of the total fiscal year 1990 requirement changes identified by AMC. We judgmentally selected high-dollar changes ranging from \$2.0 million to \$45.0 million in order to cover a significant portion of the changes in requirements. We also determined the reasons for the changes and when they occurred.

At TACOM, we selected eight combat and automotive systems, which had changes totaling \$123.5 million of \$241.0 million in increases and decreases. Our TACOM selections covered \$88.5 million, or 73 percent, of the \$122.0 million requirement decreases identified by AMC and \$35.0 million, or 29 percent, of the \$119.0 million increases identified by AMC.

At AVSCOM, we selected three aircraft systems, which had changes totaling \$22.2 million of \$121.5 million in increases and decreases. Our AVSCOM selections covered \$15.8 million, or 15 percent, of the \$102.5 million requirement decreases identified by AMC and \$6.4 million, or 34 percent, of the \$19.0 million increases identified by AMC.

To determine what had happened to backlog requirements included in the fiscal year 1990 budget, we also reviewed selected items from TACOM's fiscal year 1990 backlog, which were included as part of the total requirements in the Army's fiscal year 1990 budget. Our review

covered \$74.8 million (80 percent) of TACOM's \$93.8 million backlog for fiscal year 1990.

We did not independently determine the reliability of the computer programs or the accuracy of the reports, records, or statistics we obtained from the Army.

We performed our review from June 1989 through March 1990 in accordance with generally accepted government auditing standards.

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