UNITED STATES
GENERAL ACCOUNTING OFFICE

Improvements Needed In Managing The Army's Field Level Equipment Modification Program

Departments of Defense and the Army

The Army has had recurring problems in managing its program for making changes (modifications) in its tactical and combat vehicles.

There have been long delays in applying modifications, ineffective controls over material, and unreliable reporting on the program's status.

These problems cause extensive backlogs of uninstalled modifications resulting in inefficient cancellations of partially completed modifications.

LCD-76-435

MAY 4, 1976

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

LOGISTICS AND COMMUNICATIONS
DIVISION

B-133256

The Honorable
The Secretary of Defense

Dear Mr. Secretary:

We have surveyed the Army's equipment modification program at the Tank Automotive Command. This report points out the recurring problems the Army has had in managing the program.

This report contains recommendations to you on pages 7, 11, and 14. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House and Senate Committees on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report to the Director, Office of Management and Budget; the Chairmen, Senate and House Committees on Appropriations, Armed Services, and Government Operations; and the Secretary of the Army.

Sincerely yours,

Fred J. Shafer
Director

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ABBREVIATIONS

GAO	General Accounting Office
TACOM	Tank Automotive Command

GENERAL ACCOUNTING OFFICE
REPORT TO THE
SECRETARY OF DEFENSE

IMPROVEMENTS NEEDED IN MANAGING THE ARMY'S FIELD LEVEL EQUIPMENT MODIFICATION PROGRAM

Departments of Defense and the Army

D I G E S T

The Army spends large sums to modify or improve its tactical and combat vehicles. In fiscal year 1976 the Army received $208.2 million to procure modification material and $17 million to install modification material. (See p. 1.)

Modifications are made for the safety of personnel to prevent serious damage to equipment, to increase combat or operating effectiveness, to make equipment compatible with new equipment, or to improve or simplify maintenance. (See p. 1.)

Generally, modifications are applied by field maintenance activities or depots depending on their complexity and the industrial equipment required for application, but field maintenance modifications have not been applied in a timely manner. The Army attributed much of the delay to the lack of personnel at the field maintenance activities, and shifted some of the modification work to depots. (See pp. 1 and 3.)

The field activities can do the work. The main reasons for the modification backlog are that equipment is not being inducted promptly for modification installation, controls over material are ineffective, and the management reports required for effective workload scheduling are unreliable. (See pp. 4 and 5.)

Twice in the past five years, the Tank Automotive Command rescinded a total of 116 modifications. Thus the modification program almost had to start over again on two occasions. Little documentation was available to justfify modification rescissions, and the guidance necessary to insure consistent rescission decisions is lacking. (See pp. 8 and 9.)

GAO was informed that many of the modifications would not have been issued under current approval criteria because they would be considered minor. Approvals for proposed modifications have not been effectively used in the past, and GAO believes additional improvements are needed under current or proposed systems. (See p. 12.)

The Army has tried very hard to reduce the modification backlog and revise management procedures to stop their recurrence. But many problems may continue.

GAO therefore makes the following recommendations to the Secretary of Defense:

--The Army should follow the basis maintenance philosphy of applying modifications at the lowest, capable maintenance level.

--The readiness reporting system should be modified to provide the incentive for commanders to promptly induct their equipment for modification applications.

--Management controls should be improved to provide (1) continuous visibility and control over modification material from the time of contractor delivery to the time of kit application and (2) management information systems which accurately report whether modifications have been applied.

--Specific rescission guidance should be provided modification program managers.

--The modification approval process should be strengthened by requiring user comments on proposed modifications and testing the installed modifications at user levels before total program installation.

CHAPTER 1

INTRODUCTION

The Army has spent large sums to modify its tactical and combat vehicles. In fiscal year 1976 the Army received $208.2 million to procure material needed to modify this equipment. In addition, $9 million is being spent to install modification material.

Modifications are made for a number of reasons. Generally, they can be categorized as changes to

--insure the safety of personnel,

--prevent serious damage to equipment,

--appreciably increase combat or operating effectiveness,

--make equipment compatible with newer equipment, and

--considerably improve or simplify maintenance.

Modifications are applied at field maintenance units and depots depending on their complexity and the industrial equipment required for application. In some cases they are also being applied in the field by depot or contract-assist teams.

Most normal modifications should be applied within 1 year of the effective dates of the modification. In July 1974 the Army recognized that modifications scheduled for application by field maintenance units were not being accomplished in a timely manner. At that time the modification backlog exceeded 5 million staff-hours, the bulk of which was for field maintenance application, as shown in the following table. This was considered beyond the Army's present and future capacity.

Commodity command	Staff-hours at depot	Staff-hours at field	Total
Armor Command	315,000	164,000	479,000
Aviation Systems Command	768,000	1,400,000	2,168,000
Electronics Command	23,000	249,000	272,000
Missile Command	1,200,000	65,000	1,265,000
Tank Automotive Command	87,000	849,000	936,000
Troop Support Command	12,000		12,000
Total	2,405,000	2,727,000	5,132,000

As a result of this recognition, the Army Material Development and Readiness Command, formerly the Army Material Command, was tasked to develop a time-phased plan to eliminate the outstanding field-level workload and develop a plan to prevent its recurrence.

CHAPTER 2

MODIFICATIONS NOT APPLIED IN A TIMELY MANNER

The Tank Automotive Command (TACOM) has experienced long delays in applying its field maintenance modifications which, as of July 1974, represented about 92 percent of its modification workload. The remaining 8 percent represented depot-level modifications.

Field maintenance modifications should be applied within 1 year of their effective dates. The following chart shows the age of TACOM's outstanding field modifications as of July 1974.

Modification date	Number	Percent
1969	2	3
1970	9	15
1971	18	30
1972	20	34
1973	11	18
Total	60	100

The Army believes that the prime reason for these delays is the lack of necessary personnel. We believe that the primary reasons are that

--equipment requiring modification is not promptly inducted into the maintenance activities,

--required materials are not effectively controlled and therefore not available at the right place at the right time, and

--the management information systems are not reliable to insure effective planning and scheduling.

MAINTENANCE PERSONNEL AVAILABLE AT FIELD LEVEL TO INSTALL MODIFICATIONS

Because the Army believed it lacked necessary personnel to apply modifications at the field maintenance level, it authorized the commodity commands, such as TACOM, to defer this work from field- to depot-level maintenance. Also, it authorized application of modifications at field level by depot-assist teams.

As a result of these actions, TACOM deferred to the depot level 372,000 staff-hours originally scheduled for field maintenance. Also, an additional 88,000 staff-hours were scheduled for performance by depot assistance teams.

Our inquiries did not disclose any studies or analyses which support the Army's conclusion on the lack of necessary personnel at field maintenance activities. In contrast, we believe additional work can be done at the field level.

In our report entitled "Productivity of Military Below-Depot Maintenance--Repairs Less Complex Than Provided at Depots--Can be Improved," LCD-75-422, July 29, 1975, we concluded that maintenance personnel at these levels were not being fully used, and recommended that productivity be increased by allocating more work to these activities.

At the maintenance activity we visited, Army officials said they could perform the field modifications, if the equipment users would make the equipment available for applications.

EQUIPMENT NOT AVAILABLE FOR MODIFICATION INSTALLATION

Application of modifications at field-level maintenance activities depends on equipment users' making the items available. An Army study and our observations at one activity indicate that one main problem for delays is that, with a few exceptions, there is no incentive for users to turn in their equipment promptly for modification. In fact, as pointed out in the Army study, there are some disincentives. When field commanders have to place their equipment in a nonoperational status for extended periods to apply modifications, the operational readiness rating is adversely affected. For example, at the time of our survey, one of the field-level modifications required 80 hours for application.

Our discussions with maintenance personnel at the maintenance activity we visited confirmed the Army's study conclusions. For example, before our visit, a special effort was made to apply modifications to the M-551 tank; however, only about 50 percent of the M-551s were brought in by the users. Maintenance personnel said that the users were concerned about the effect the applications would have on the operational readiness ratings and their training requirements.

CONTROL OVER MODIFICATION MATERIAL

Accountability over modification material (kits) has been a continual problem. Past GAO and Army audit reports have reported these problems on a recurring basis. Our work at TACOM showed that improvements are still needed.

Inaccurate inventory records and the reliance upon them for workload scheduling cause delays, thus reducing productivity. For example, during our survey TACOM personnel were concentrating on getting modifications applied to the M-551 by using depot-assist teams. The absence of kits, not shown in the inventory records, precluded these teams from applying 22 percent of the modifications at one location and 12 percent at another.

As a result of these shortages, TACOM initiated procurement action for 1,695 kits at a cost of about $185,000. TACOM officials informed us that additional procurement will be needed to replace kits which have been physically lost and/or lost through accounting transactions.

MANAGEMENT REPORTS UNRELIABLE

The Army needs to closely monitor the accuracy of the data reported in its information systems to effectively plan future workloads. Army officials admit that the management reports have been unreliable.

As a part of the plan to reduce modification backlogs, the Army directed its commands to survey and inspect selected equipment to determine the extent of applications. The Army believed that more applications had been done than records indicated. Responses from commanders on six pieces of equipment, including the M-60 and M-551 tanks, showed that TACOM could reduce its backlog by about 118,000 staff-hours because applications had been done but were not shown in the records.

Although physical inspections were supposed to have been made, the depot-assist teams subsequently found that some of the responses were inaccurate. For example, for 1 modification, the validation process indicated that only 20 vehicles needed the modification Army-wide, while physical inspection at a later date indicated that 48 vehicles at 1 activity alone still needed this modification. In another case the validation indicated 5 vehicles Army-wide, while at the same activity 22 vehicles needed the modification.

In gathering modification data for all commodity commands, we noted that the Missile Command had 983,430 hours outstanding as reported by the Army's Maintenance Management Center. Missile Command officials said the actual backlog was only 350,802 hours. The difference was attributed to problems in the Center's computer accepting completed modification status forms.

CONCLUSIONS

Field maintenance modifications have not been applied in a timely manner. The Army attributed much of the delay to the lack of personnel. We believe that the main reasons are that equipment is not being inducted promptly for modification installation, controls over kits are ineffective, and the management reports required for effective workload scheduling are unreliable.

The Army authorized the shifting of field applications to the depot level to overcome the personnel problem. In addition, it authorized the commodity commands to negotiate with major field commands to have the workload, which cannot be accomplished by the field, done by either depot or contract-assist teams.

One of the Army's basic maintenance policies is to apply modifications at the lowest capable maintenance level. We agree and, based on past GAO and Army Audit reviews and recent discussions with field maintenance personnel, we believe these units can apply the modifications.

Although the assistance teams have reduced some of the backlog, this approach is not economical when onsite personnel can do the work. In addition, these onsite personnel could have done the work if the equipment had been given to them promptly.

There are no incentives, and some disincentives, for user commands to turn in their equipment promptly for modification. The Army hopes to solve this problem by (1) field commands setting modification application goals each quarter and (2) having the commands, when they cannot accomplish modifications as planned, reach agreements whereby equipment will be made available at specific times for depot or contractor team application.

Because of the aforementioned reasons, we do not believe this is the most economical approach and its success still depends on the users' submitting their equipment for modification at the time specified. This still does not provide the necessary incentive.

The Army plans to fund field modifications (except for military salaries) at the Army Development and Readiness Command level, instead of the field command level, whether or not they are applied by field units or depot teams. Army officials believe this will give the field commanders the incentive to direct users to input equipment since they will no longer be able to augment their funds available for other maintenance work by deferring modification work.

Although this should improve the program coordination between procurement of material funding and installation funding because both will now be under one command, we do not believe it will provide the incentive for the users to input their equipment. As previously mentioned, the special coordinated effort for the M-551 tank resulted in only a 50-percent users input response.

A possible solution to this problem is to modify the readiness reporting system so that it shows the degradation of equipment because modifications have not been applied in the time prescribed.

RECOMMENDATIONS TO SECRETARY OF DEFENSE

We recommend that:

--The Army comply with its basic maintenance philosophy of applying modifications at the lowest capable maintenance level, which in this case is in the field ratner than at the depot level.

--The readiness reporting system be modified to show degradations in equipment readiness when modifications are not applied in the time prescribed.

--Management controls be improved to provide (1) continuous visibility and control over modification kits from the time of contractor delivery to the time of kit application and (2) management information systems which accurately report whether modifications have been applied.

CHAPTER 3

MANY MODIFICATIONS RESCINDED BEFORE BEING FULLY APPLIED

Twice in the past five years TACOM rescinded a total of 116 modifications before they were applied to all Army equipment in the inventory. Thus the modification program almost had to start over again on two occasions.

We surveyed the most recent rescissions completed in fiscal year 1975. The reasons for recissions are not well documented or supported, and very little guidance is provided to the commodity commands on the procedures and documentation required for canceling modifications. Without specific guidance, opinions differ, even within TACOM, as to whether some of the modifications should have been rescinded.

RESCINDING ACTIONS TAKEN

To reduce the extensive backlog, the Army instructed each commodity command to review its outstanding modifications to determine whether they should be retained for application by field maintenance activities, rescinded, or deferred for application at the depot level.

TACOM, following this instruction, placed its 57 outstanding field-level modifications in the following categories as of June 30, 1975.

Category	Number of modifications	Staff-hours outstanding
Retain	16	194,064
Defer	15	372,259
Rescind	26	275,153
Total	57	841,476

The TACOM modification workload was reduced by 33 percent (275,153 staff-hours) by canceling modifications before they were applied to all equipment in inventory. We estimate that, as a result of these actions, about $3.5 million worth of modification kits will be declared excess. According to the Army, the kits will be broken down for use as spare parts where practical.

In addition to rescinding the 26 modifications, TACOM also categorized 17 (393,791 staff-hours) of the remaining 31 modifications as category "D" as shown below.

The categories are:

--(A) Appreciably enhance the operational-support characteristics of the equipment.

--(B) Application is essential to provide the required personnel and/or equipment safety.

--(C) Application will provide the required security.

--(D) All others.

Under category "D" the modification should be scheduled for application within 1 year. If not applied within 1 year (July 1, 1976, in this instance), it will be rescinded.

TACOM was not placing special emphasis on scheduling these modifications for applications. Also, because depot level modifications are applied during equipment overhauls, which occur every few years, the majority of the modifications deferred to the depots could not be applied within 1 year.

TACOM officials were noncommittal, in subsequent discussions, as to whether category "D" modifications would be rescinded in 1 year if not applied. They said that the kits would be available for installation by the field maintenance activities and by depots during overhauls after 1 year.

We believe that modifications with such low priority and little application emphasis will eventually be canceled and few additional applications made. Also, we question the expenditure of valuable maintenance resources to apply modifications, which according to TACOM (1) do not enhance the operational-support characteristics of the equipment, (2) are not essential to the safety of personnel or equipment, or (3) are not needed to provide the required security.

RESCISSION REASONS NOT WELL DOCUMENTED OR SUPPORTED

The commodity commands appear to lack guidance on procedures and documentation required when canceling modifications. As a result, at TACOM there was very little documentation available as to why modifications had been canceled. Also, among TACOM personnel, there were differing opinions as to whether some of the modifications should have been rescinded.

Decisions to rescind modifications were made on the basis of (1) lack of complaints from the field units, indicating that equipment was working satisfactorily without the modification, (2) the low quantity of modification kits issued, indicating lack of interest, and (3) the age of the modification.

The reason TACOM gave for little documentation was its concern that few modifications would have been rescinded if the managers were required to justify their decisions. So the managers merely checked off those which they believed should be rescinded. Without guidelines and the need to justify rescissions, differences of opinion existed as to whether some modifications should have been canceled.

For example, the specialist responsible for one safety modification was uncertain about its recission. The purpose of the modification was to correct the heater exhaust system on a cargo carrier so that it would not malfunction and injure crew personnel. TACOM bought 1,270 kits at the unit cost of about $350. As of November 1974 only 300 of the 1,270 kits were reported as applied. The specialist believed that, because the modification was safety related and very few kits had been applied, more consideration should have been given to this modification before rescinding it.

The most common reason given for rescission was the low quantity of kits issued, indicating a lack of interest. What is a low quantity? For those modifications retained, 96 percent of the kits had been requisitioned and issued to the field; for those rescinded, 74 percent were requisitioned and issued. Seventy-four percent does not appear low or demonstrate a lack of interest on the part of many field activities.

TACOM officials said that one problem with the modification program is that there are no specific procedures outlined to rescind modifications. Our review of current regulations, plus a proposed change, supports this contention.

The proposed change states that "action to cancel modifications will be initiated by the sponsoring agency (commodity command) when it is determined that the modification is not accomplishing its intended purpose." "Not accomplishing its intended purpose" is subject to varied interpretation, and therefore more definitive guidance should be provided to achieve consistent rescission actions.

CONCLUSIONS

The most recent concerted effort to reduce extensive modification backlogs could result in rescinding as much as 79 percent of the TACOM modifications outstanding as of June 30, 1975.

Little documentation was available to justify modification rescissions, and the guidance necessary to insure consistent rescission decisions is lacking. As a result, some confusion exists as to whether certain modifications should have been canceled.

RECOMMENDATION TO THE SECRETARY OF DEFENSE

We recommend that the Army give the commodity commands specific guidance for canceling modifications.

CHAPTER 4

IMPROVEMENTS NEEDED IN APPROVING MODIFICATIONS

The potential cancellation of 79 percent of an 841,500 staff-hour modification backlog with no apparent impact on the operations, maintenance, safety, or security of equipment illustrates the need to improve the modification approval procedures.

Before a modification is applied, all responsible levels, especially the equipment user commands should be convinced it is worth the logistical support required.

Approvals of proposed modifications have not been effectively accomplished in the past, and we believe improvements are required under current or proposed systems.

PAST APPROVALS

During July 1970 to July 1975, TACOM rescinded 116 modifications. These modifications were basically minor modifications or more important ones where subsequent equipment experience showed they were no longer needed.

In 1972, in response to a congressional request, we reported that 90 modifications had been rescinded by TACOM on the basis of their age and the quantities of kits issued. At that time we were told that many of the older modifications would not have been issued under the then new criteria because they would be considered minor modifications.

In our current survey, we found that 26 modifications were rescinded and an additional 20 have rescission potential (category "D" modifications). Again we were told that they were rescinded primarily on the basis of age and quantities issued. We were told once again that many of these modifications would not be issued under new procedures if they were up for approval today.

PRESENT APPROVALS

TACOM, under the direction of the Army Development and Readiness Command, has taken steps to reduce the number of nonessential modifications published. But improvements in approval actions are still needed.

Proposed modifications are now required to be coordinated with the appropriate Training and Doctrine Command school. For example, the proposed product improvement

program for the M-551 tank with a projected cost of $45 million was coordinated with the armor school at Fort Knox, Kentucky. As a result of this coordination, some proposed modifications were deleted from further consideration.

Under these new procedures, certain items in the M-551 program still appear to be minor because they apparently do not affect the capability of the vehicle to perform its mission, are not safety related, and do not pertain to security matters.

For example, one improvement listed as a priority one provides for a larger bustle rack on the back of the tank to give added space for the storage of crew material. The cost is estimated at nearly $1.5 million. Another such improvement, listed as a priority three, provides for a holder for the driver's gas mask--cost is estimated at about $536,000.

We also noted some overlapping between outstanding modifications and the product improvement program. For example, one modification calls for replacing the wiper blade assembly, although under the improvement program the wiper system will be eliminated.

Although TACOM officials agreed that there was some overlapping, they explained that the modification may not be working as intended and there may now be a better way of doing things. They also said that the modifications that are expected to overlap will not be rescinded because it is better to do some modification until the product improvements are applied.

We believe this overlapping, plus the existence of many modifications that may not work as intended, of which many are eventually rescinded, indicates the need for more test and evaluation programs before issuing modifications for application.

CONCLUSIONS

Modification approval procedures need improvement to reduce the number of nonessential modifications, many of which are eventually rescinded because the benefits to be derived do not outweigh the logistic support efforts required.

All responsible levels, especially the equipment user commands, must be convinced that the modification is worthwhile and the application time can be spared without seriously degrading the operational or training commitments.

We believe two actions, in addition to the new current approval procedures, are needed to foster support from the user commands and in turn insure that modifications are applied in a timely manner.

--User commands should have a greater voice in the modification approval process. Modifications will not be applied in a timely manner, if at all, unless the benefits can be demonstrated to the operators of the equipment.

--The testing and evaluation process should include modification on a selective basis at the operator's level. Essentiality and the determination that modification will perform as intended can best be demonstrated by users over a reasonable time frame. If successful these tests will also add credence and support at the user level.

RECOMMENDATIONS TO THE SECRETARY OF DEFENSE

We recommend that the modification approval process be strengthened by

--requiring user comments on proposed modifications and

--testing the installed modification at user level before servicewide installation.

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