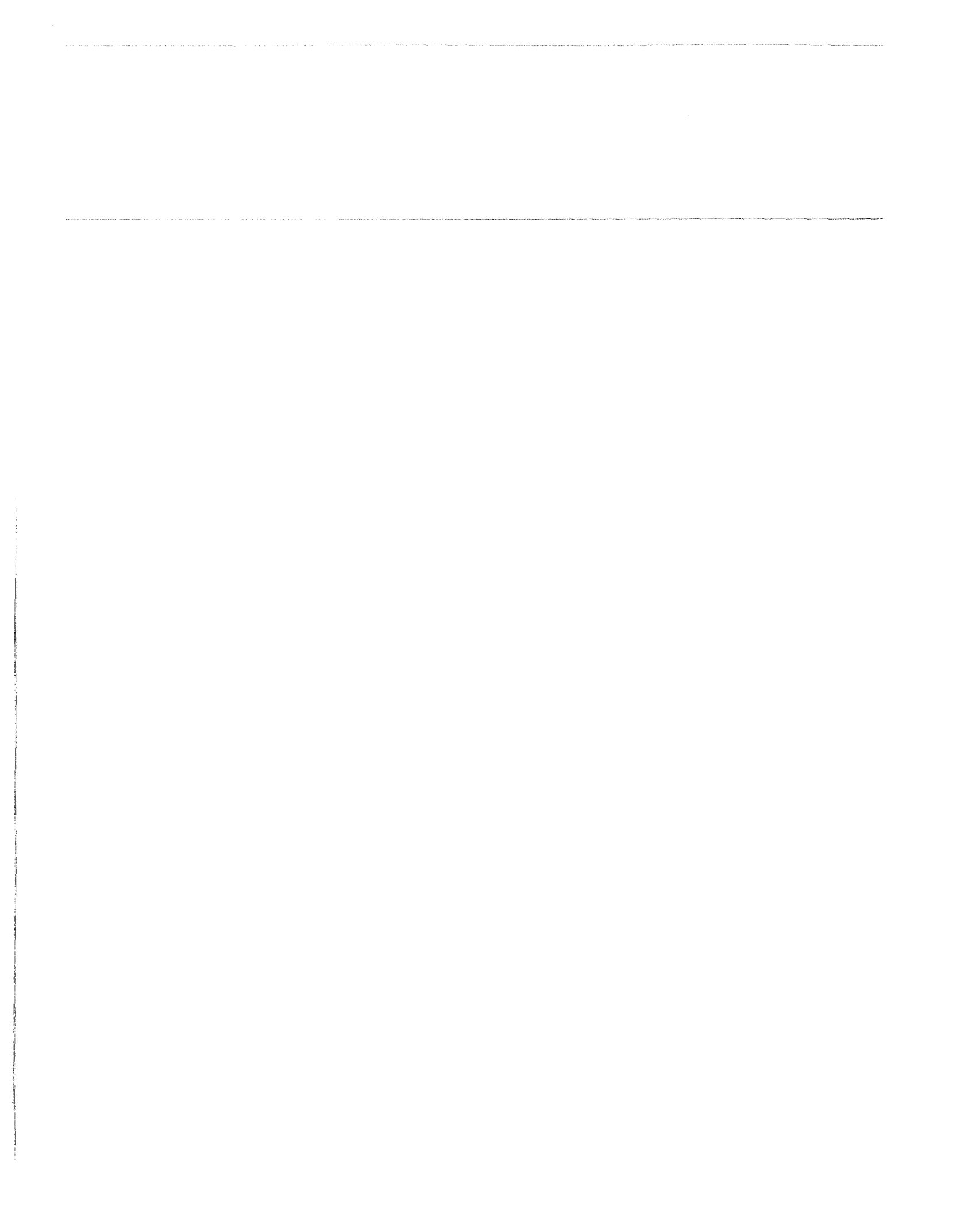


Better Training Could Improve General Support Maintenance Capability



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General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-226358

July 9, 1991

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

Dear Mr. Chairman:

As you requested, we evaluated how well the Army was preparing its reserve general support maintenance units to perform their wartime missions and assessed actions underway to improve their capability. This report makes several recommendations to the Secretary of the Army for improving this capability through better training.

Our audit work was completed prior to Operation Desert Storm. Although some reserve general support maintenance units were deployed to Saudi Arabia, we did not evaluate the (1) adequacy of any training they may have received after being mobilized for their Desert Storm roles or (2) units' performance during the war.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 15 days from its issue date. At that time, we will send copies of this report to appropriate congressional committees, the Secretaries of Defense and the Army, and the Director of the Office of Management and Budget. We will make copies available to others upon request.

Please contact me at (202) 275-4141 if you or your staff have any questions concerning the report. Major contributors to this report are listed in appendix III.

Sincerely yours,

Richard Davis
Director, Army Issues

Executive Summary

Purpose

The Army has placed heavy reliance on reserve (Army Reserve and National Guard) forces to maintain its equipment in the event of war. The Army has 65 of its 76 general support maintenance units in the reserves. In December 1989, the Chairman, Subcommittee on Readiness, House Committee on Armed Services, asked GAO to (1) evaluate how well the Army was preparing its reserve general support maintenance units to perform their wartime missions and (2) assess actions underway to improve capability.

GAO's audit work was completed prior to Operation Desert Storm. Eight reserve general support maintenance units were deployed to Saudi Arabia. GAO did not evaluate the (1) adequacy of any training they may have received after being mobilized for their Desert Storm roles or (2) units' performance during the war.

Background

The reserves are expected to play a major role in performing general support maintenance during wartime. General support maintenance provides important repair support in the rear areas of a war zone to sustain combat and support equipment. Under this concept, repaired items are generally returned to the supply system for issue to units that must replace unserviceable equipment. Because of their important support roles, it is necessary that these units train effectively in peacetime on the equipment that the Army expects them to repair during wartime.

Results in Brief

Based on GAO's survey of 56 units prior to Operation Desert Storm, the Army's reserve general support maintenance units were not routinely prepared for their wartime missions. Specifically:

- Mission guidance provided to units often did not specify what they would repair during wartime. Recent actions to improve this guidance for the European theater should help alleviate this problem, but indications are that the problem exists elsewhere.
- Units were generally not effectively using their limited training time to develop and sustain general support maintenance proficiency.
- Using commanders' estimates, GAO calculated that between 42 and 50 percent of the mechanics in the units were unprepared to perform general support tasks during wartime.

In addition, unit capabilities have been degraded by long-standing, fundamentally inherent problems that have hampered reserve units'

training. For example, units (1) are sometimes located far from maintenance facilities or other repair sources, (2) have limited amounts of time available to train their soldiers on repairs, and (3) frequently spend much of their weekend training time on administrative tasks.

The Army is striving to develop initiatives to provide better general support-level training opportunities for its reserve units. However, GAO identified problems that prevent some of these initiatives from accomplishing this goal. Nonetheless, improvements implemented by some units to enhance maintenance training could be adopted by other units.

Principal Findings

Wartime Mission Guidance Provided to Units Has Been Inadequate

Twenty-two of 52 units GAO surveyed had not received sufficient guidance from higher level wartime commands regarding their wartime missions. Commanders of these units were not aware of the specific types of equipment they would be expected to repair in various wartime theaters. Without this information, units cannot develop realistic training programs. During GAO's review, the Army's Forces Command asked wartime theater commanders to identify the equipment they expected reserve maintenance units to repair. The U.S. Army, Europe, has done this, but the other commands have not.

Limited Training Time Not Used Effectively

Reserve units have far less time available to train for wartime missions than active forces. Units were often not effectively using their limited training time to develop and sustain general support maintenance proficiency because they (1) were spending more time performing administrative and other tasks rather than general support maintenance, (2) had limited or no opportunities to repair mission-essential equipment, especially the Army's newer equipment, and (3) had inadequate maintenance facilities. For example, the units GAO surveyed estimated they spent only 38 percent of their yearly training time and 25 percent of their weekend drill time performing general support-level repairs.

Units estimated they spent 42 percent of their limited training time on administrative and other nonmaintenance tasks. Many of these tasks are required by higher headquarters and included attending mandatory briefings and classes, taking periodic inventories of supplies and equipment, and performing field training exercises.

Twenty of 51 units had no opportunity to repair force modernization equipment, such as the M1A1 tank and the Bradley Fighting Vehicle, and 14 additional units repaired this equipment only during their 2-week annual duty training period. Because the Army does not routinely provide reserve units with equipment to repair, unit commanders must take the initiative to either obtain equipment for their unit or to provide training opportunities at other facilities.

Nineteen commanders believed that their maintenance facilities were inadequate for a variety of reasons, including insufficient space to repair equipment and unheated work areas. Some commanders also expressed concern over using alternate training facilities. For example, they told GAO that they often had to spend a considerable portion of their training time to travel great distances to obtain needed maintenance training.

Units Need to Evaluate Maintenance Proficiency

The Army does not have a system to adequately evaluate the technical proficiency of reserve mechanics performing general support maintenance. In July 1989, GAO identified the same weakness in active Army units and recommended that the Secretary of the Army develop methods for evaluating general support maintenance proficiency.¹ Although the Army concurred, it has not aggressively taken steps to develop a proficiency measurement system. In the absence of such a system, commanders of 56 units GAO surveyed estimated the percentage of mechanics in their units who were prepared for wartime missions. Using these estimates, GAO computed that between 42 and 50 percent of these units' mechanics were unprepared for wartime tasks.

Changes Needed to Existing Initiatives to Improve Reserve Maintenance Capability

Actions that the Army has underway are steps in the right direction, but they may not ensure that general support maintenance units will be prepared for wartime missions. For example:

- The Hands-on Training program, designed to provide units with mission-essential equipment to repair, has progressed slowly and has not improved general support-level training. The program suffers from a lack of command emphasis and problems, such as too few parts to repair equipment, that have limited its progress.

¹ Army Maintenance: General Support Maintenance Units Not Prepared to Perform Wartime Missions (GAO/NSIAD-89-183, July 17, 1989).

- The Regional Training Sites—Maintenance program, designed to provide maintenance training at regional locations throughout the country, has not offered general support-level training on a routine basis because the focus to date has been on direct support-level repairs. The Army plans to have general support-level programs of instructions in place at these sites by 1992.
- The Equipment Maintenance Center—Europe, designed to provide overseas maintenance training for select general support units, has neither provided training on the Army's most modern equipment systems nor training to all maintenance disciplines in those units.

Improvements implemented by some units have enhanced maintenance training. For example, the Iowa National Guard and its maintenance units have developed initiatives to (1) measure and track the proficiency of unit mechanics performing general support-level repairs and (2) ensure that certain training weekends throughout the year are dedicated to primary mission tasks. Officials at these units believed that the initiatives improved their capability to perform wartime missions.

Recommendations

To enhance the capability of reserve general support maintenance units, GAO recommends that the Secretary of the Army

- ensure that commanders in all wartime theaters provide mission guidance to reserve units specifying the types of equipment they would be expected to repair in wartime;
- resolve problems that have limited the value of reserve training initiatives designed to provide units with opportunities to repair equipment they would be expected to repair during wartime; and
- determine whether unit-level initiatives to improve general support maintenance capability can be adopted in other reserve units.

Agency Comments

The Department of Defense agreed with all of GAO's findings and recommendations. It stated that, by October 1, 1991, it will (1) certify that reserve component maintenance units receive guidance on the types of equipment to be repaired during wartime and (2) review and resolve problems that have caused administrative and repair parts difficulties in the Hands-on Training program. It also stated that, by December 31, 1991, it will review the initiatives developed by the Iowa National Guard for use by other reserve component units.

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Abbreviations

DOD	Department of Defense
DS	Direct support
GAO	General Accounting Office
GS	General support

Introduction

The reserve components (National Guard and Army Reserve) are essential elements of today's Army. Since the early 1970s, the Army has come to rely on these forces to accomplish its mission during wartime. These forces constitute over one-half of the Army's total force structure, and the likelihood exists for an even greater share in the face of Army force reductions and restructuring.

Importance of Reserves in the Army's Total Force

The reserves have both combat and support roles. With the end of the draft and the creation of the "Total Force" policy in 1973, reservists, rather than draftees, have become the primary source of personnel to augment the active forces in military emergencies. Army defense plans depend on the reserves to perform as effectively as their active counterparts in the event of war.

The Army's dependence on reserves is particularly vital in the support area. Whereas the reserves comprise about 52 percent of the Army's combat units, their presence is even greater in combat support and combat service support roles within the Army's support structure.¹ Table 1.1 shows the percentage of the combat and support structure devoted to reserves.

Table 1.1: Combat and Support Roles in the Army's Force Structure

Role	Example units	Percentage of capability in the reserves
Combat arms	Infantry, armor	52
Combat support	Military police, signal, chemical, and engineering	58
Combat service	Transportation, supply, support and maintenance	70

Role of Reserves in the Army's Maintenance System

Army maintenance ranges from basic preventive maintenance performed at the unit level to the industrial type performed at the depot level. At the intermediate levels, general support (GS) and direct support (DS) maintenance units provide interim repair and replacement of equipment. Items repaired at the GS level are generally returned to the supply system to replace unserviceable equipment. The four levels of maintenance are as follows:

¹"Combat support" refers to fire support and operational assistance such as military intelligence and military police. "Combat service support" refers to logistics and administrative support.

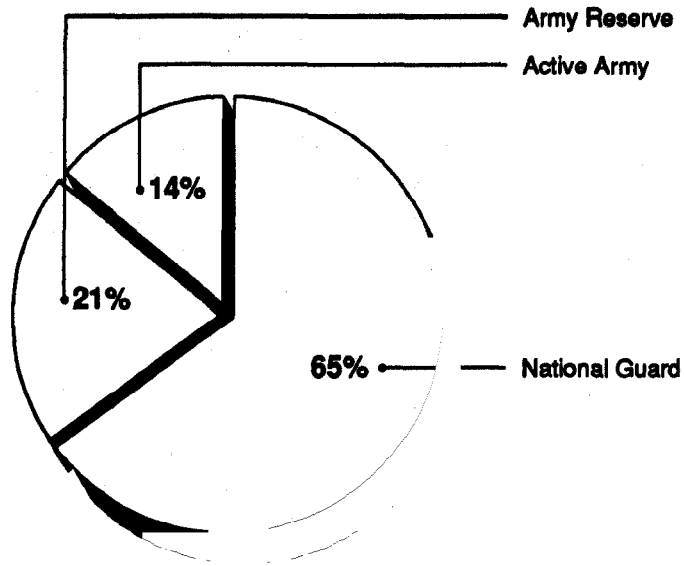
- **Organizational level:** Equipment operators and unit mechanics perform preventive maintenance; make minor repairs; replace modules and parts; and inspect, lubricate, clean, and preserve equipment.
- **DS level:** Repairs are performed at forward-deployed areas during wartime, including the replacement of unserviceable parts, major subassemblies, and modules. Maintenance personnel also identify equipment malfunctions and perform light body repairs. DS repairs include removing and replacing engines, transmissions, and water pumps.
- **GS level:** Maintenance is performed in fixed or semifixed facilities in the rear areas of a war zone. Components are repaired and rebuilt in support of the theater supply system and lower maintenance levels. Heavy body repairs are made to major equipment, and technical assistance is provided to lower level units. GS-level repairs include repairing or rebuilding engines or transmissions as necessary.
- **Depot level:** The life of the equipment is extended through restorative maintenance, such as the complete overhaul of components (engines and transmissions) and end items (trucks, tanks, etc.).

The Army plans to use civilian and military personnel to repair its equipment during wartime. In peacetime, civilians perform much of the Army's GS maintenance, while reserve units do not normally have GS maintenance missions. As a result, reserve units are usually not provided equipment requiring GS-level repairs. Nonetheless, because reserve units constitute the majority of the Army's GS maintenance force, they are expected to play an important role in performing these repairs during wartime. Therefore, reserve maintenance units must be well trained and prepared to carry out wartime missions.

GS Maintenance Force Structure

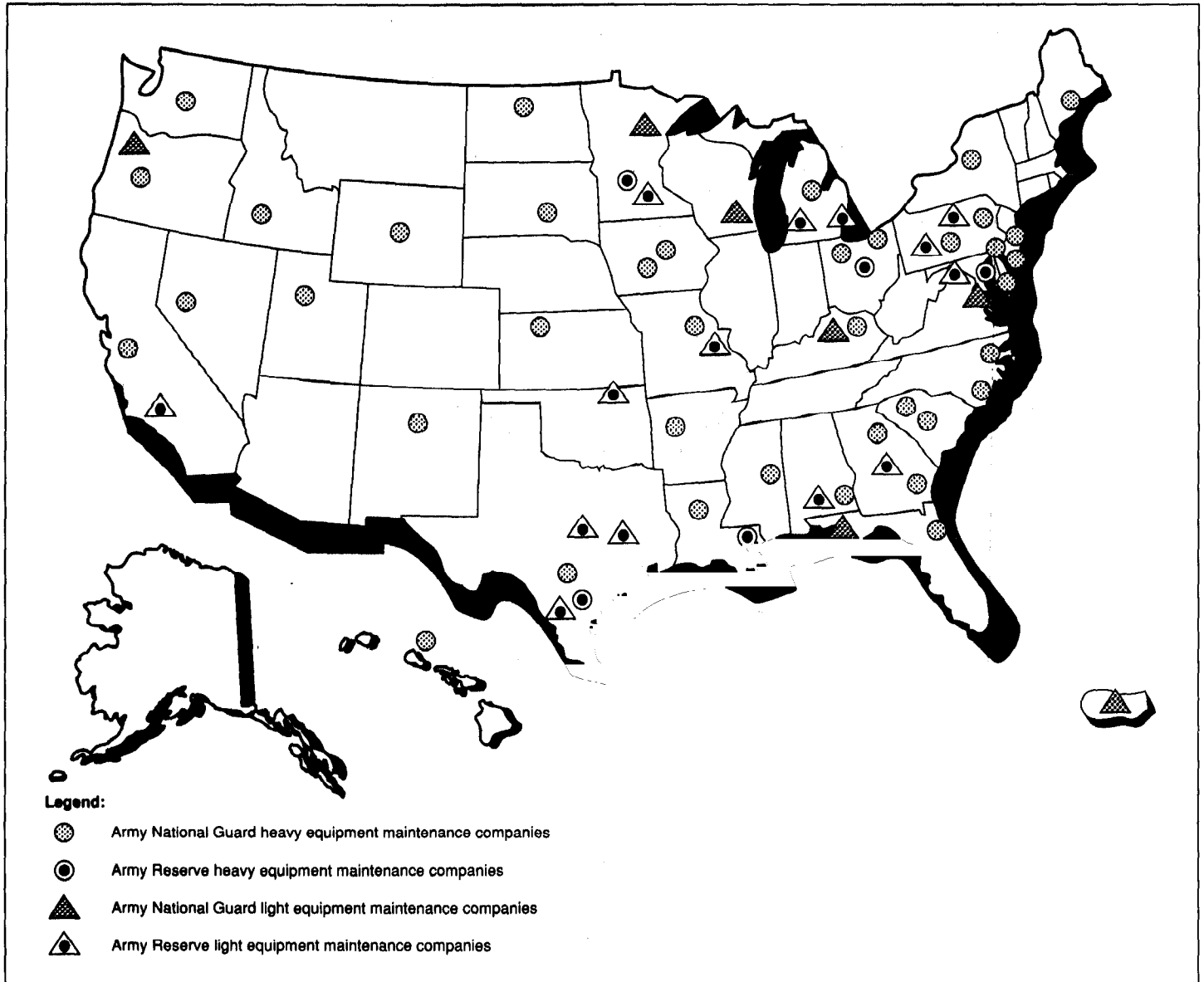
The GS maintenance force structure has two types of Army units: heavy equipment maintenance companies and light equipment maintenance companies. Heavy equipment companies maintain combat and tactical vehicles and their components, while light equipment companies maintain light equipment, such as electronic and communications equipment, and their components. As shown in figure 1.1, 86 percent of these companies, or 65 of 76 units, are in either the Army Reserve or National Guard.

Figure 1.1: GS Maintenance Force Structure



As shown in figure 1.2, reserve GS maintenance units are widely dispersed throughout the United States and Puerto Rico. Thirty-nine of 44 heavy equipment maintenance companies are in the National Guard, while 14 of 21 light equipment maintenance companies are in the Army Reserve.

Figure 1.2: Reserve GS Maintenance Units in the United States and Puerto Rico



Prior GAO Studies Addressed Reserve Training and GS Maintenance Issues

Issues related to Army reserve component training and GS maintenance capability have been the subject of several GAO reports in recent years. Our reports on reserve training have identified training deficiencies and stressed the need for the Army to better manage its training programs. In June 1989, we reported that the Army was not (1) adequately training its reserve soldiers to perform critical job tasks, (2) emphasizing

battlefield survival skills, and (3) effectively managing the use of its reserve training time.² As a result, we expressed concern about the effects these deficiencies could have on the Army's ability to perform its wartime operations.

Our reports in the Army GS maintenance area have also raised concerns about the accomplishment of this mission during wartime. In a July 1989 report, for example, we concluded that the Army's active force was not prepared to perform its wartime GS maintenance mission.³ We cited a number of problem areas, including (1) the inadequacy of wartime mission guidance provided to GS units and (2) insufficient time being spent by these units during peacetime performing GS-level repairs.

The Department of Defense (DOD) has generally agreed with our previous recommendations and has initiated action to improve maintenance capability and reserve training. Improvements related to some of the deficiencies noted in this report are discussed in chapter 3.

Objectives, Scope, and Methodology

The Chairman, Subcommittee on Readiness, House Committee on Armed Services, asked us to review Army reserve GS maintenance. The request was prompted by the Subcommittee's concern regarding reliance on reserves to accomplish GS maintenance during wartime, particularly in view of the difficulties associated with training reserve forces. Our objectives were to (1) evaluate how well the Army was preparing its reserve forces to perform their wartime GS maintenance missions and (2) assess initiatives underway to improve reserve GS maintenance capability.

We performed our work at the following locations:

- various Army headquarters organizations in the Washington, D.C., area, including the National Guard Bureau; Chief, Army Reserve; Office of the Deputy Chief of Staff for Logistics; and the Office of the Deputy Chief of Staff for Operations and Plans;
- U.S. Army Materiel Command, Alexandria, Virginia;
- U.S. Army Forces Command, Fort McPherson, Georgia;

²Army Training: Management Initiatives Needed to Enhance Reservists' Training (GAO/NSIAD-89-140, June 30, 1989).

³Army Maintenance: General Support Maintenance Units Not Prepared to Perform Wartime Missions (GAO/NSIAD-89-183, July 17, 1989).

- various Army activities in Germany, including U.S. Army, Europe, headquarters; 21st Theater Army Area Command headquarters; and the Equipment Maintenance Center—Europe;
- Ordnance Center and School, Aberdeen Proving Ground, Maryland;
- two regional maintenance training sites at Camp Dodge, Iowa, and Fort Indiantown Gap, Pennsylvania;
- 734th Maintenance Battalion, Camp Dodge, Iowa; and
- nine reserve GS maintenance units listed in table 1.2.

Table 1.2: GS Maintenance Units Visited

Unit Visited	Location	Component
103rd GS HEMCO	Fort Indiantown Gap, PA	National Guard
195th GS HEMCO	Westminster, MD	Army Reserve
298th GS LEMCO	Altoona, PA	Army Reserve
417th GS LEMCO	Faribault, MN	Army Reserve
424th GS LEMCO	St. Louis, MO	Army Reserve
544th GS HEMCO	Wabasha, MN	Army Reserve
1035th GS HEMCO	Jefferson City, MO	National Guard
3655th GS HEMCO	Camp Dodge, IA	National Guard
3657th GS HEMCO	Camp Dodge, IA	National Guard

Note: HEMCO—heavy equipment maintenance company
LEMCO—light equipment maintenance company

To achieve our first objective, we focused on several factors important to the wartime preparedness of GS units. The factors included the adequacy of wartime mission guidance provided to these units; the effectiveness of training policy and practices on GS maintenance proficiency; the availability and use of equipment and facilities for training purposes; and the availability and proficiency of maintenance personnel.

As shown in table 1.2, our visits included heavy equipment maintenance and light equipment maintenance companies within the Army Reserve and National Guard. At the GS units visited, we interviewed military and civilian personnel involved in maintenance operations and reviewed documentation to obtain information on wartime GS maintenance preparedness. We reviewed maintenance regulations, instructions, and directives; wartime operational plans and mission guidance; and unit training plans and work load schedules.

We also used a questionnaire to obtain data from all 65 units on their preparedness for performing GS maintenance during wartime. Most of the questions focused on (1) units' operations from June 1989 through May 1990 and (2) GS mechanics assigned to these units as of

May 31, 1990. We pretested the questionnaire at three Army Reserve GS maintenance units—two heavy equipment maintenance companies and one light equipment maintenance company—representing diverse geographical locations. We mailed the questionnaire in July 1990 and finished collecting data in November 1990. To encourage a high response rate, we pledged to treat responses confidentially and to report responses in summary form. We received 56 questionnaires, a response rate of 86 percent. Appendix I provides a summary of the questionnaire results.

To achieve our second objective, we interviewed officials and obtained relevant documentation from several Army activities involved in GS maintenance training. At Department of Army headquarters, for example, we discussed the objectives and status of a variety of training efforts with officials responsible for the Army's maintenance and training programs. At the Ordnance Center and School, we discussed efforts to measure the proficiency of GS maintenance mechanics. At the Forces Command and the Army Materiel Command, we spoke with key officials about new training programs for reserve units.

In Europe, we discussed with key officials the mission and operations of the Equipment Maintenance Center—Europe, an organization designed to provide equipment repair training opportunities for reserve units. We also visited two of the Army's regional maintenance training sites to gain an overview of GS maintenance training at these sites. During our GS maintenance unit site visits, we also discussed and obtained data regarding local actions to improve maintenance training and management.

Our audit work was completed prior to Operation Desert Storm. According to an Army official, eight reserve general support maintenance units were deployed to Saudi Arabia. We did not evaluate the (1) adequacy of any training they may have received after being mobilized for their Desert Storm roles or (2) units' performance during the Operation.

We performed our review from January through November 1990 in accordance with generally accepted government auditing standards.

Reserve Units Are Not Effectively Preparing for General Support Maintenance Missions in War

Many reserve GS maintenance units we surveyed were not effectively preparing for their wartime missions because they (1) had not received adequate wartime mission guidance needed to develop effective training programs and (2) were generally not using their limited training time to develop and sustain GS maintenance proficiency. As a result, units had mechanics who were unprepared to perform their wartime duties. Although the Army does not have a system to evaluate a mechanic's proficiency to perform GS maintenance tasks, unit commanders we surveyed provided us with estimates of the percentage of mechanics in their units who were prepared for wartime missions. Using these estimates, we calculated that between 42 and 50 percent of their mechanics were not prepared to perform their wartime tasks.

In addition, reserve unit capabilities have been degraded by long-standing, fundamentally inherent problems that have hampered maintenance training efforts. For example, reserve units (1) are sometimes located far from maintenance facilities or other sources of equipment to repair, (2) have limited amounts of time available to train their soldiers on repairs, and (3) frequently spend much of their weekend training time on administrative tasks.

Until the Army overcomes the fundamental training problems that have existed for many years, it may not be able to achieve what it expects these units to do in wartime.

Wartime Mission Guidance Provided to Units Has Been Inadequate

Most units, or 51 of 56 units we surveyed, had received some mission guidance as of May 1990. However, 22 units had not received guidance identifying the specific equipment they would be expected to repair during war. Without this information, units cannot develop realistic training programs that are compatible with their expected wartime roles.

According to Army training policy, wartime mission guidance is needed for GS maintenance units to establish training plans to meet wartime requirements. Mission guidance is provided to units through the wartime chain of command. It consists of operational plans, battle books, and other correspondence. According to Forces Command officials, the need for specific repair missions is essential because limited reserve training time precludes training on all equipment that may be found on the battlefield. Further, Army Regulation 220-1, "Unit Status Reporting," requires units to degrade their training readiness ratings if

they repaired equipment during training time other than that designated for their wartime mission.

Mission Guidance Has Improved Recently

In a July 1989 report on active GS maintenance units, we concluded that mission guidance was inadequate and recommended that the Army provide more specific guidance to its units. The Army has taken partial action recently to improve its wartime mission guidance.

In August 1988, Forces Command developed detailed instructions for wartime commanders to use in providing better guidance to their units. In early 1989, the Command requested wartime commanders to provide GS maintenance units with improved guidance in the form of a maintenance unit employment plan. The plan was to specify, among other things, the equipment to be repaired during wartime.

In March 1990, U.S. Army, Europe, officials issued the requested guidance to 76 active and reserve GS maintenance units. The guidance was tailored to each of the units, considering its expected wartime role, and contained a listing of specific items to be repaired during wartime. As of October 1990, all but 13 of these units had reported receiving the guidance, and U.S. Army, Europe, officials planned to follow up to ensure that all received it. The guidance conformed with our July 1989 report recommendation to the Secretary of the Army. Although these officials said it was issued too late for the 1990 training year, they believed the guidance should help commanders establish training plans for succeeding years.

On the other hand, a Forces Command official told us that the commanders in chiefs of other wartime theaters, such as Korea, had not provided similar guidance at the time of our review. Further, 12 of 24 units responding to our survey who have support missions to theaters other than Europe reported they did not have guidance on specific equipment to repair during wartime.

Limited Training Time Not Used Effectively

Commanders of the majority of the units we surveyed estimated that their units spent more time performing either lower-level maintenance or other tasks rather than on training or work related to their primary GS maintenance missions. Although commanders offered various reasons, the performance of excessive administrative duties and other mandatory requirements were predominant detractors. Other factors

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affecting training time included (1) the lack of mission-essential equipment, particularly force modernization items, to repair and (2) facility-related problems.

Time Spent on GS-Level Repairs Is Low

Unlike the active forces, the reserves have a limited amount of training time available. To effectively use training time, the Army advocates that the reserves focus their peacetime training on mission-essential tasks required for wartime. For GS maintenance units, GS-level repair is a mission-essential task.

As shown in table 2.1, commanders for GS units responding to our survey estimated spending only an average of 38 percent of their time on GS-level maintenance training. This time includes inactive duty training, which usually consists of a weekend drill each month throughout the year, and annual training, which is normally a 2-week drill held sometime during the year.

Table 2.1: GS Units' Estimates of Training Time Usage (June 1989 Through May 1990)

Tasks performed	Estimated percentage of training hours		
	Inactive duty training	Annual training	Combined training
GS-level maintenance	25	56	38
DS and organizational-level maintenance	22	20	21
Other activities (e.g., administrative and tactical tasks)	53	24	42
Total	100	100	100^a

^aTotal does not add to 100 percent due to rounding.

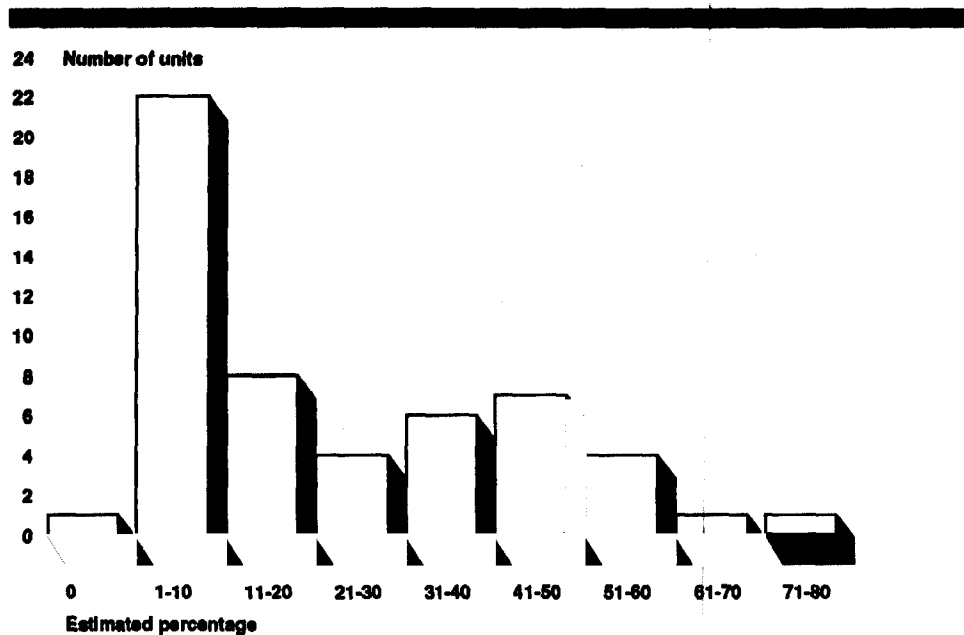
Note: Fifty-four and 49 units provided estimates for inactive duty training and annual training, respectively. Estimates shown in the table are weighted estimates from 49 units. (See app. I, survey question 26.)

We believe, however, that the actual time spent performing GS-level repairs may even be lower than estimated. For example, to verify units' inactive duty training time estimates, we compared them with actual work load data as shown on units' maintenance records. Because many units either did not or could not provide us with usable work load data, we limited our analysis to three case studies. In each case, the units' GS-level repair estimates were about 5 to 10 percent higher than their recorded repair times. This disparity raises questions as to the reliability of these estimates and suggests that the estimates may have been overstated.

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As noted in table 2.1, annual training, rather than inactive duty training, offered the primary opportunity for mechanics to gain proficiency in GS-level repairs. For example, 23 of 54 units, as shown in figure 2.1, estimated spending 10 percent or less of their inactive duty time performing GS-level repairs. Several commanders believed their maintenance personnel needed to spend more time on GS-level repairs during inactive duty training to develop their maintenance skills.

Figure 2.1: Unit Inactive Duty Training Time Spent on GS-Level Maintenance
 (June 1989 Through May 1990)



Note: Percentages based on responses from 54 units for the percentage of yearly inactive duty training time GS mechanics spent on primary mission tasks. (See app. I, survey question 26.)

Excessive Time Spent on Administrative and Other Duties

Units estimated that an average of 42 percent of their limited training time was spent on administrative and other duties rather than GS-level maintenance. Many of these duties included, for example, attending mandatory briefings and classes, inventorying supplies and equipment, and performing field training exercises.

Commanders of 22 units said these requirements greatly hindered the effective use of their training time. For example, although Army training policy requires only one field exercise per year, one unit we visited was required to perform four field training exercises per year. The

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unit commander told us the exercises focused on tactical skills and required advance preparation during the weekend drills prior to the exercises. As a result, 8 of the unit's 12 weekend drills were used for exercise-related activities apart from their GS maintenance mission. The commander, along with other unit and maintenance battalion leaders, believed these activities were not preparing mechanics for their wartime mission.

Previous Army studies have reported the impact of administrative duties on reserve units. A 1988 Reserve Component Training Strategy Task Force study, for example, pointed out that, on the average, reserve units were faced with at least 115 administrative requirements annually. In July 1988, the Army's Inspector General also reported that administrative requirements imposed on reserve units, coupled with required response dates, had forced changes to training plans and had detracted from training.

**Units Lack Mission-
Essential Equipment for
Maintenance Training**

Army doctrine specifies that units should be capable of (1) supporting in peacetime the same systems and subsystems that they will be required to support during wartime and (2) performing the scope and type of work that not only sustains GS maintenance mission capability but also parallels their wartime roles.

Forty-one of 56 commanders responding to our survey reported that an inadequate amount or type of the Army's newer systems and components greatly hindered their GS training efforts. Twenty of 51 commanders reported that they did not train on force modernization equipment, such as the M1AI tank and the Bradley Fighting Vehicle, throughout the year. Another 14 units had this equipment available to repair only during their annual training period. Consequently, 34 of the 51 units had no force modernization equipment to train on during inactive duty training.

Units also reported some difficulties in obtaining GS-level training on other mission-essential equipment, such as power generators and tactical radios. Nineteen units reported that an inadequate amount or type of this equipment for repair greatly hindered training for their GS mechanics.

Because mission-essential equipment to repair at the GS-level was lacking, some units used their time to perform lower-level maintenance repairs or repair nonessential equipment. Units estimated spending an

average of 21 percent of their total training time for the year on DS and organizational-level maintenance. One unit we visited had repaired nonmission-essential equipment. During a 15-month period in 1989 and 1990, the unit completed only 15 GS-level work orders during inactive duty training. Eleven of those work orders were nonmission-essential items such as television sets, video cassette recorders, a water fountain, a water cooler, and a coffee maker. None of these orders represented the type of equipment, such as tactical radios and generators, the unit would be expected to repair during wartime.

Inadequate Maintenance Facilities and Difficulties Using Alternate Facilities

Many unit commanders also reported that the lack of adequate facilities hindered effective use of their training time and became a barrier to preparing mechanics for their wartime missions. About 34 percent, or 19, of the surveyed unit commanders reported that their maintenance shops were inadequate for weekend drills. Commanders cited a variety of problems, including insufficient space to perform GS-level repairs, use of maintenance bays for storage of needed supplies and equipment, lack of overhead cranes for heavy equipment work, and unheated work areas.

Commanders also expressed concern over using alternate facilities for their training. In some cases, reserve units had no dedicated facilities of their own and shared facilities with other organizations, such as Army civilian maintenance activities. Commanders cited various difficulties with these arrangements, including having (1) to use their limited training time traveling to other facilities and (2) only limited control over the type of equipment and level of maintenance required at these facilities.

GS-Level Maintenance Proficiency Measures Are Limited

We recommended in a July 1989 GS maintenance report that the Secretary of the Army develop methods for evaluating GS-level maintenance proficiency. Although the Army concurred with our recommendation, no system to evaluate reserve unit or individual proficiency had been developed at the time of our current review. Moreover, the Army was not aggressively pursuing actions to develop such a system. Without such a system, commanders and other maintenance managers lack the necessary information to make sound judgments about mechanic proficiency and the ability of units to perform their wartime missions.

Army Regulation 350-1, "Army Training," requires all commanders and leaders to ensure that soldiers attain and maintain skill proficiency and

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continuously evaluate the status of individual and unit training. Some of the evaluation techniques include commanders' personal evaluations, checklists of individual tasks, and external evaluations. Units we visited were using a combination of measures to help gauge the proficiency of their maintenance personnel. However, the measures were generally inadequate because they focused on basic soldiering and DS-level maintenance tasks rather than GS-level maintenance tasks.

Using commanders' estimates of the preparedness of the mechanics in their units, we calculated that between 42 and 50 percent of the mechanics in the 56 units we surveyed were unprepared to perform their wartime tasks. Commanders' estimates for the percentages of prepared mechanics in their units are contained in question 29 of appendix I.

Changes Needed to Existing Initiatives to Improve Reserve Maintenance Capability

The Army is aware of problems facing reserve GS maintenance units and has initiated several actions to improve their capability. For example, the Army has

- implemented the Hands-on Training program to provide units with equipment to repair from the Army's depot system,
- established regional maintenance training facilities to provide equipment repair opportunities for reservists, and
- established an overseas maintenance facility to train reserve units based in the United States.

Although the improvement efforts are steps in the right direction, we identified problems with several of the actions that limit the training value for GS maintenance units. Unless these initiatives enable units to routinely perform GS-level repair on equipment they would be expected to maintain during wartime, their value will be limited.

Several maintenance units we visited have also initiated actions to improve their preparedness. We believe these initiatives could be adopted by other maintenance units.

Hands-On Training Program Is Progressing Slowly

In February 1987, the Army established the "Training with Available Repairables—Reserve Components" program, now referred to as the Hands-On Training program. Its goal is to allow reserve GS maintenance units to gain experience in equipment repair by receiving unserviceable equipment compatible with their wartime mission from Army depots, repairing these items, and returning them to the supply system. The repairs are to be accomplished during weekend training drills.

We found several problems impeding the program's progress. Although the program has been in existence since 1987, the two light equipment maintenance companies initially chosen to participate in the program have received only 13 generators to repair and have not been able to complete all repairs due to repair parts' shortages. As a result, some generators have remained unrepaired at one unit for over 1 year. Furthermore, although one unit has submitted requests for additional equipment to repair, the Army Materiel Command, which has joint program responsibility with Forces Command, has not provided the equipment.

First, the Army Materiel Command initially had difficulty providing unit-requested equipment because request documents were incomplete.

By the time the documents were corrected and the requests were reissued, months had passed and the Command could not provide the requested equipment because it was no longer available to repair. Second, the Army Materiel Command and the Forces Command have been unable to resolve program funding issues, such as payment for repair parts. Finally, one participating unit official believed the program lacked command emphasis because it had a low priority.

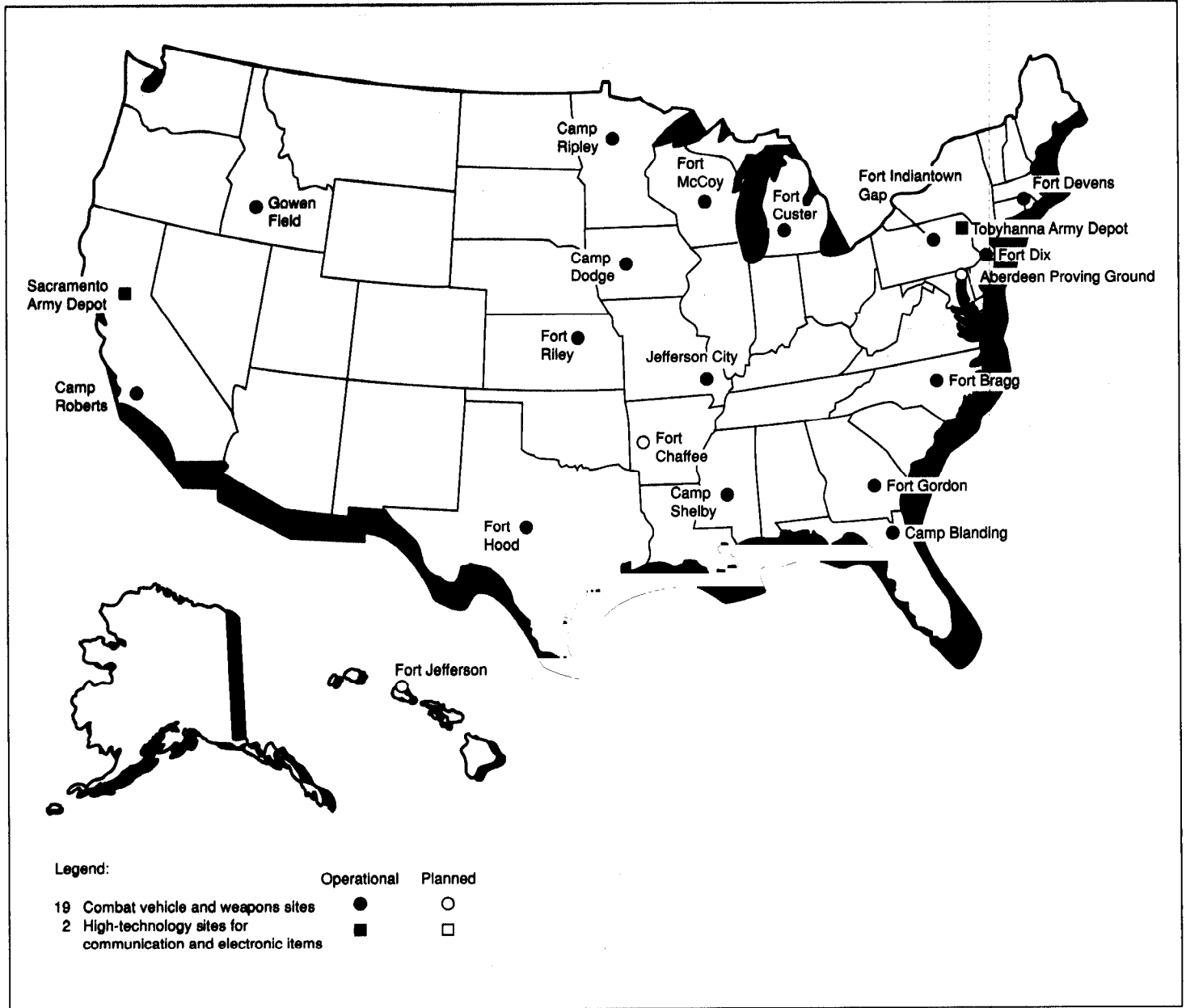
Because the Army has not aggressively pursued actions to resolve the difficulties encountered, the program has not provided reserve maintenance units with training that the Army had planned to achieve.

Regional Training Sites—Maintenance Program Should Help GS Units in the Future

The Army has developed the Regional Training Sites—Maintenance program to provide reserve units with equipment maintenance training at specially created training sites. The program's purpose is to provide reservists with hands-on maintenance training at regional sites to (1) sustain skills previously acquired on older required equipment and (2) acquire additional skills needed to repair the Army's newer force modernization equipment. The program is intended to serve both DS and GS maintenance units.

When fully operational, the program is to have 21 sites—19 standard sites for wheeled and tracked vehicle repair and 2 high technology sites for specialized electronics and communications equipment repair. At the time of our review, 18 of the 21 sites, as shown in figure 3.1, were operational, and the remaining sites were to be operational by fiscal year 1993.

Figure 3.1: Army Regional Training Sites for Maintenance



Maintenance personnel from many units had not trained at the regional facilities, and others had to spend a considerable part of their training time traveling to the facilities. For example, 28 of 56 units had not sent personnel to the training centers during their weekend drills from

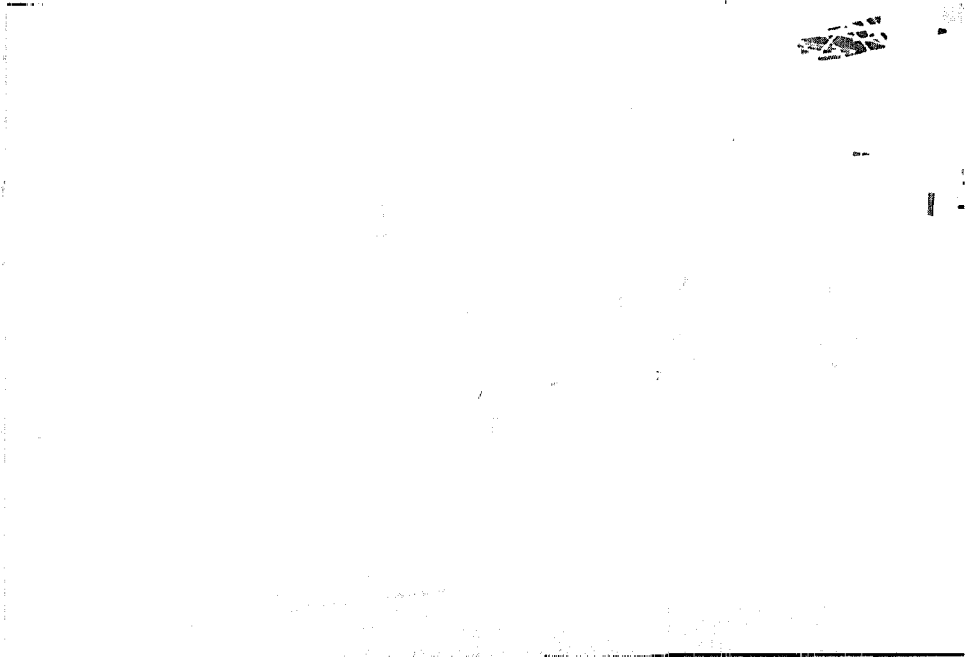
June 1989 through May 1990. For personnel from 11 of 27 units that were training at the regional facilities on weekends, the round trip travel time exceeded 4 hours, or more than 25 percent of their time available for training. According to several program officials, the centers' training focused on DS rather than GS tasks. At several units we visited, maintenance officials confirmed this statement. Although some GS-level training was occurring, as of January 1991 the Army had not fully developed programs of instruction for its GS maintenance training. The Army plans to have GS-level programs in place by the 1992 training year.

Overseas Reserve Maintenance Training Program Not Being Executed as Envisioned

In 1987, the Senate Committee on Appropriations requested the Army to study specific overseas missions that could be assumed by reserve units. In response, the Army established the Equipment Maintenance Center—Europe in Germany in January 1989 to serve as a maintenance organization for an overseas deployment reserve training program. Under the program concept, GS heavy equipment maintenance companies deploy, on a rotational basis, to Germany to repair equipment in the Center's maintenance facilities for 3-week periods. As of October 1990, 18 of 44 reserve units had trained at the Center.

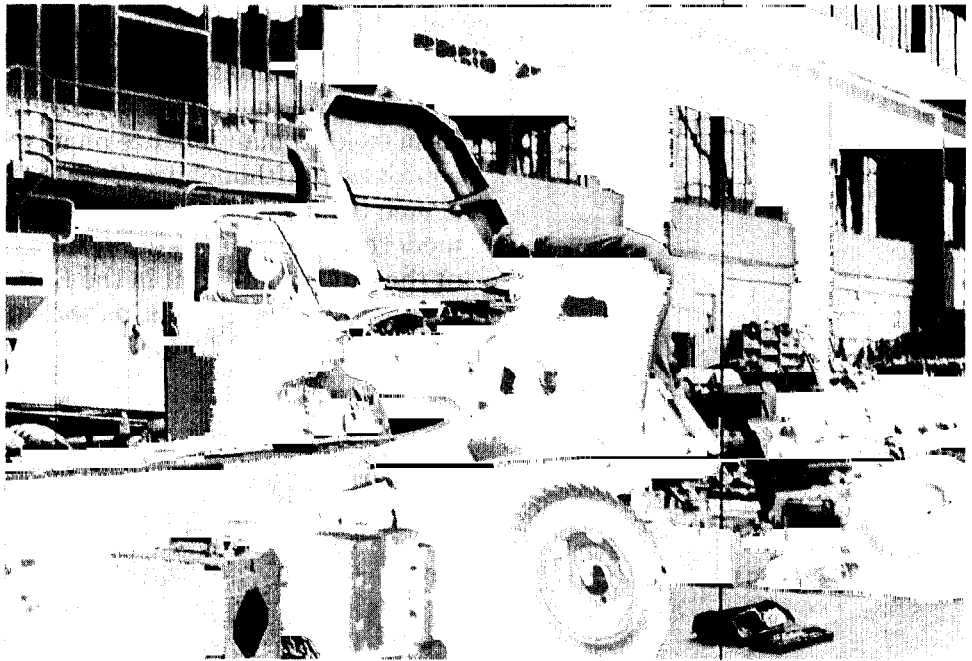
According to Army officials, the program has been a success and units have gained valuable training not often available at their home stations. However, we found that none of the 18 units had an opportunity to perform GS-level maintenance on any of the Army's force modernization equipment. Although the Senate Committee on Appropriations had envisioned that the Center would be training reserve units on the most modern heavy equipment systems, the units have been repairing much of the older equipment in the European theater's maintenance backlog such as 2-1/2 ton trucks, as shown in figures 3.2 and 3.3.

Figure 3.2: A 2-1/2 Ton Truck Awaiting Repair at the Equipment Maintenance Center—Europe Facility in Germany



Source: U.S. Army

Figure 3.3: Army Reservists Repairing a 2-1/2 Ton Truck at the Equipment Maintenance Center—Europe Facility in Germany



Source: U.S. Army

Army plans for 1991 again did not call for reservists to repair force modernization equipment. Army theater officials told us, however, that they were exploring the possibility of introducing the newer equipment into the Center's maintenance program in 1991 on a trial basis.

Furthermore, our visit to the Center showed that not all of the units' mechanics had received training in their skill areas. Mechanics in the armament, tracked vehicle, and engineer sections of many units, for example, had little or no opportunity to develop their GS-level skills because of the limited variety of equipment available at the Center. Army officials told us that this condition was expected to continue for the 1991 training program.

Individual Unit Initiatives Could Have Wider Application

Some units we visited have taken actions to improve their training and capability that could be adopted in other reserve units. Most notable are two initiatives regarding (1) effective GS-level task training and time management and (2) maintenance proficiency measurement.

Effective GS-Level Task Training and Time Management

The 734th Maintenance Battalion of the Iowa National Guard has developed a program that combines specific GS-level skill development with an effective time management system. Prior to 1987, its maintenance units were often performing DS rather than GS-level maintenance repairs and were regularly distracted from their maintenance training by other tasks. According to Battalion and maintenance units' officials, the training program has increased unit GS-level capability.

One essential component of the training program is what the Battalion refers to as "maintenance lane training." As defined by Battalion officials, lane training is structured performance-oriented training for a particular maintenance skill on a specific equipment item. Its objective is to obtain high quality training by having mechanics perform specific tasks under the same operating conditions. In operation, lane training involves setting up individual work stations, or lanes, with specific equipment, such as a tank engine, so mechanics with those GS-level repair skills can train at that work station. Lanes remain in place so that training can be accomplished during several weekend drills without having to set up and remove equipment.

For lane training to be effective, Battalion officials believe that maintenance units need to allow their mechanics sufficient training time in

established lanes. Accordingly, the Battalion adopted a time management approach as advocated in Army Field Manual 25-100, Training the Force, which dedicated prime training weekends throughout the year to mission-essential tasks. The maintenance units have been able to dedicate at least 6 weekend drills per year to GS-level training. The remaining time is devoted to other unit tasks that normally detract from GS-level training. The two Iowa National Guard GS maintenance units were the only units of the nine we visited that were using a focused time management approach, as depicted in table 3.1.

Table 3.1: Time Management System
Used by the 734th Maintenance Battalion

Number of weekends	Tasks performed
6	With the exception of a maximum of 2 hours of administrative and logistical functions at the beginning or end of a training period, training is devoted to unit or individual tasks that support a unit's mission-essential tasks.
4	Training time is a combination of mission-essential tasks and other training to include administrative and logistical functions, such as personnel file updates.
2	Training time is devoted to all nontraining activities, such as administrative and logistical functions.

We believe that the Battalion's training program is a step in the right direction toward better training for its GS maintenance units. For training to be successful in other units, the units would have to have (1) sufficient types and quantities of equipment on hand to repair, (2) adequate maintenance facilities, and (3) proper test measurement and diagnostic equipment and tools to set up an effective lane training program.

Maintenance Proficiency Measurement

The Iowa National Guard and its maintenance units have developed an automated system to measure and track the proficiency of unit mechanics performing GS-level repairs. Prior to 1987, GS unit records were oriented to DS-level tasks and contained very few GS-level tasks. Further, manual record-keeping made it difficult for unit leaders to review and aggregate the current status of a unit's maintenance proficiency and training.

The Guard's proficiency system has two essential components. First, the system has an automated listing of GS-level tasks, which were developed by the maintenance units. The units' mechanics are rated in their skills as training occurs and the results are entered into the system. Second,

maintenance managers are able to obtain soldier proficiency data rapidly.

Guard and maintenance officials believe the measurement system has helped them gauge the proficiency of their GS maintenance units. Furthermore, they said the system could be readily transferable to other units because it is designed to work on the computer systems used by reserve units.

Conclusions, Recommendations, and Agency Comments

Conclusions

Although Army Reserve and National Guard units are expected to play a major role in accomplishing the GS maintenance mission during wartime, they are currently not routinely prepared to carry out this role. GS maintenance units we surveyed were often (1) unaware of the specific equipment they would be expected to repair in war and (2) not effectively using their limited training time to develop and sustain GS maintenance proficiency. Moreover, long-standing fundamental problems, such as a limited number of training days during the year, heavy administrative demands, and wide geographical dispersion of units from potential repair sources, have made it difficult for units to adequately train for their missions.

Unless GS maintenance units (1) have adequate wartime mission guidance that specifies what to repair and (2) routinely repair this equipment in peacetime, the Army cannot be assured that these units will be adequately prepared to perform their wartime missions. The Army needs to ensure that both of these conditions are met if it is to have a GS maintenance capability it can rely on during wartime.

The Army has pursued actions to improve GS maintenance capability, but additional steps are necessary to better prepare GS maintenance units for war. The U.S. Army, Europe, for example, has improved its wartime mission guidance, and we believe other wartime commands need to take similar action. Moreover, the Hands-on Training, Regional Training Site-Maintenance, and overseas heavy equipment maintenance company programs have all been steps in the right direction to provide units with increased opportunities to train on equipment they would be expected to repair during war. However, we believe they have fallen short of their intended goals. The Army needs to ensure that these programs are successful if it hopes to improve reserve maintenance capability.

The actions taken by some units, such as those taken by the Iowa National Guard to effectively use its training time and measure maintenance proficiency, could be adopted in other reserve units to improve their GS maintenance capability.

Recommendations

To enhance the capability of reserve GS maintenance units, we recommend that the Secretary of the Army

- ensure that commanders in all wartime theaters provide mission guidance to reserve units specifying the types of equipment they would be expected to repair in wartime;
- resolve problems, such as (1) administrative and repair parts' difficulties with the Hands-on Training program and (2) the lack of force modernization equipment available to units participating in the overseas program for heavy equipment maintenance companies, that have limited the value of reserve training initiatives designed to provide units with opportunities to repair equipment they would be expected to repair during wartime; and
- determine whether unit-level initiatives to improve GS maintenance capability, such as Iowa National Guard actions to (1) measure and track the proficiency of general support maintenance mechanics and (2) more effectively manage reserve training time, can be adopted in other reserve units.

Agency Comments

DOD agreed with all of our recommendations. In its comments, which are printed in their entirety in appendix II, DOD stated that, by October 1, 1991, it will (1) certify that reserve component maintenance units receive guidance on the types of equipment to be repaired during wartime and (2) review and resolve problems that have caused administrative and repair parts difficulties in the Hands-on Training program. It also stated that, by December 31, 1991, it will review the initiatives developed by the Iowa National Guard for use by other reserve component units. Also, DOD said that the Army, through its "Task Force to Reduce Reserve Component Training Detractors," will issue guidance to ensure that administrative training requirements do not replace general support maintenance wartime training.

DOD stated that the implementation of the equipment maintenance centers in the United States (scheduled to be activated in fiscal year 1992) and in Europe (activated in January 1989) will permit increased general support maintenance training at both the individual and unit levels. It considers these centers, during annual training, the best source for maintenance training on mission-essential equipment.

During inactive duty training, DOD believes that more frequent use of the regional maintenance training sites will increase the time spent on general support repairs because units will have greater access to mission-essential equipment.

Summary of Questionnaire Results

This appendix shows the Army Reserve and National Guard units' responses to our survey questions. Each number to the right of a response alternative shows the number of units choosing that particular alternative. In some cases, questions were preceded by a "filter question" that screened out units from responding. For example, if a question did not apply to a particular unit, the unit was directed to skip to the next applicable question. The reader is cautioned to account for these filter questions when comparing the number of responses to specific questions with the numbers and percentages cited in this report. Because the respondents could choose more than one alternative, the sum for each question does not necessarily total 56, the number of questionnaires that were analyzed.

For questions where the respondent was asked to write in an amount (e.g., percentage estimates), we present the average (i.e., mean) and standard deviation of reported amounts. In matrix-type questions, the number of respondents choosing a particular alternative is shown within the appropriate matrix box or row-column space. For some questions, we have provided brief summaries of the responses. The "missing" data category represents a "no-response" to a question. These values were considered as nonresponses and were not used in developing response proportions.

The item nonresponse rates ranged from 0 to 2 percent for most survey questions used in this analysis. Other item nonresponse rates were as follows: question 2: part 1, 7 percent and part 2, 5 percent; question 16: 4 percent; question 17: part II, 6 percent; question 18: part I, 17 percent and part II, 14 percent; question 19: 8 percent; question 26: part I, 4 percent and part II, 6 percent; and question 27: row 10, 4 percent.

Because our data collection method involved self-reporting, adverse findings may have been underreported and positive findings overreported. For example, our verification analysis of units' estimates of inactive duty training time spent performing GS-level repairs showed these estimates to be overstated by about 5 to 10 percent in three cases where we had usable unit work load documentation. Moreover, world events and military requirements changed during the data collection period and could have affected the responses to the above item or other survey questions.

Appendix I
Summary of Questionnaire Results

United States General Accounting Office



Survey of Commanders of U.S. Army Reserve
and National Guard General Support
Maintenance Units

INTRODUCTION

The U.S. General Accounting Office (GAO) is a review agency for the Congress. The Chairman, Subcommittee on Readiness, House Armed Services Committee, has requested GAO to examine whether Army reserve component (Army Reserve and National Guard) forces are prepared to perform their expected wartime general support (GS) maintenance missions. As a part of this study, GAO is sending this questionnaire to each of the Commanders of U.S. Army Reserve and National Guard GS maintenance units.

Because centralized data are not available, we are using this questionnaire to gather information and judgments from unit commanders. This form asks about your unit's wartime mission guidance and maintenance mission work and training to prepare GS soldiers for their wartime responsibilities.

Most of the questionnaire items can be answered by checking a box or providing a short written response. A few items require checking readily available records. For the purposes of this study, base your answers on all soldiers assigned to your unit's support mission as of May 31, 1990. Throughout this form, we refer to these soldiers as GS mechanics. Your answers to this survey will be treated confidentially, and we will not release them to your chain of command or elsewhere outside GAO except in summary form in our report. Readers will not be able to tell how you answered any questions because all answers to each question will be combined.

Please report only for the unit identified below.

Please return your completed questionnaire within two weeks. If staff schedules would delay a response or if you have questions about this form, please call George Shelton at (202) 275-6694 or Jim Reifsnyder at (202) 275-4166. Thank you for assisting us in this study. Your responses and judgments are very important to the discussions and actions of the Subcommittee. We need your frank assessments to ensure that your needs and the needs of the Army are being met.

Please write below point of contact information for this questionnaire.

(name)

(position)

(_____) _____
(area code) (telephone number)

**Appendix I
Summary of Questionnaire Results**

UNIT STRENGTH

1. Based on your Unit Manning Report, as of May 31, 1990, what was this unit's authorized strength and what was its assigned strength (17-14)

1) _____ (total number authorized)

2) _____ (total number assigned)

2. Based on your Unit Manning Report, as of May 31, 1990, what was this unit's authorized and assigned strength for GS mechanics? (16-22)

1) _____ (total number GS authorized)

2) _____ (total number GS assigned)

UNIT HISTORY

3. When was your unit first organized as a GS maintenance unit? (23-26)

_____ (Write month and year)

4. Since your initial organization as a GS maintenance unit, has there been a reorganization? (Check one.) (27)

1. Yes (CONTINUE)

2. No (GO TO QUESTION 6)

5. When was your unit last reorganized? (28-31)

_____ (Write month and year)

MISSION GUIDANCE

6. What type of documents, if any, has the wartime gaining command provided you about your wartime mission? (Check all that apply.) (32-36)

(If none, check box 5)

1. Mission letter 44

2. Battle book 9

3. Maintenance unit employment plan 20

4. Other (Specify) 16

5. No guidance received 5

IF NO GUIDANCE RECEIVED, GO TO QUESTION 9. OTHERWISE CONTINUE.

7. When did your unit receive the wartime mission guidance? (37-40)

_____ (Write month and year)

¹The total authorized number of personnel for the 56 units surveyed was 9,704. The average per unit was 173; the standard deviation was 55.

The total assigned number of personnel was 8,881. The average per unit was 159; the standard deviation was 41.

²Based on 52 responding units, the total number of authorized GS mechanics was 5,870. The average per unit was 113; the standard deviation was 50.

The total assigned number of GS mechanics (52 units) was 4,821. The average per unit was 93; the standard deviation was 37.

**Appendix I
Summary of Questionnaire Results**

8. Based on the document(s) cited in Question 6, what type of information do you have about this unit's wartime mission? (Check all that apply.)
- | | |
|--|------------|
| 1. <input type="checkbox"/> Unit's deployment location | (41-46) 45 |
| 2. <input type="checkbox"/> Units with which this unit would be deployed | 37 |
| 3. <input type="checkbox"/> Specific systems this unit would support in wartime (eg, M1A1, 120mm; M977, 10 ton; Position Azimuth Determining Systems-PADS) | 32 |
| 4. <input type="checkbox"/> Units this unit would support in wartime | 13 |
| 5. <input type="checkbox"/> Other (Specify) | 4 |

MISSION ESSENTIAL TASK LIST (METL)

9. Has a wartime METL been developed for your unit? Also, has it been approved by the wartime gaining command? (Check one.)
- | | |
|--|--------|
| 1. <input type="checkbox"/> Wartime METL not developed for unit (GO TO QUESTION 11) | (46) 2 |
| 2. <input type="checkbox"/> Unit has wartime METL but it is not approved (GO TO QUESTION 11) | 29 |
| 3. <input type="checkbox"/> Unit has approved wartime METL (CONTINUE) | 25 |
10. When was your wartime METL approved? (47-50)
- _____ (Write month and year)

Appendix I
Summary of Questionnaire Results

NOTE: Throughout this form we use the term "hands-on maintenance work/training" to refer to both hands-on maintenance mission work and maintenance training, necessary to prepare your GS mechanics for their wartime GS maintenance responsibilities.

Unless otherwise noted, base your answers on:

•GS mechanics (mission support soldiers) assigned to your unit as of May 31, 1990;

•Hands-on maintenance work/training conducted during IDT (Inactive Duty Training) and AT (Annual Training) from June 1989 through May 1990. Include mock-up and simulated maintenance work and classroom maintenance training. Exclude preventive maintenance checks and services (PMCS) and non-mission support activities performed by Company Headquarters (eg, motor pool maintenance).

In this form we often ask about hands-on maintenance work/training during IDT and AT separately. If your GS mechanics did not attend Annual Training from June 1989 through May 1990, skip PART II in the questions that follow.

11. Did your GS mechanics attend Annual Training (AT) at any time from June 1989 through May 1990? (Check one.)

- | | | |
|--|------|----|
| 1. <input type="checkbox"/> Yes (CONTINUE) | (81) | 52 |
| 2. <input type="checkbox"/> No (GO TO QUESTION 13) | | 4 |

12. If yes, during AT, did GS mechanics spend most of their duty time performing hands-on maintenance work/training? (Check one.)

- | | | |
|---------------------------------|------|----|
| 1. <input type="checkbox"/> Yes | (92) | 51 |
| 2. <input type="checkbox"/> No | | 1 |

**Appendix I
Summary of Questionnaire Results**

AVAILABILITY OF MAINTENANCE TOOLS AND TEST EQUIPMENT, MAINTENANCE SHOPS, INSTRUCTORS, EQUIPMENT AND TASKS

The next questions deal with the availability of resources for hands-on maintenance work/training to GS mechanics (that is tools and test equipment, maintenance shops, instructors, equipment and tasks). REMEMBER: Answer only for GS mechanics with your unit's support mission on May 31, 1990. Report on hands-on maintenance work/training during IDT and AT from June 1989 through May 1990. Include mock-up and simulated maintenance work and classroom maintenance training.

Tools and Test Equipment

13. Did each of your GS mechanics have a sufficient amount of proper types of tools and test equipment, in working order and readily available, during IDT and during AT? (If no Annual Training, skip PART II)

TOOLS & TEST EQUIPMENT	PART I: IDT (Check one box for each row)						PART II: AT (Check one box for each row)					
	Definitely yes (1)	Generally yes (2)	Undecided (3)	Generally no (4)	Definitely no (5)	N/A Not applicable (6)	Definitely yes (1)	Generally yes (2)	Undecided (3)	Generally no (4)	Definitely no (5)	N/A Not applicable (6)
1. Technical manuals	20	34	1	1	0	0	23	25	2	0	1	1
2. Test Measurement & Diagnostic Equipment (TMDE)	12	37	1	6	0	0	22	25	0	4	1	0
3. Hand tools	35	20	0	1	0	0	35	17	0	0	0	0
4. Light shop tools	29	24	0	2	0	0	29	23	0	0	0	0
5. Heavy shop tools	22	26	2	4	0	2	28	16	2	1	2	3

¹³Commanders reported having sufficient tools and test equipment. When units experienced problems, they tended to occur with heavy shop tools and measurement and diagnostic equipment.

**Appendix I
Summary of Questionnaire Results**

Maintenance Shops

14. What maintenance shops did your GS mechanics use for hands-on maintenance work/training during IDT and AT? Also how adequate or inadequate was the shop space? (Consider storage space, type and amount of repair equipment shop accommodated, and number of GS mechanics to be trained) (If no Annual Training, skip PART II) (84-78)

MAINTENANCE SHOPS	PART I: IDT (Check one box for each row)						PART II: AT (Check one box for each row)					
	(1) Very adequate	(2) Generally adequate	(3) Neither adequate nor inadequate	(4) Generally inadequate	(5) Very inadequate	(6) N/A Not applicable	(1) Very adequate	(2) Generally adequate	(3) Neither adequate nor inadequate	(4) Generally inadequate	(5) Very inadequate	(6) N/A Not applicable
1. Home Station shop(s)	15	18	4	10	9	0	12	13	0	2	1	24
2. Depot shop(s)	11	4	0	0	1	40	24	10	0	0	0	18
3. Regional Training Site-Maintenance (RTS-M) shop(s)	11	13	2	2	0	28	12	11	0	3	0	26
4. Area Maintenance Support Activity (AMSA) shop(s)	7	12	2	2	2	31	6	5	1	1	0	39
5. Other (Specify)	4	7	0	0	0	45	8	6	0	1	0	37
6. Other (Specify)	1	0	1	0	0	54	1	0	0	0	0	51

¹⁴Units generally reported maintenance shops as adequate. However, 19 units reported that their home station shops were inadequate for inactive duty training.

**Appendix I
Summary of Questionnaire Results**

15. If shop space was inadequate (you checked columns 4 or 5 in PARTS I or II, Question 14), please describe deficiencies below. Otherwise go to Question 16. (7-7)

IDT shop space deficiencies:

AT shop space deficiencies:

Regional Training Site-Maintenance (RTS-M)

CONTINUE IF GS MECHANICS USED AN RTS-M MAINTENANCE SHOP DURING IDT. OTHERWISE SKIP TO QUESTION 17.

16. For the RTS-M used during IDT, what was the usual travel time to and from the home station and the RTS-M location? (7-8)

_____ (minutes)

Force Modernization Equipment (FME)/New Generation Systems

17. We use "FME" to refer to Force Modernization Equipment or new generation systems. What specific FME systems (eg, M1A1, 120mm) is it this unit's mission to support? Also, which of these systems were available to GS mechanics for IDT and AT hands-on maintenance work/training at some time from June 1989 through May 1990? (If no Annual Training, skip PART II) (10-21)

(Write specific FME systems below)	PART I: IDT (Check one box for each row)		PART II: AT (Check one box for each row)	
	Available (1)	Not available (2)	Available (1)	Not available (2)
1.				
2.				
3.				
4.				
5.				
6.				

¹⁵Nineteen units reported insufficient shop or bench space. Seven units reported a lack of storage space.

¹⁶For 11 of 27 units, the round trip travel time to regional training sites for maintenance exceeded 4 hours and ranged to 16 hours.

¹⁷Units reporting at least one priority equipment item were counted as having force modernization equipment available.

New equipment not available for IDT and AT—16 units.
 AT not attended; no new equipment available during IDT—4 units.
 New equipment available AT only—14 units.
 New equipment available for IDT only—2 units.
 New equipment available for IDT and AT—15 units.
 Missing responses—3 units.
 Question not applicable for nondeployable support units—2 units.

**Appendix I
Summary of Questionnaire Results**

————→NOTE: GO TO QUESTION 21 IF YOUR UNIT DID NOT HAVE ANY FME ITEMS AVAILABLE TO MAINTAIN OR TRAIN ON FROM JUNE 1989 THROUGH MAY 1990. OTHERWISE CONTINUE.

18. Was a sufficient number of capable individuals available to provide instruction to GS mechanics who were less skilled in hands-on maintenance tasks on FME systems? (Check one box for each row. If no Annual Training, skip PART II) (22-42)

	Definitely yes (1)	Generally yes (2)	Undecided (3)	Generally no (4)	Definitely no (5)	Missing
1. PART I: During IDT	16	6	3	2	3	6
2. PART II: During AT	18	11	1	1	0	5

19. Consider the range of repair and rebuild tasks and amount of time available to the GS mechanics who needed to be proficient in maintaining FME. Was the hands on maintenance work/training available to them sufficient to acquire/maintain proficiency in their FME maintenance responsibilities? (Consider FME available during both IDT and AT unless no Annual Training occurred during the one year of interest) (Check one.) (24)

- 1. Definitely yes 3
- 2. Generally yes 10
- 3. Undecided 4
- 4. Generally no 13
- 5. Definitely no 3

Missing 3
IF YOU CHECKED "DEFINITELY YES" GO TO QUESTION 21. OTHERWISE CONTINUE.

20. Briefly describe below the major reasons why GS mechanics could not get sufficient tasks and/or enough time on FME hands-on maintenance. (26)

²⁰Fourteen units indicated that force modernization equipment was not available for training; 3 units indicated that other equipment was not available for training; 4 units indicated that the performance of administrative and soldiering tasks took time away from maintenance training.

**Appendix I
Summary of Questionnaire Results**

Hands-on Work/Training on Other Equipment (non-FME)

21. Was a sufficient number of capable individuals available to provide instruction to GS mechanics who were less skilled in hands-on maintenance tasks on non-FME systems? (Check one box for each row. If no Annual Training, skip PART II) (26-27)

	Definitely yes	Generally yes	Undecided	Generally no	Definitely no
	(1)	(2)	(3)	(4)	(5)
1. PART I: During IDT	23	28	3	2	0
2. PART II: During AT	29	21	0	2	0

22. Consider the range of repair and rebuild tasks and amount of time available to GS mechanics who needed to be proficient in maintaining non-FME systems. Was the hands-on maintenance work/training available to them sufficient to acquire/maintain proficiency in their maintenance responsibilities for these systems? (Consider non-FME available during both IDT and AT unless no Annual Training occurred during the one year of interest) (Check one.) (28)

- 1. Definitely yes 14
- 2. Generally yes 20
- 3. Undecided 6
- 4. Generally no 13
- 5. Definitely no 3

IF YOU CHECKED "DEFINITELY YES" GO TO QUESTION 24. OTHERWISE CONTINUE.

23. Briefly describe below the major reasons why GS mechanics could not get sufficient tasks and/or enough time on non-FME hands-on maintenance. (29)

²³Twelve units reported that equipment to train on was either not available or scarce; 7 units reported that maintenance repairs could not be completed during weekend drills; and 7 units reported that significant time was used for performing administrative and soldiering skills.

**Appendix I
Summary of Questionnaire Results**

AMOUNT OF WORK/TRAINING TIME ON FME AND NON-FME SYSTEMS

GO TO "PEACETIME WORK LOAD" BELOW IF YOUR UNIT DID NOT HAVE FME/NEW GENERATION SYSTEMS DURING THE ONE YEAR OF INTEREST. OTHERWISE CONTINUE.

24. Consider the total amount of time GS mechanics spent on hands-on maintenance work/training during IDT and AT. To what extent, if at all, did they get more work/training on non-FME systems than on FME/New generation systems? (Check one.)

- | | | |
|---|----|------|
| 1. <input type="checkbox"/> Much more work/training on non-FME systems | 25 | (20) |
| 2. <input type="checkbox"/> Somewhat more work/training on non-FME systems | 7 | |
| 3. <input type="checkbox"/> About the same amount of work/training on non-FME as on FME systems | 0 | |
| 4. <input type="checkbox"/> Somewhat more work/training on FME systems | 0 | |
| 5. <input type="checkbox"/> Much more work/training on FME systems | 0 | |
| Missing | 4 | |

HANDS-ON MAINTENANCE WORK/TRAINING - PEACETIME WORK LOAD

In the next two questions we ask you if documentation is available about hands-on maintenance work/training and to estimate the percentage of time GS mechanics spent performing maintenance and other activities from June 1989 through May 1990. Use the Army's four maintenance levels in responding.

Organizational level: At this level, equipment operators and unit mechanics perform preventive maintenance; make minor repairs; replace modules and parts; and inspect, lubricate, clean and preserve equipment.

Direct support (DS) level: Repair at this level is intended to be performed at forward-deployed areas during wartime. It consists of the replacement of unserviceable parts, major subassemblies, and modules. Maintenance personnel also isolate equipment malfunctions and perform light body repairs. DS repairs include removing and replacing engines, transmissions, or water pumps.

General support (GS) level: Maintenance at this level is performed in fixed or semi-fixed facilities. Components are repaired and rebuilt in support of the theater supply system and lower maintenance levels. Heavy body repairs are made to major equipment, and technical assistance is provided to lower level units. GS-level repairs include repairing or rebuilding engines or transmissions as necessary.

Depot level: At this level, the life of equipment is extended through restorative maintenance, such as the complete overhaul of components (engines and transmissions) and end items (trucks, tanks, etc.)

25. Do you have work orders and work sheets (eg, Maintenance Request Registers or DD Form 2407s) readily available to document hands-on maintenance work/training performed by GS mechanics from June 1989 through May 1990? (Check one.)

- | | |
|--|------|
| 1. <input type="checkbox"/> Yes (COMPLETE ENCLOSURE I AND GO TO QUESTION 26) | (21) |
| 2. <input type="checkbox"/> No (GO TO QUESTION 26) | |

²⁵Five units provided complete documentation for inactive duty training hours. The remaining units did not have documentation readily available or did not submit complete records.

**Appendix I
Summary of Questionnaire Results**

26. Consider the annual number of IDT and AT duty hours that Army Reserve and National Guard members typically have. Also report only for GS mechanics with your unit as of May 31, 1990. About what percentage of their duty hours was spent on GS hands-on maintenance work/training, what percentage on DS and organizational hands-on maintenance work/training, what percentage on classroom maintenance training and what percentage on other activities? (Refer to documentation in developing estimates, if readily available) (If no Annual Training, skip PART II) (32-69)

ACTIVITY	PART I: IDT (Write In percent)	PART II: AT (Write In percent)
	Estimated Percentage of Annual IDT Hours (1)	Estimated Percentage of Annual AT hours (1)
1. GS hands-on maintenance work/training including mock-up work and service sections (eg, welders, fabricators)	Average: 25 *SD: 20 Median: 17.5 %	Average: 56 SD: 28 Median: 60 %
2. DS and organizational hands-on maintenance work/training including mock-up work	Average: 22 SD: 17 Median: 20 %	Average: 20 SD: 21 Median: 15 %
3. Classroom maintenance training	Average: 11 SD: 11 Median: 10 %	Average: 7 SD: 9 Median: 5 %
4. Other activities (eg, soldier skills, administrative requirements)	Average: 42 SD: 22 Median: 40 %	Average: 17 SD: 19 Median: 10 %
TOTAL:	100 %	100 %

²⁶Most of the general support-level training tended to occur during annual training rather than during inactive duty training.

**Appendix I
Summary of Questionnaire Results**

27. For the one year period of interest, to what extent, if at all, did the following factors hinder preparing GS mechanics to perform their GS wartime mission? (Check one box for each factor)

(00-70)

FACTORS						Missing
	(1) To little or no extent	(2) To some extent	(3) To a moderate extent	(4) To a great extent	(5) To a very great extent	
TOOLS & TEST EQUIPMENT						
1. Insufficient amount of proper tools & test equipment	30	20	4	1	0	1
2. Insufficient training on use of test equipment (TMDE)	19	19	15	2	0	1
EQUIPMENT TO MAINTAIN						
3. Inadequate amount and/or type of FME systems or components for repair	5	7	3	10	31	
4. Inadequate amount and/or type of other equipment or components for repair (non-FME)	12	15	10	9	10	
INSTRUCTION						
5. Inadequate number of capable GS mechanics to instruct those less skilled	26	19	6	4	0	1
MAINTENANCE SHOPS						
6. Travel time to maintenance shop(s) too long	29	8	5	6	7	1
7. Inadequate space at maintenance shop(s)	27	8	7	10	3	1
MAINTENANCE TIME						
8. Inadequate amount of time available for maintenance work/training	10	14	14	14	4	
9. Excessive administrative duties	4	11	18	12	10	1
CLASSROOM & MOCK-UP TRAINING						
10. Inadequate amount of time and/or materials for classroom /mock-up training	11	15	16	9	3	2
11. OTHER (Specify)	0	0	2	0	4	
12. OTHER (Specify)	0	0	0	0	2	

12

²⁷Factors in Descending Order of Hindrance:

Lack of priority equipment (row 3) was a very great hindrance (median=5).

Lack of lower priority equipment (row 4), inadequate training time (row 8), excessive administrative duties (row 9), and inadequate classroom and mock-up training (row 10) were moderate hindrances (medians=3).

**Appendix I
Summary of Questionnaire Results**

28. If you checked columns 4 or 5 in Question 27 (a factor hindered preparing GS mechanics to a great or very great extent), please describe these factors and their major impacts below. Otherwise, go to Question 29. (71-76)

OVERALL ASSESSMENT OF WARTIME PREPAREDNESS

29. Now look back at the evaluations you have made in this questionnaire on the availability and adequacy of maintenance tools and test equipment, shops, instructors and amount of time spent and type of tasks performed on both FME and non-FME systems during IDT and AT.

In your judgment, overall, what percentage of GS mechanics with this unit on May 31, 1990 were prepared to perform their wartime GS maintenance mission? (Check one.)

- | | | |
|---|----|---------|
| 1. <input type="checkbox"/> 10% or less | 2 | (76-77) |
| 2. <input type="checkbox"/> 11% - 20% | 1 | |
| 3. <input type="checkbox"/> 21% - 30% | 4 | |
| 4. <input type="checkbox"/> 31% - 40% | 3 | |
| 5. <input type="checkbox"/> 41% - 50% | 5 | |
| 6. <input type="checkbox"/> 51% - 60% | 7 | |
| 7. <input type="checkbox"/> 61% - 70% | 13 | |
| 8. <input type="checkbox"/> 71% - 80% | 10 | |
| 9. <input type="checkbox"/> 81% - 90% | 10 | |
| 10. <input type="checkbox"/> 91% - 100% | 1 | |

31. If yes, were you able to get the ADT time your GS mechanics needed? (Check one.)

- | | | |
|--|----|------|
| 1. <input type="checkbox"/> Definitely yes | 13 | (78) |
| 2. <input type="checkbox"/> Generally yes | 20 | |
| 3. <input type="checkbox"/> Undecided | 2 | |
| 4. <input type="checkbox"/> Generally no | 9 | |
| 5. <input type="checkbox"/> Definitely no | 3 | |

IF YOU CHECKED "DEFINITELY YES" GO TO QUESTION 33. OTHERWISE CONTINUE

32. Briefly describe below, the major reasons why you were not able to get all of the ADT time needed? (80)

ADT (ACTIVE DUTY TRAINING)

30. From June 1989 through May 1990, did GS mechanics need to use ADT to acquire/increase their maintenance skills? (Check one.)

- | | | |
|--|----|------|
| 1. <input type="checkbox"/> Yes (CONTINUE) | 47 | (78) |
| 2. <input type="checkbox"/> No (GO TO QUESTION 33) | 9 | |

13

²⁸Twenty-seven of 51 respondents reported problems in obtaining force modernization or other equipment to repair at home stations or other training facilities.

Fourteen units reported that numerous administrative and other requirements greatly decreased training time.

Ten units reported shop deficiencies such as lack of work space or insufficient space to tear down and store vehicle components.

³²Nine of 12 units cited lack of funding as a reason for not being able to have all of the ADT time needed.

**Appendix I
Summary of Questionnaire Results**

EQUIPMENT FOR DEPLOYMENT

33. Was all the unit's mission essential equipment on-hand or staged to permit full strength deployment on May 31, 1990? (Check one.)

- 1. Yes (GO TO QUESTION 35) 6 ^(*)
- 2. No (CONTINUE) 49
- Missing 1

34. What proportion of your mission essential equipment was not on-hand or staged for deployment? (Check one.)

- 1. 10% or less 8 ^(*)
- 2. 11% - 20% 17
- 3. 21% - 30% 12
- 4. 31% - 40% 9
- 5. 41% - 50% 2
- 6. 51% - 60% 1
- 7. 61% - 70% 0
- 8. 71% - 80% 0
- 9. 81% - 90% 0
- 10. 91% - 100% 0
- Missing 1

OVERSEAS DEPLOYMENT TRAINING (ODT) AT EMC-KAISERSLAUTERN

→HEMCO UNITS CONTINUE; LEMCO UNITS SKIP TO QUESTION 37.

35. During the June 1989 through May 1990 time period, did GS mechanics from this unit attend ODT at EMC-Kaiserslautern? (Check one.)

- 1. Yes (CONTINUE) 10 ⁽¹⁰⁾
- 2. No (GO TO QUESTION 37) 26
- Missing 2

36. During ODT, about what percentage of duty time did GS mechanics spend on hands-on GS maintenance work/training, what percentage on DS and organizational work/training and what percentage on other activities? (Write in percents) ⁽¹¹⁻¹⁰⁾

ACTIVITY	Estimated Percentage of ODT Duty Hours ⁽¹⁾
1. GS hands-on maintenance work/training including service sections	Average: 72 SD: 23 Median: 80 %
2. DS and organizational hands-on maintenance work/training	Average: 22 SD: 18 Median: 20 %
3. Other activities	Average: 5 SD: 7 Median: 1 %

TOTAL: 100 %

Note: SD of Standard Deviation
Missing 1

**Appendix I
Summary of Questionnaire Results**

FIELD TRAINING EXERCISES (FTXs)

37. How many FTXs was your unit required to participate in from June 1989 through May 1990?

_____ (number required FTXs)

(20-21)

38. For a variety of reasons, units may not have been able to participate in required FTXs. How many FTXs did your unit actually participate in during this time period? (If none, skip to Question 40)

_____ (number FTXs actually participated in)

(22-23)

39. How many of the FTXs you identified in Question 38 were in a MOUT (Military Operation in Urban Terrain) environment?

_____ (number MOUT FTXs)

(24-26)

40. Please write below (or on a separate sheet) further comments about GS maintenance work/training you wish to bring to the attention of the Congressional committee requesting this study.

(28)

If you misplaced the self-addressed return envelope, return your completed questionnaire to:
U.S. General Accounting Office
441 G Street, NW
Attn: George Shelton, NSIAD, Room 5132
Washington, DC 20548

Thank you for your assistance in this study.

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³⁷Four units were not required to participate in a field training exercise. One of these units did attend an exercise, however. Of 53 units participating in one or more field training exercises, all but 7 units attended at least the required number of exercises. Twenty-five units attended 1 exercise and 28 units attended 2 or more.

^{38 and 39}For about one-half of the units attending a single field training exercise, the exercise was held in a MOUT (Military Operation in Urban Terrain) environment. For about two-thirds of the units attending two or more exercises, none of the exercises were held in a MOUT environment.

⁴⁰Eleven of 31 respondents said they lacked equipment for adequate training; 8 units reported that more emphasis should be placed on GS maintenance training; and 6 units reported fund shortages for maintenance skill training.

Comments From the Department of Defense

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301

JUN -7 1991

RESERVE AFFAIRS

Mr. Frank C. Conahan
Assistant Comptroller General
U.S. 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 "ARMY RESERVE COMPONENTS: Better Training Could Improve General Support Maintenance Capability," dated April 15, 1991 (GAO Code 393386), OSD Case 8663. The Department concurs with the GAO draft report.

The Army has an ongoing initiative to update the applicable Soldier's Manuals to include a section on critical general support level maintenance tasks. Additionally, the Army is developing track and wheel vehicle general support maintenance self development tests for Noncommissioned Officers to help evaluate their specialty proficiency as well as their leadership and training skills. Implementation of the Equipment Maintenance Centers in the United States and Europe will permit increased general support level maintenance training at both the individual and unit levels. The Equipment Maintenance Center-Europe was activated in January 1989, and Equipment Maintenance Center-United States is currently scheduled to be activated in the fourth quarter of FY 1992.

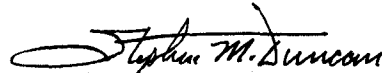
The Army is also taking action to resolve problems involving administrative and repair parts difficulties in the hands-on training program. Additionally, the lack of availability of modernized equipment for units participating in the overseas program for heavy equipment maintenance companies should be rectified in the future as newer equipment is made available for these units to repair.

With regard to material controls, the Army will review the report findings for possible inclusion in its Internal Control Program.

Appendix II
Comments From the Department of Defense

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

Sincerely,


Stephen M. Duncan

Enclosure:
As stated

GAO DRAFT REPORT -- DATED APRIL 15, 1991
(GAO CODE 393386) OSD CASE 8663

"ARMY RESERVE COMPONENTS: BETTER TRAINING COULD
IMPROVE GENERAL SUPPORT MAINTENANCE CAPABILITY"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

FINDING A: Importance of Reserves in the Army's Total Force. The GAO observed that the Reserves have both combat and support roles. The GAO noted that, with the end of the draft and the creation of the "Total Force" policy in 1973, Reservists--rather than draftees--have become the primary source of personnel to augment the active forces in Military emergencies. The GAO reported that Army defense plans depend on the Reserves to perform as effectively as their active counterparts in the event of war.

The GAO asserted that the Army dependence on Reserves is particularly vital in the support area. The GAO found that the Reserves comprise about 42 percent of the Army combat units; however, they comprise well over 50 percent of the combat support and combat service support units within the Army support structure. (pp. 2-3, pp. 12-13/GAO Draft Report)

DoD RESPONSE: Concur.

FINDING B: Role of Reserves in the Army's Maintenance System. The GAO learned that Army maintenance ranges from basic preventive maintenance performed at the unit level to the industrial type maintenance performed at the depot level. The GAO observed that, at the intermediate levels, general support and direct support maintenance units provide interim repair and replacement of equipment. The GAO noted that items repaired at the general support level are returned to the supply system to replace unserviceable equipment. The GAO explained that the four levels of maintenance are, as follows:

- **Organizational Level**--Equipment operators and unit mechanics perform preventive maintenance; make minor repairs; replace modules and parts; and inspect, lubricate, clean, and preserve equipment.

Page 1 of 14

See comment 1.

Now on pp. 2, 8.

- **Direct Support Level**--Repairs are performed at forward-deployed areas during wartime, including the replacement of unserviceable parts, major subassemblies, and modules.
- **General Support Level**--Maintenance is performed in fixed or semi-fixed facilities in the rear areas of a war zone.
- **Depot Level**--The life of the equipment is extended through restorative maintenance, such as the complete overhaul of components (engines and transmissions) and end items (trucks, tanks, etc.).

The GAO found that the Army plans to use civilian and Military personnel to repair its equipment during wartime. The GAO explained that, in peacetime, civilians perform much of the general support maintenance for the Army, while Reserve units normally do not have general support maintenance missions. The GAO concluded, therefore, that the Reserve units usually are not provided equipment requiring general support-level repairs. The GAO found, however, that because Reserve units constitute the majority of the Army general support maintenance force, they are expected to play an important role in performing such repairs during wartime. The GAO further concluded that Reserve maintenance units, therefore, must be well trained and prepared to carry out wartime missions.

The GAO pointed out that the general support maintenance force structure has two types of Army units: heavy equipment maintenance companies and light equipment maintenance companies. The GAO stated that the heavy equipment companies maintain combat and tactical vehicles and their components, while light equipment companies maintain light equipment--such as electronic and communications equipment, and their components. The GAO found that 86 percent of those companies (or 65 out of 76 units) are in either the Army Reserve or the National Guard. (pp. 2-3, pp. 13-16/GAO Draft Report)

DOD RESPONSE: Concur.

FINDING C: Prior GAO Studies Addressed Reserve Training and General Support Maintenance Issues. The GAO observed that issues related to Army Reserve component training and general support maintenance capability have been the subject of several GAO reports in recent years. The GAO further observed that those prior reports identified training deficiencies and stressed the need for the Army to manage its training programs better. In one prior report (OSD Case 7904), the GAO asserted

that the Army (1) was not training its reserve soldiers adequately to perform critical job tasks, (2) was not emphasizing battlefield survival skills, and (3) was not managing the use of its reserve training time effectively. The GAO expressed concern about the effects those deficiencies could have on the ability of the Army to perform its wartime operations.

The GAO stated that reports in the Army general support maintenance area have also raised concerns about the accomplishment of this mission during wartime. The GAO noted a July 1989 report (OSD Case 7973), concluded that the active force of the Army was not prepared to perform its wartime general support maintenance mission. The GAO cited a number of problem areas that were found, including (1) the inadequacy of wartime mission guidance provided to general support units, and (2) insufficient time being spent by these units during peacetime performing general support-level repairs.

The GAO indicated that the Army generally agreed with the cited previous recommendations and initiated action to improve maintenance capability and Reserve training. (pp. 2-3, pp. 16-17/GAO Draft Report)

DOD RESPONSE: Concur. In December 1988, the Department of the Army established a task force to reduce the types of activities that detract from Reserve component training, including those identified in earlier GAO reports. In March 1989, the task force sent a message (signed by the Chief of Staff) to Reserve component commanders emphasizing the importance of, and providing guidance and ideas on how to devote more time to, both wartime mission and battlefield survival training. As indicated in the current GAO report the Army also initiated action to improve maintenance capability and Reserve training. Implementation of the United States Equipment Maintenance Center in FY 1992, in concert with deployments to Equipment Maintenance Center-Europe, will increase the time spent performing general support level repairs as a cohesive unit during Annual Training. As part of the planned four year training system, for example, general support Heavy Equipment Maintenance Companies will go to one of the two Centers every other year. The first unit rotation to the United States Center is planned for the fourth quarter of FY 1992.

FINDING D: Wartime Mission Guidance Provided to Units Has Been Inadequate. The GAO found that many units it surveyed did not have the necessary guidance needed to develop realistic training plans. The GAO reported that, in particular, unit personnel were often not aware of the specific equipment they would be expected to repair during wartime.

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Now on pp. 2, 11.

Appendix II
Comments From the Department of Defense

The GAO observed that the Army training policy states that wartime mission guidance is needed for general support maintenance units to establish training plans to meet wartime requirements. The GAO further observed that mission guidance is provided to units through the wartime chain-of-command. The GAO explained that guidance consists of operational plans, battle books, and other correspondence. The GAO reported that, according to Forces Command officials, the need for specific repair missions is essential because limited reserve training time precludes training on all equipment that may be found on the battlefield. The GAO also observed that Army Regulation 220-1, Unit Status Reporting, requires units to degrade their training readiness ratings if they repaired equipment other than that designated for their wartime mission.

The GAO found that most units (51 out of the 56 units surveyed) had received some mission guidance for the 1990 training year. The GAO observed, however, that 22 units had not received guidance identifying the specific equipment they would be expected to repair during war. The GAO emphasized that, without such information, units have difficulty developing training plans that are aligned with their expected wartime roles. (pp. 3-7, pp. 22-24, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur. One of the principal causes of units receiving inadequate mission guidance has been the turbulence within the Army CAPSTONE Program. That program was established to identify wartime command relationships for the purpose of providing focus for peacetime training. Beginning in July 1989, CAPSTONE relationships were "locked" for a two year period, as opposed to the previous one year period. That decision assisted the Army in moving toward its goal of all units receiving and training with current wartime mission guidance.

The Department of the Army will continue to take action to assure that all units receive the necessary guidance to identify the specific equipment they would be expected to repair during wartime.

FINDING E: Limited Training Time Not Used Effectively--Time Spent on Several General Support-Level Repairs is Low. The GAO observed that, unlike the active forces, the Reserves have a limited amount of training time available. The GAO noted that, in order to maximize the use of their time, the Army advocates the Reserves focus their peacetime training on mission-essential tasks required for wartime. The GAO pointed out that, for general support maintenance units, general support-level repair is a mission-essential task.

Page 4 of 14

Now on pp. 2-5, 15-16, and 30-31.

The GAO surveyed commanders for general support units and found that they estimated spending only an average of 38 percent of their time on general support-level maintenance training. According to the GAO, such time included inactive duty training, which usually consists of monthly weekend drills throughout the year--and annual training, which is normally a 2-week drill held sometime during the year.

The GAO concluded, however, that the actual time spent performing general support-level repairs may even be lower than estimated. The GAO compared the unit estimates of time on general support with actual work load data on maintenance records of the units. The GAO explained that, because many units either did not or could not provide the GAO with usable work load data, analysis was limited to three case studies. In each of those cases, however, the GAO found that the general support-level repair estimates from the unit were 5 percent to 10 percent higher than their actual recorded repair times. The GAO pointed out that the disparity raises questions about the reliability of the estimates and suggests that the estimates may have been overstated.

The GAO further explained that annual training, rather than inactive duty training, offered the primary opportunity for mechanics to gain proficiency in general support-level repairs. The GAO indicated that, nonetheless, 23 of 54 units it surveyed estimated spending 10 percent or less of their inactive duty time performing general support-level repairs. According to the GAO, several commanders believed their maintenance personnel needed to spend more time on general support-level repairs during inactive duty training to develop their maintenance skills. (pp. 3-7, pp. 24-26, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur. The mission complexity and large requirements for tools, equipment, and items needing general support level repairs make execution of general support level training during Inactive Duty Training assemblies difficult. Greater use of Regional Training Sites-Maintenance will increase time spent on general support level repairs. Experience has shown that Reserve maintenance units, while performing annual training at the Equipment Maintenance Center-Europe achieve high rates of shop productivity. An additional Equipment Maintenance Center is planned for the United States, with the first unit rotation projected for fourth quarter of FY 1992. The amount of time spent performing general support maintenance training will increase as more units use the Centers.

Now on pp. 2-5, 16-18, and 30-31.

FINDING F: Limited Training Time Not Used Effectively-- Excessive Time Spent on Administrative and Other Duties. The GAO observed the units estimated that an average of 42 percent of their limited training time was spent on administrative and other duties, rather than general support-level maintenance. The GAO explained that many of the administrative-type duties included such things as (1) attending mandatory briefings and classes, (2) inventorying supplies and equipment, and (3) performing field training exercises.

According to the GAO, commanders of 22 units it surveyed said those requirements greatly hindered the effective use of available training time. The GAO noted that Army training policy requires only one field exercise per year; however, one unit it visited was required to perform four field training exercises per year. The GAO reported that the unit commander said the exercises focused on combat and tactical skills and required advance preparation during the weekend drills prior to the exercises. The GAO found that the field exercises resulted in eight of the 12 weekend drills for the unit being used for exercise-related activities--apart from their general support maintenance mission. The GAO indicated the commander, along with other unit and maintenance battalion leaders, did not consider that such activities were preparing mechanics for their wartime mission.

The GAO pointed out that previous Army studies have reported the impact of administrative duties on Reserve units. The GAO cited a 1988 Reserve Component Training Strategy Task Force report, which pointed out that Reserve units were faced with at least 115 administrative requirements annually. The GAO also identified a July 1988 Army Inspector General report that concluded that administrative requirements imposed on Reserve units had forced changes to training plans, detracting from their training. (pp. 3-7, p. 24, p. 27, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur. Ongoing emphasis and efforts by the Army will continue to reduce the proportion of time spent on administrative and other duties (See the response to Finding C). Additionally, the Department of the Army will issue guidance through the Chief of Staff, Army, Task Force To Reduce Reserve Component Training Detractors, to assure that administrative requirements do not unduly displace the required general support maintenance wartime training. The guidance is currently scheduled to be issued by October 1, 1991.

Now on pp. 2-5, 15, 18-19,
and 30-31.

FINDING G: Limited Training Time Not Used Effectively--Units Lack Mission-Essential Equipment for Maintenance Training. The GAO pointed out Army doctrine specifies that units should be capable of (1) supporting in peacetime the same systems and subsystems they will be required to support during wartime and (2) performing the scope and type of work that not only sustains general support maintenance mission capability, but also parallels their wartime roles.

The GAO calculated that 41 of 56 commanders it surveyed reported that an inadequate amount or variety of the newer Army systems and components greatly hindered their general support training efforts. According to the GAO, 20 of 51 commanders reported that they did not train on force modernization equipment throughout the year--such as the M1A1 tank and the Bradley Fighting Vehicle. The GAO found that another 14 units had such equipment available to repair only during their annual training period. The GAO concluded, therefore, that 34 of the 51 units had no force modernization equipment on which to train on during inactive duty training.

The GAO further found that units also experienced some difficulties in obtaining general support-level training on other mission-essential equipment--such as power generators and tactical radios. The GAO reported that, according to 19 of the units, an inadequate amount or variety of that type of equipment for repair greatly hindered training for their general support mechanics.

The GAO explained that, because mission-essential equipment to repair at the general support-level was lacking, some units used their time to perform lower-level maintenance repairs or to repair nonessential equipment. The GAO survey showed that units estimated spending an average of 21 percent of their total training time for the year on direct support and organizational maintenance. The GAO cited an example where one unit had repaired nonmission-essential equipment. According to the GAO, during a 15-month period in 1989 and 1990, the unit completed only 15 general support-level work orders during inactive duty training. The GAO noted that 11 of those work orders were nonmission-essential items, such as television sets, video cassette recorders, a water fountain, a water cooler, and a coffee maker. According to the GAO, none of the cited orders represented the type of equipment the units would be expected to repair during wartime--such as tactical radios and generators. (pp. 3-7, p. 24, pp. 27-28, pp. 42-43/GAO Draft Report)

DOD RESPONSE: Concur. During Inactive Duty Training, the best source of mission-essential equipment to be used for maintenance training is one of the 21 Regional Training Site - Maintenance locations. Eighteen are currently operational; the last three

Now on pp. 2-5, 15, 19-20,
and 30-31.

are programmed to become operational by FY 1993. Units will have increasingly greater access to mission-essential equipment for training as the Regional Training Sites are used. During Annual Training, the Equipment Maintenance Center is considered the best source for mission-essential equipment for maintenance training.

FINDING H: Limited Training Time Not Used Effectively--Inadequate Maintenance Facilities and Difficulties Using Alternate Facilities. The GAO observed that many unit commanders reported that the lack of adequate facilities also hindered effective use of training time and became a barrier to preparing mechanics for wartime missions. The GAO found that 34 percent, or 19 of the surveyed unit commanders, reported that maintenance shops were inadequate for weekend drills. According to the GAO, commanders cited a variety of problems, including (1) insufficient space to perform general support-level repairs, (2) use of maintenance bays for storage of needed supplies and equipment, (3) lack of overhead cranes for heavy equipment work, and (4) unheated work areas. The GAO reported that the inadequate facilities resulted in some mechanics spending time on nonmaintenance duties.

The GAO further observed that commanders, some of whom had no facilities of their own, also expressed concern over using alternate facilities for training. The GAO found that, in many cases, Reserve units shared facilities with other organizations, such as Army civilian maintenance activities. The GAO also reported that commanders cited various difficulties with the arrangement--including (1) having to use their limited training time traveling to other facilities and (2) having only limited control over the type of equipment and level of maintenance required at the alternate facilities. (pp. 3-7, p. 24, p. 29, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur. Tight budgets preclude the building of new maintenance facilities. However, the Department of the Army will continue to explore the problem through the Military Construction Program and other facility initiatives to solve the problem. The short term solution to inadequate facilities is the increased use of the Regional Training Sites and Equipment Maintenance Center facilities.

FINDING I: General Support-Level Maintenance Proficiency Measures Are Limited. The GAO found that the Army does not have a system to evaluate Reserve unit or individual general support-level maintenance proficiency. The GAO referenced a July 1989 GAO general support maintenance report (OSD Case 7973), which recommended that the Secretary of the Army develop methods for evaluating proficiency. The GAO asserted that, although the

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Army concurred with the recommendation, no system had been developed at the time of the current review. The GAO further asserted that the Army was not pursuing actions aggressively to develop such a system. The GAO explained that, without a system for evaluating proficiency, commanders and other maintenance managers lack the necessary information to make sound judgments about the capability of their general support units.

The GAO referred to Army Regulation 350-1, Army Training, which requires all commanders and leaders to ensure that soldiers attain and maintain skill proficiency and continuously evaluate the status of individual and unit training. The GAO observed that some of the evaluation techniques include (1) commanders personal evaluations, (2) checklists of individual tasks, and (3) external evaluations. The GAO found that units were using a combination of measures to help gauge the proficiency of their maintenance personnel. The GAO concluded, however, that the measures generally were inadequate because they focused on basic soldiering and direct support-level maintenance tasks, rather than general support-level maintenance tasks.

The GAO observed that commanders estimated that from 42 to 50 percent of the mechanics were unprepared to perform wartime tasks. The GAO concluded that, until the Army implements an adequate system, mechanic proficiency and the ability of units to perform their wartime missions will be largely unknown. (pp. 3-7, pp. 29-31, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur. The Department of the Army has an ongoing initiative to update the applicable Soldier's Manuals to include a section on critical general support level maintenance tasks. Individual evaluation for mechanics includes Skill Qualification Tests for individual Military Occupational Specialty skill proficiency and Common Task Tests for basic soldier skills. The Army is developing wheel and track general support maintenance self development tests for Noncommissioned Officers, which will help evaluate their proficiency in their specialty as well as in leadership and training skills. That action is currently scheduled for completion by the third quarter of FY 1993.

FINDING J: Hands-on Training Program is Progressing Slowly. The GAO reported that, in February 1987, the Army established the program, "Training with Available Repairables--Reserve Components" now referred to as the "Hands-On" Training program. According to the GAO, the goal of the "hands on" program is to allow Reserve general support maintenance units to gain experience in equipment repair by (1) receiving from Army depots unserviceable equipment compatible with their wartime mission, (2) repairing these items, and (3) returning them to the supply system. The GAO pointed out that the repairs were to be accomplished during weekend training drills.

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The GAO found a number of problems impeding the progress of the "hands on" program. The GAO indicated that, although the program has been in existence since 1987, the two light equipment maintenance companies initially chosen to participate in the program have received only 13 generators to repair and have not been able to complete all repairs due to shortages of repair parts. According to the GAO, the result is that some generators have remained unrepaired at one unit for over 1 year. The GAO further indicated that, although those units have submitted requests for additional equipment to repair, the Army Materiel Command (which has joint program responsibility with Forces Command) has not provided the equipment.

The GAO stated that, at first, the Army Materiel Command initially had difficulty providing unit-requested equipment because request documents were incomplete. The GAO noted that, by the time the documents were corrected and the requests were reissued, months had passed and the Command could not provide the requested equipment because it was no longer available. The GAO also found that the two commands have been unable to resolve program funding issues--such as payment for repair parts. According to the GAO, one participating unit official indicated that he believed the program lacked command emphasis and, therefore, had a low priority.

The GAO concluded that the Army has not aggressively pursued actions to resolve the difficulties encountered in implementing the "hands on" program. The GAO concluded that, as a result the program has not provided Reserve maintenance units with the training the Army had planned to achieve. (pp. 3-7, pp. 32-33, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur.

FINDING K: Regional Training Sites-Maintenance Program Should Help General Support Units in the Future. The GAO observed that the Army developed the Regional Training Sites--Maintenance Program to provide Reserve units with equipment maintenance training at a number of specially created training sites. The GAO reported that the program objectives are to provide Reservists with hands-on maintenance training at regional sites to (1) sustain skills previously acquired on older required equipment and (2) acquire additional skills needed to repair the newer Army force modernization equipment. According to the GAO, the program is intended to serve both direct support and general support maintenance units.

The GAO explained that, when fully implemented, the program is to have 21 sites--19 standard sites for wheeled and tracked

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30-31.

vehicle repair and two high technology sites for specialized electronics and communications equipment repair. The GAO found that, currently, 18 of the 21 sites were operational--with the remaining sites to be operational by FY 1993.

The GAO found, however, that maintenance personnel from many units had not trained at the facilities and others had to spend considerable time traveling to them. The GAO reported that 28 of 56 units it surveyed had not sent personnel to the training centers during weekend drills for the period from June 1989 through May 1990. The GAO further reported that, for personnel from 11 of 27 units training at the facilities on weekends, the round trip travel time exceeded 5 hours--or more than 25 percent of their time available for training.

According to the GAO, several program officials also said that the training at the centers focused on direct support rather than general support tasks. The GAO indicated that, although some general support-level training was occurring, as of January 1991, the Army had not developed fully the programs of instruction for general support maintenance training. The GAO reported that the Army plans to have general support-level programs in place by the 1992 training year. The GAO concluded that, after general support-level courses have been implemented, Reserve general support maintenance units should benefit from the training. (pp. 3-7, pp. 33-36, pp. 42-43/GAO Draft Report)

DoD RESPONSE: Concur.

FINDING I: Overseas Reserve Maintenance Training Program Not being Executed As Envisioned. The GAO indicated that, in 1987, the Senate Committee on Appropriations requested the Army to study specific overseas missions that could be assumed by Reserve units. The GAO reported that, in January 1989--in response to the congressional direction--the Army established the Equipment Maintenance Center-Europe in Germany to serve as a maintenance organization for an overseas deployment Reserve training program. The GAO explained that, under the program concept, general support heavy equipment maintenance companies deploy on a rotational basis to Germany to repair equipment in the maintenance facilities of the Center for 3-week periods. The GAO found that, as of October 1990, 18 of 44 Reserve units had trained at the Center.

According to the GAO, Army officials claimed that the program has been a success and units have gained valuable training not often available at their home stations. The GAO noted, however, that none of the 18 units had an opportunity to perform general support-level maintenance on any of the Army force modernization equipment. The GAO asserted that, although the Senate Committee

See comment 2.

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on Appropriations had envisioned that the Center would be training Reserve units on the most modern heavy equipment systems--in actuality, the units have been repairing much of the older equipment in the European theater maintenance backlog such as 2-1/2 ton trucks.

The GAO found that the Army plans for FY 1991 again did not call for the Reservists to repair force modernization equipment; however, Army officials indicated that they were exploring the possibility of introducing the newer equipment into the Center maintenance program during 1991 on a trial basis.

The GAO further found that not all of the unit mechanics had received training in skill areas. According to the GAO, mechanics in the armament, tracked vehicle, and engineer sections of many units had little or no opportunity to develop their general support-level skills because of the limited variety of equipment available at the Center. The GAO reported that, according to Army officials, the described condition is expected to continue for the 1991 training program. (pp. 3-7, pp. 36-38, pp. 42-43/GAO Draft Report)

DOD RESPONSE: Concur. It should be noted, however, that there must be a balance of both wartime training on modern items of equipment, and peacetime workload accomplishment on older items of equipment. The Equipment Maintenance Center-Europe, the site of overseas maintenance training for Reserve component units, was established (1) to provide training for Reserve components units while in Europe and (2) to reduce the large maintenance backlog. Reserve components unit training at the Center receive valuable unit training, while developing unit cohesion.

FINDING M: Individual Unit Initiatives Could Have Wider Application. The GAO found that some units have taken action to improve their training and capability. According to the GAO, the most notable are two initiatives related to (1) effective general support-level task training and time management and (2) maintenance proficiency measurement. The GAO concluded that the cited initiatives could be adopted by other Reserve units to improve their capability.

The GAO explained that the a maintenance battalion of the Iowa National Guard developed a program that combines specific general support-level skill development with an effective time management system. The GAO concluded that the improved training program of the Battalion is a step in the right direction toward better training for its general support maintenance units. The GAO added, however, for training to be successful, units must have (1) sufficient types and quantities of equipment on hand to repair, (2) adequate maintenance facilities, and (3) proper test

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measurement and diagnostic equipment and tools to set up an effective lane training program.

The GAO also reported that the Iowa National Guard and its maintenance units have developed an automated system to measure and track the proficiency of unit mechanics performing general support-level repairs. According to the GAO, the proficiency system has two essential components, as follows:

- An automated listing of general support-level tasks, which were developed by the maintenance units. As training occurs, unit mechanics are rated in their skills and the results are entered into the system.
- Maintenance managers are able to obtain soldier proficiency data rapidly. Guard and maintenance officials believe the measurement system has helped them gauge the proficiency of general support maintenance units. The GAO further indicated that, according to those officials, the system could be readily transferable to other units because it is designed to work on the computer systems used by Guard and Reserve units.

The GAO concluded that the actions taken by the Iowa National Guard to use its training time more effectively and measure maintenance proficiency should help improve general support maintenance capability. The GAO stressed that the Army can take advantage of those local actions, as well as other unit initiatives, by adopting them in other Reserve units to improve their general support maintenance capability. (pp. 3-7, pp. 38-43/GAO Draft Report)

DoD RESPONSE: Concur. Camp Dodge, Iowa, was selected as the site for the United States Equipment Maintenance Center. The majority of training innovations demonstrated by the Iowa National Guard (as noted by the GAO) will be used at the Center. The first unit rotation is projected for the fourth quarter of FY 1992.

Now on pp. 2-5, 27-31.

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RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of the Army ensure that commanders in all wartime theaters provide mission guidance to Reserve units specifying the types of equipment they would be expected to repair in wartime. (p. 7, p. 43/GAO Draft Report)

Now on pp. 5, 31.

DoD RESPONSE: Concur. The Secretary of the Army will direct Commander of Forces Command to certify that Reserve component maintenance units receive mission guidance specifying the types of equipment to be repaired during wartime. The tasking will be made by July 1, 1991, with a completion date of October 1, 1991.

RECOMMENDATION 2: The GAO recommended that the Secretary of the Army resolve problems--such as administrative and repair parts difficulties with the hands-on training program and the lack of force modernization equipment available to units participating in the overseas program for heavy equipment maintenance companies--that have limited the value of Reserve training initiatives designed to provide units with opportunities to repair equipment they would be expected to repair during wartime. (p. 7, p. 43/GAO Draft Report)

Now on pp. 5, 31.

DoD RESPONSE: Concur. The Secretary of the Army will direct Army Materiel Command, Forces Command, and the Training and Doctrine Command to review and resolve problems causing administrative and repair parts difficulties in the hands-on training program. The review is currently scheduled to begin July 1, 1991, and finish October 1, 1991. Force modernization equipment is now being provided by U.S. Army Europe to units participating in the overseas program for heavy equipment maintenance units to meet their wartime repair training requirements.

RECOMMENDATION 3: The GAO recommended that the Secretary of the Army determine whether unit-level initiatives to improve general support maintenance capability--such as the Iowa National Guard actions to (1) measure and track the proficiency of general support maintenance mechanics and (2) manage reserve training time more effectively--can be adopted in other reserve units. (p. 7, p. 43/GAO Draft Report)

Now on pp. 5, 31.

DoD RESPONSE: Concur. The Secretary of the Army will direct the Army staff to review initiatives demonstrated by the Iowa National Guard for use by other Reserve component units. The review is currently scheduled to start on July 1, 1991, and finish by December 31, 1991, at which time changes will be implemented as applicable.

The following are our comments on DOD's letter dated June 7, 1991.

GAO Comments

1. According to the Reserve Forces Policy Board, the reserve components now constitute 52 percent of the Army's total force. We have revised the text to reflect this updated figure.
2. We have revised the text to show that round trip travel time for affected units' personnel to regional maintenance training facilities exceeded 4 hours rather than 5 hours as reported in the draft report.

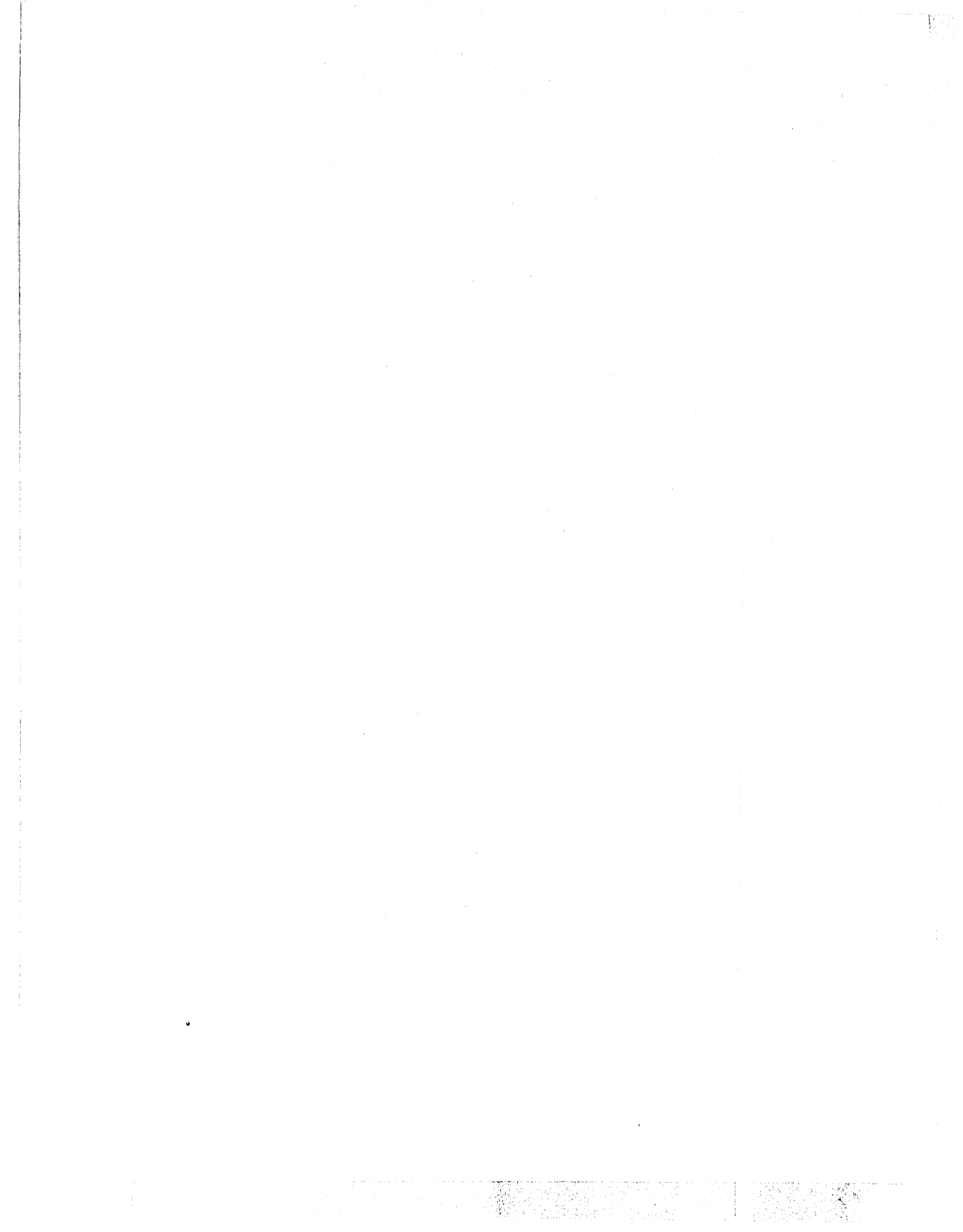
Major Contributors to This Report

**National Security and
International Affairs
Division,
Washington, D.C.**

Henry L. Hinton, Associate Director
Kenneth R. Knouse, Jr., Assistant Director
Marilyn Mauch, Social Science Analyst
James Reifsnyder, Evaluator-in-Charge
George Shelton, Senior Evaluator

**Kansas City Regional
Office**

Benjamin Douglas, Regional Assignment Manager
Christopher Guthrie, Evaluator



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