

U.S. ARMY SERGEANTS MAJOR ACADEMY (BSNCOC)

R103

JUN 99

MAINTENANCE SUPPORT OPERATIONS

PRERESIDENT TRAINING SUPPORT PACKAGE

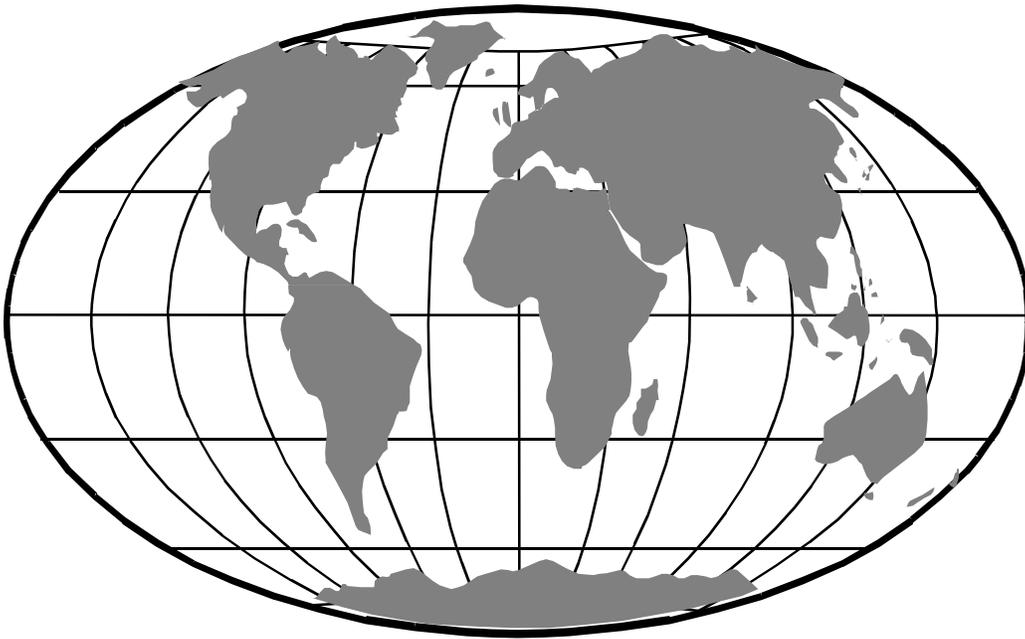
WAR FIGHTERS



Sergeant Major



Master Sergeant



Sergeant First Class



Staff Sergeant

OF THE 21ST CENTURY

PRERESIDENT TRAINING SUPPORT PACKAGE

**TSP Number/
Title** R103
Maintenance Support Operations

Effective Date October 1998

**Supersedes
TSPs** This supersedes Preresident Training Support Package R103, May 96 and
Training Support Package R103, Jan 95.

TSP User The following course uses this TSP.

| Course Number(s) | Course Title(s) |
|------------------|-------------------------|
| 250-ASI 2S | Battle Staff NCO Course |

Proponent The proponent for this TSP is the U.S. Army Sergeants Major Academy.

**Comments and
Recommendations** Sent comments and recommendations on DA Form 2028 (Recommended
Changes to Publications and Blank Forms) directly to:

ATTN ATSS DCR
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**Foreign
Disclosure
Restrictions** The materials contained in this course have been reviewed by the course
developers in coordination with the USASMA foreign disclosure authority.
This course is releasable to students from all requesting foreign countries
without restrictions.

**This TSP
contains**

The following table lists the material included in this TSP.

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| Appendixes | A. Lesson Evaluation, Faculty Graded | Not Used |
| | B. Lesson Exercise and Solutions | B-1 |
| | C. Student Handouts | Not Used |

**Gender
Disclaimer**

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

SECTION I ADMINISTRATIVE DATA**Task(s)
Trained**

This lesson trains the tasks listed in the following table(s):

| | |
|---------------------|---|
| Task Number: | None. |
| Task Title: | Advise the commander and staff on the Army maintenance support operations. |
| Conditions: | While serving as a Battle Staff NCO in a battalion/brigade Tactical Operation Center. |
| Standard: | In accordance with AR 750-1, FM 63-2, FM 63-21, FM 71-123, FM 100-10, and the material provided in this Preresident Training Support Package. |

**Task(s)
Reinforced**

This lesson reinforces the task(s) listed in the following table:

| Task Number | Task Title |
|--------------------|---|
| 7-1-3912/4 | TF maintenance performs periodic services |
| 7-1-3912/5 | TF maintenance performs unit maintenance collecting Point (UMCP). |
| 7-1-3912/6 | TF recovers, repairs, and returns non-mission capable equipment. |

Clearance and Access

There is no security clearance or access requirement for this lesson.

Copyright Statement

No copyright material reproduced for use in this lesson.

References

The following table lists the reference(s) for this lesson. You will receive these references in Phase II.

| Number | Title | Date | Paragraph No. | Additional Information |
|---------------|--|-------------|----------------------|-------------------------------|
| AR 750-1 | Army Materiel Maintenance Policies | Aug 94 | NA | NA |
| FM 63-2 | Division Support Command, Armored, Infantry, and Mechanized Infantry Division | May 91 | NA | NA |
| FM 63-21 | Main Support Battalion | Aug 90 | NA | NA |
| FM 71-123 | Tactics and Techniques for Combined Arms Heavy Forces: Armored Brigade, Battalion/Task Force, and Company/Team | Sep 92 | NA | NA |
| FM 100-10 | Combat Service Support | Oct 95 | NA | NA |

Equipment Required

None.

Materials Required

Pencil and writing paper.

Safety requirements

None.

**Risk
Assessment
level**

Low.

**Environmental
considerations**

None.

**Lesson
Approval**

The following individuals have reviewed and approved this lesson for
Publication and incorporation into the Battle Staff NCO Course.

| Name/Signature | Rank | Title | Date Signed |
|-----------------------|-------------|----------------------------|--------------------|
| Herbert T. Haskett | CIV | Training Developer, BSNCOC | 20 October 1999 |
| William D. Adams | SGM | Chief Instructor, BSNCOC | 20 October 1999 |
| Alan R. Tucker | SGM | Course Chief, BSNCOC | 20 October 1999 |

SECTION II INTRODUCTION

Terminal Learning Objective

At the completion of this lesson, you will take an exam on combat support services in the resident phase.

| | |
|---------------------|---|
| Task Number: | None. |
| Action: | Advise the commander and staff on the Army Maintenance Support Operations. |
| Conditions: | In a self-study environment using the material presented in this lesson. |
| Standard: | In accordance with AR 750-1, FM 63-2, FM 71-123, FM 100-10, and the material provided in this Preresident Training Support Package. |

Evaluation

Prior to being enrolled into Phase II of the Battle Staff Course you must take a Phase I Exam that includes questions on material from this lesson. You must correctly answer 70% of the multiple choice questions to receive a "GO" on the Phase I exam. A "GO" is required for enrollment into Phase II.

Instructional Lead-in

This lesson familiarizes you with the Army maintenance system and functions and prepares you for duties as a staff NCO at a battalion or brigade level. It includes the levels of maintenance, maintenance support for tactical operations, and the general concepts of maintenance operations.

The ability of any military unit to accomplish a combat mission depends a great deal on the unit's capabilities to use its equipment for its intended purpose.

Most units have technical supervisors in the maintenance field, such as the maintenance technician, motor sergeant, and the battalion motor officer (BMO).

As a battle staff NCO serving in a battalion or brigade level, would you know how to handle maintenance related issues? Are you aware of the four levels of the army maintenance system and the pertinent responsibilities at each level? What maintenance capabilities do the forward support battalion (FSB) and main support battalion (MSB) have? Would you know, who to task for maintenance support in the field?

SECTION III PRESENTATION

ELO 1

| | |
|--------------------|--|
| Action | Identify the four levels of the Army maintenance system. |
| Conditions: | In a self-study environment using the material presented in this lesson. |
| Standard: | In accordance with AR 750-1, FM 100-10, Annex C, and the material provided in this Preresident Training Support Package. |

**Learning Step/
Activity (LS/A)
1, ELO 1,
Introduction
Maintenance
Policy and
Principles**

Tactical success on today's battlefield demands that equipment be maintained, recovers repaired or replaced as quickly as possible. Good maintenance practices, forward positioning of maintenance units, effective repair parts and equipment replacement systems, and clear priorities for recovery and repair are vital.

**Maintenance:
A Combat
Multiplier**

Maintenance is a combat multiplier. When opposing forces have relative parity in numbers and quality of equipment, the force that combines skillful use of equipment with an effective maintenance system has a decided advantage. This advantage is two-fold.

- The initial advantage is that the using force enters battle with equipment that is operational and likely to remain so longer.
- The subsequent advantage is that the using force can return damaged and disabled equipment to the battle faster.

Gaining these advantages is the real purpose of a maintenance system.

**Maintenance:
a Team Effort**

Elements at all levels work together to ensure the attainment of strategic goals and objectives. They must have the proper personnel, equipment, tools, and replacement parts. Personnel must train in the theory and principles of systems and be capable of diagnosing and correcting faults. Additionally, they must have immediate access to high usage repair parts.

Unit level maintainers and direct support maintenance units concentrate on the rapid turnaround of equipment to the battle, while general support maintenance units and depots repair and return equipment to the supply system.

LS/A 1 , ELO 1,
 Fixing

The fixing function is central to tactical and operational success. A viable maintenance system is agile and synchronized to the combat scheme of fire and maneuver. It anticipates force requirements. A commander who has 65 percent of his tanks operational may wisely delay an attack if he can realistically expect the fixing process to have 90 percent ready within 24 hours.

 Guiding
 Maintenance
 Tenets

The guiding maintenance tenets are:

- Fix forward. This enhances the ability to repair and return the maximum number of combat systems, at the earliest opportunity, as close to the using unit as possible.
- Anticipatory support built on flexible levels of maintenance. To maximize the number of combat systems available, maintenance leaders and managers anticipate the requirements for support and preposition that capability.

The system does not lock maintainers into artificially divided levels of maintenance where they perform only repairs indicated by the maintenance allocation charts. Rather, they perform necessary repairs within the limits of their capability (skills and test equipment) and the tactical situation.

 Maintenance
 Capability:
 Employment
 Considerations

The type and location of maintenance units that best support the tactical commander's requirements are a prime concern of the theater logistician. A viable maintenance system complements the capabilities of the supply system.

When equipment is in short supply or otherwise unavailable to support requirements, commanders use the maintenance system to offset the shortfall. As equipment becomes more technically complicated, it is easier to meet the surge requirements by redirecting the maintenance effort than by influencing the supply effort.

The proper mix of the type and location of maintenance units best supports the tactical and operational commander's requirements. Additionally, early arrival of essential maintenance capabilities is important in force projection operations to ensure deployed and prepositioned equipment is operational.

(REF: FM 100-10, Annex C, Page C-1 and C-2)

 Maintenance
 Support
 System

The Army maintenance program is a flexible, four level system. The levels are operator/unit, direct support (DS), general support (GS), and depot. Army aviation maintenance has three levels. In this lesson, we will discuss the four level system.

| | |
|---|--|
| LS/A 1 , ELO 1, Maintenance Support System, continued | Each level has certain capabilities based on the skills of the assigned personnel and the availability of tools and test equipment. While these are distinct levels, there is flexibility built into the system due to overlapping capabilities. |
|---|--|

| | |
|--|--|
| Maintenance Management: Two Echelons | Strategic, operational, and tactical maintenance managers coordinate maintenance operations among the various activities. Tactical managers oversee operator/crew, unit, and DS maintenance operations. The various management functions required result in the classification of maintenance management into two echelons. They are: <ul style="list-style-type: none"> • Readiness. • Sustainment. |
|--|--|

| | |
|-----------|--|
| Readiness | Commanders are responsible for equipment readiness. Readiness maintenance managers at corps and lower echelons support commanders by managing operations to enhance equipment readiness. Readiness echelon managers maximize combat readiness by coordinating repairs as far forward as possible for quick return into the battle. |
|-----------|--|

| | |
|-------------|--|
| Sustainment | Sustainment maintenance managers at corps and above focus on materiel management. They concentrate on fixing by repairing, sustaining units, and supporting joint/multinational equipment and standard Army systems. |
|-------------|--|

| | |
|-------------------|--|
| Strategic Support | The strategic base is the backbone of the maintenance system. At this level, maintenance supports the supply system by repairing or overhauling components or end items not available or too costly to procure. Maintenance management concentrates on identifying the needs of the Army supply system and developing programs to meet them. Strategic support also includes maintenance of pre-positioned equipment. |
|-------------------|--|

| | |
|------------------------|---|
| Operational Support | The overriding goal of maintenance is to support the operations plans and objectives of the commander. Its primary purpose is to maximize the number of operational systems available to support the tactical battle. Commanders tailor and position maintenance units in the theater to best support this goal. Maintenance at the operational level drives the tactical battle by ensuring that the maintenance system supports campaigns and supports theater forces. |
|------------------------|---|

| | |
|--|--|
| LS/A 1 , ELO 1, Operational Support, continued | <p>Through the judicious use of maintenance assets, the commander can alleviate shortages in the supply system or support unexpected requirements.</p> <p>The operational support plan ties together the requirements of the tactical units with the capabilities of the strategic base. The maintenance system both drives and supports the supply system</p> |
| <hr/> | |
| Tactical Support | <p>The nature of the modern battlefield demands that the maintenance system repairs equipment quickly and at, or near as possible to, the point of failure or damage. This requirement implies a forward thrust of maintenance into division and brigade areas. There the battle is more violent and the damage greater.</p> <p>Maintenance assets move as far forward as the tactical situation permits to repair inoperable and damaged equipment and return it to the battle as quickly as possible.</p> <p>The structure of tactical maintenance units includes highly mobile maintenance support teams (MSTs). These teams provide support forward on the battlefield as directed by the direct support (DS) maintenance company commander and maintenance control officer. They send personnel, parts, test, measurement, and diagnostic equipment (TMDE), and tools to forward areas as required and pull them back when no longer needed.</p> <p>(REF: FM 100-10, Annex C, Pages C-2 and C-3.)</p> |
| <hr/> | |
| Four Levels of Maintenance | <p>The four level maintenance are:</p> <ul style="list-style-type: none"> • Operator/unit maintenance. • Direct support (DS) maintenance. • General support (GS) maintenance. • Depot maintenance. |
| <hr/> | |
| Operator/Unit Maintenance | <p>Preventive maintenance checks and services (PMCS) serve as the key to quickly identify potential problems. Operator/unit maintenance serves as the linchpin of the maintenance system. It involves quick turnaround repairs by component replacement, minor repairs, and performance of scheduled services.</p> |

LS/A 1, ELO 1,
Operator/Unit
Maintenance,
continued

Command emphasis is vital to ensure an effective PMCS program. The program requires trained operators/crews and routine supervisory and implementing procedures. Ineffective command emphasis can lead to cursory PMCS programs that fail to correct deteriorating effects before they adversely affect readiness and combat capability and unnecessarily burden technical maintenance systems. Unit maintenance efforts concentrate on returning equipment to the user quickly enough to influence the outcome of a given task or mission. The operator or crew identifies malfunctions through the use of onboard sensors and visual inspection.

Most units, organizations, and activities have organic unit maintenance personnel to perform unit maintenance on equipment.

Direct Support
(DS) Maintenance

Direct support (DS) maintenance organizations consist of a base maintenance company augmented with maintenance support teams designed to support specific types of supported units. The composition of the supported units determines the type and number of teams assigned or attached to the base company. These teams directly support units on an area basis or dedicated basis.

Those, which support units on a dedicated basis, accompany the supported unit as it moves around the area of operations. The DS maintenance team receives repair parts and backup maintenance support through the nearest DS maintenance company.

DS maintenance units and maintenance teams expected to operate in forward areas must be as mobile as the supported customer must. The maintainers in these units focus on repair by placement. If these units cannot repair equipment due to lack of time or specialized tools and/ or test equipment, supporting teams from a higher maintenance echelon repair the equipment on site or evacuate it.

As with unit maintenance elements, maintainers in DS maintenance units may repair selected components to eliminate higher echelon backlogs and maintain technical skills when METT-T permits.

LS/A 1, ELO 1,
Sustainment
Maintenance
Support

Sustainment maintenance support includes the following maintenance levels:

- General support (GS) maintenance.
- Depot maintenance.

It consists of several different types of activities modularly designed to meet maintenance demands anywhere in the world.

General support and depot repair activities locate where they can best support the theater operations plan. They support the theater supply system through TOE/TDA units, host nation support, and contract personnel. These activities generally move into fixed or semi-fixed facilities in the theater.

General Support
(GS) Maintenance

The primary mission of General Support (GS) component repair activities is the repair of components for return to the supply system. Managers set priorities on the basis of the anticipated consumption rates of components. Sustainment maintenance managers determine consumption rates. Secondary repair missions include end item repair and repair of components in support of depot maintenance.

Additionally, GS maintenance elements provide backup support to DS maintenance units.

Depot
Maintenance

Depot maintenance supports the strategic level of war. Army Materiel Command (AMC) depots, or activities, contractors, and host nation support personnel perform this level of maintenance in support of the supply system. Depot maintenance operates in fixed facilities in the continental United States (CONUS) and in theater.

(REF: FM-100-10, Annex C, pages C-3)

LS/A 1, ELO 1,
Cannibalization
and Controlled
Exchange

The commander who owns unserviceable equipment decides whether to perform cannibalization or controlled exchange.

- Cannibalization is the authorized removal, under specific conditions, of serviceable and unserviceable parts, components, and assemblies from materiel authorized for disposal.
- Controlled exchange is the removal of serviceable parts, components, and assemblies from unserviceable, economically repairable equipment and their immediate reuse in restoring a like item of equipment to a combat-operable or serviceable condition.

Commanders may use supervised battlefield cannibalization and controlled exchange when parts are not available from the supply system.

Commanders as close to the site of damaged equipment as possible make cannibalization and exchange decisions consistent with Army regulations and major command (MACOM) policy. They base their decisions on guidelines established at higher headquarters.

Cannibalization is a major source of critical repair parts in a combat environment. Maintainers use it aggressively according to the command's established policy.

(REF: FM-100-10, Annex C, pages C-7)

Maintenance in
an NBC
Environment

Logisticians avoid operating in a chemically contaminated environment whenever METT-T permits. Rather than conduct operations in a contaminated area, combat service support (CSS) units will displace at the earliest opportunity, decontaminate their equipment, and resume support operations. Reductions in manual dexterity and effects of petroleum product spills on protective overgarments particularly degrade maintenance operations.

Avoid contamination of equipment if all possible, because it's easier than decontaminating it. Decontamination is time consuming, and it may corrode and damage some types of equipment. Providing overhead cover for equipment and supplies significantly reduces liquid contamination of such material.

Using units decontaminate their own equipment within their capabilities. Equipment turned over to maintenance personnel is as free of contamination as the using unit can make it.

LS/A 1, ELO 1,
Maintenance in
an NBC
Environment,
continued

Using units establish standard operating procedures for recovery, handling, and decontamination of their own equipment.

When using unit personnel are not able to decontaminate equipment, they mark the equipment with the type and the date/time of contamination. If feasible, they mark the specific areas of equipment contamination to alert maintenance personnel of the danger. They also segregate contaminated material. When using units cannot decontaminate damaged or inoperable equipment that is critical to the battle, material managers consider equipment replacement.

Lesson
Exercise 1

Click here to go to [Lesson Exercise 1](#).

(REF: FM-100-10, Annex C, pages C-7)

ELO 2

| | |
|--------------------|--|
| Action | Identify maintenance operations normally assigned to the four levels of support maintenance. |
| Conditions: | In a self-study environment using the material presented in this lesson. |
| Standard: | In accordance with AR 750-1, and the material provided in this Preresident Training Support Package. |

LS/A 1, ELO 2,
Unit Maintenance
Policies and
Standards

The Army's maintenance standard is found in the technical manual (TM) series -10 and -20. Each piece of equipment has a (TM) -10 and -20 covering its preventive maintenance checks and services (PMCS). The exception to this standard is equipment utilized as training aids and frequently disassembled and assembled for instructional purposes.

The maintenance standard is met when the condition of the equipment:

- is fully mission capable.
- has all faults identified by the operator/crew following the prescribe intervals using the "items to be checked" column of the applicable -10 and -20 series TM PMCS table.

Unit maintenance is the first and most critical level of the Army maintenance system. It is the foundation of the maintenance system and requires continuous emphasis by all leaders.

| | |
|---|--|
| LS/A 1, ELO 2, Unit Maintenance Policies and Standards | <p>Commanders must establish a command climate that ensures the conduct of proper maintenance of equipment in accordance with the above Army maintenance standards.</p> <p>(REF: AR 750-1, page 5)</p> |
| <hr/> | |
| Preventive Maintenance Checks and Services (PMCS) | <p>Commanders must establish a command climate, which ensures conduct of proper maintenance of equipment in accordance with applicable -10 and -20 series TM.</p> <p>The cornerstone of unit maintenance is the operator/crew performing preventive maintenance checks and services (PMCS) from the applicable -10 series TM.</p> <p>The before and during PMCS checks concentrate on ensuring equipment is fully mission capable (FMC). After operations checks detect faults resulting from the mission and ensure the identification and correction of faults to maintain the equipment to the maintenance standard.</p> <p>(REF: AR 750-1, page 5 through 7)</p> |
| <hr/> | |
| Unit Maintenance Operations | <p>Maintenance operations normally assigned to unit maintenance include the following:</p> <ul style="list-style-type: none"> • Performance of PMCS. • Inspections by sight and touch of external and other easily accessible components. • Lubricating, cleaning, preserving (to include spot painting), tightening, replacing, and make minor adjustments authorized by the maintenance allocation chart (MAC). • Diagnosis and fault isolation authorized by the MAC. • Replacement of unserviceable parts, modules, and assemblies authorized by the MAC. • Requisition, receipt, storage, and issue of repair parts. • Verification of faults and level of repair of unserviceable material prior to evacuation. • Evacuation to the appropriate maintenance support activity of unserviceable repairable equipment that exceeds authorization to correct/repair. |

-
- LS/A 1, ELO 2,**
Unit
Maintenance
Operations,
continued
- Recovery or transportation of equipment to and from the supporting maintenance activity.
 - Accomplishment of all tasks required by the Army Oil Analysis Program (AOAP).
 - Materiel readiness reporting in accordance with AR 700-138.

(REF: AR 750-1, page 7)

Characteristics
of Direct support
(DS)

Direct support (DS) maintenance is characterized by :

- Backup support to unit level maintenance.
 - One-stop service to supported units.
 - Highly mobile, weapon-system-oriented maintenance.
-

DS Maintenance
Support to Unit

DS maintenance support by unit type is allocated as follows:

- Divisional maintenance units support organic elements of the division.
 - Attached units will coordinate with the parent units for support.
 - Nondivisional maintenance units will provide support on an area basis and backup support to divisional DS units.
-

DS Maintenance
Functions

Functions performed by maintenance units at the DS level include inspection of the following items:

- Verify serviceability of the item.
 - Determine if items become unserviceable due to other than fair wear and tear (FWT).
 - Determine economic repairability.
-

DS Maintenance
Provision

Provision of proactive materiel readiness and technical assistance of unit maintenance elements including:

- Visits to supported units on a regular basis.
 - Advice to supported units in proper methods for performing maintenance and related logistics support.
 - Coordination with supported units to perform technical inspection when requested
-

LS/A 1, ELO 2,
DS Maintenance
Functions,
continued

- On-site assistance to supported units.
- Diagnosis and isolation of materiel or module malfunctions, adjustment, and alignment of modules that become readily completed with assigned tools and Test, Measurement, and Diagnostic Equipment (TMDE).
- Performance of light body repair to include straightening, welding, sanding, and painting of skirts, fenders, body, and hull sections when required to stop corrosion or retain structural integrity.
- Evacuation of economically repairable end items to designated maintenance facilities when repair is beyond authorized capability or capacity. Evacuation and return of equipment after repair through the maintenance channels.
- Providing backup DS maintenance support to other DS units and requesting backup support from other DS and GS units as required.
- Fabrication as identified by the appropriate technical manual.

(REF: AR 750-1, page 8)

Characteristics of
GS maintenance

GS maintenance is characterized by:

- Commodity oriented repair of components and end items in support of the theater supply system.
- Backup maintenance support to DS units.
- Job shop/bay or production line operations with the capability to task organize to meet special mission requirements.
- Location at echelons above corps.

GS Maintenance
Functions

Functions performed by maintenance units at the GS level include the following:

- Diagnosis, isolation, and repair of faults within modules/components per MACs.
- Selected repair of line replaceable units (LRUs) and printed circuit boards (PCBs) per MACs.
- Performance of heavy body, hull, turret, and frame repair per MACs.
- Area maintenance support, to include technical assistance and on-site maintenance when required or requested.

LS/A 1 , ELO 2,
GS Maintenance
Functions,
continued

- Collection and classification of major end items (less aircraft, ammunition, missiles and medical materiel) for proper disposition.
- Operation of cannibalization points when authorized by MACOM commanders.
- Evacuation of unserviceable end items and components, through the appropriate supply support activity (SSA).
- Fabrication or manufacture of repair parts, assemblies, components, jigs, and fixtures when approved by the MACOM.
- Request for backup support as required.

(REF: AR 750-1, page 8)

Depot Level
Maintenance

Depot level maintenance will support both combat forces and the Army supply system as follows:

- Depot level maintenance will provide technical support and backup to DS and GS maintenance units.
- In wartime, the theater commander assumes control of depot level maintenance in the theater of operations.
- Depot level maintenance provides combat ready materiel to the Army supply system.

Depot level maintenance will normally be performed by TDA industrial-type activities operated by the Army. Depot level maintenance may also be performed by contract, inter service agreement (ISA), and interdepartmental or interagency agreement.

Depot level repairs may be authorized, in writing, for the next lower level of maintenance. This is a one time, non-recurring authorization and is based on the lower level's capability and capacity

(REF: AR 750-1, page 9)

Lesson
Exercise 2

Click here to go to [Lesson Exercise 2](#).

ELO 3

| | |
|--------------------|---|
| Action | Explain how maintenance echelons overlap to provide continuous support to maneuver units. |
| Conditions: | In a self-study environment using the material presented in this lesson. |
| Standard: | In accordance with FM 71-123, and the material provided in this Preresident Training Support Package. |

LS/A 1 , ELO 3,
Maintenance
Time
Guidelines

Maintenance time guidelines suggest the maximum time that unserviceable equipment will remain in various supports area. Battle damage assessment (BDA) and diagnosis indicate estimated required repair time.

The company maintenance team (CMT) repairs equipment on site or evacuates it to the appropriate maintenance echelon in the appropriate support area. Factors considered in making the decision to repair or evacuate include the following:

- Tactical situation.
- Echelon of work required.
- Availability of required repair parts.
- Current workload in each area.

The following table lists typical maintenance time guidelines. These times are flexible and not considered restrictive.

| Time to Repair (hours) | Location |
|--|--|
| Less than 2 | On site |
| 2 to 6 (and can be towed) | UMCP (until repaired) |
| 6 to 24 (or less than 6, if vehicle cannot be towed) | Field Trains in the Brigade Support Area (BSA) |
| 24 to 36 | Division support area (DSA) |

Maintenance
Support for
Maneuver Units,
Overview

This section presents battlefield maintenance concepts, which place the various maintenance echelons into proper perspective. These concepts show how echelons overlap to provide continuous maintenance support for maneuver units. The frame of reference for this discussion is the battalion task force.

LS/A 1 , ELO 3,
Maintenance
Platoon Support
Locations

In a battalion task force, the BMO task organizes the maintenance platoon based on his analysis of current and anticipated requirements. He is concerned with providing the appropriate support at each of three locations:

- Maneuver company.
 - Unit maintenance collection point (UMCP).
 - Field trains.
-

Company
Maintenance
Team (CMT)

Normally, the BMO positions the (CMT) vehicle/tank retrievers (VTRs) and armored personnel carriers (APC) with crews to support each company. The intent is to provide a quick-fix capability for repairing items in less than two hours and recovery capability for those items requiring more extensive repairs.

The remainder of the CMT operates from the unit maintenance control point (UMCP) under the control of the BMO. When the tactical situation permits, the entire CMT may go forward to provide additional forward support.

Unit
Maintenance
Control Point
(UMCP)

The UMCP is normally under the control of the BMO and battalion maintenance team (BMT). It is task organized as follows:

- Maintenance platoon headquarters (-).
- One or more prescribed load list (PLL) trucks from the administrative section.
- Remaining VTRs from the recovery section.
- Track automotive and turret repair teams from the service section.
- Wheeled vehicle assets from the CMTs.
- Direct support MST.

Task organization of the UMCP is modified based on the BMO's analysis of maintenance requirements and the tactical situation. The UMCP must not become a collection point for nonoperational vehicles to the extent that the UMCP cannot move on an hour's notice.

Anything that cannot be repaired in the UMCP, or that cannot be towed by UMCP assets, will be sent to the field trains or directly to the forward support battalion (FSB) maintenance company in the brigade support area (BSA).

The remainder of the maintenance platoon is in the field trains under the control of the battalion motor sergeant.

LS/A 1 , ELO 3,
Cross
Attachment

The battalion maintenance platoon organizes to support cross-attachment as well as pure battalion operations. As previously discussed, one CMT is cross attached to support each company. An element from the maintenance services section can supplement this team. The organization of the administration section is set up to quickly detach one PLL truck with trailer and a PLL clerk to support the detached company.

Prescribed Load
List (PLL)
Support

To support this concept, the administration section configures four PLL trucks and trailers to carry the PLL needed to support one maneuver company each. Additionally, these vehicles will transport enough packaged POL (petroleum, oils, and lubricants) to support repair operations. Configure one of the remaining PLL trucks and trailers to carry PLL associates with HHC tracked vehicles and to carry all the PLL for the battalion's wheeled vehicles; it operates from the field trains.

Additionally, high-demand, low-volume parts are carried on the CMT's tracked vehicles. The maintenance parts that are carried forward on the tracked vehicles, as well as the breakout of parts that the unit will carry on each PLL truck and trailer, should be addressed in the battalion maintenance platoon standing operating procedure (SOP).

In the unlikely event that the battalion detaches more than two companies, the maintenance platoon will task organize, including PLL, to support this detachment.

Attached
Maintenance
Elements

Attached maintenance elements come under the control of the BMO. Since attached maintenance elements are equipped and trained to support the attached unit, they are used primary for this support. Task organizing attached maintenance assets is not routinely done for the following reason:

- PLL repair parts are not readily split up to provide support lower than company level.
- Special tools and test sets are usually one of a kind items and will not be readily available to detached mechanics.
- Personnel movements require coordination, transportation, and time. When the task organization changes, the process by design becomes more complicated.

(REF: FM 71-123, Pages 8-33 through 8-36)

LS/A 1, ELO 3, Click here to go to [Lesson Exercise 3](#).
Lesson
Exercise 3

| | | |
|--------------|--------------------|---|
| ELO 4 | Action | Explain the purpose and process of battle damage assessment and repair (BDAR). |
| | Conditions: | In a self-study environment using the material presented in this lesson. |
| | Standard: | In accordance with AR 750-1, FM 71-123, and the material provided in this Preresident Training Support Package. |

LS/A 1, ELO 4, In this ELO, you will identify the concept and purpose of battle damage assessment and repair (BDAR). The circumstances and procedures regarding Battle Damage Assessment and Repair (BDAR) will assist you in the focus on battalion operations.

Purpose The purpose of BDAR is to rapidly return disabled equipment to combat or to enable the equipment to self-recover.

Responsibility BDAR is the commander's responsibility, based on METT-T, which the operator/crew and unit/DS maintenance personnel will accomplish.

The units must perform realistic training during peacetime to ensure wartime proficiency.

Procedures BDAR procedures are designed for the battlefield and training environment and should be used only in situations where standard maintenance procedures are impractical. These procedures will not replace standard maintenance procedures.

Non-destructive BDAR Non-destructive BDAR procedures will be incorporated into peacetime maintenance training. Combat training centers and field training exercises provide excellent realistic training environments for BDAR.

(REF: AR 750-1, Page 24)

LS/A 1, ELO 4,
Maintenance
Functions,
Scope of
Maintenance

Battle damage assessment and repair (BDAR) is the act of:

- Inspecting battle damage to determine its extent.
- Classifying the type of repairs required, and
- Determining the maintenance activity best suited to accomplish the repair.

Battle damage repair involves the immediate repair of equipment by field expedient methods, if necessary.

Vehicle commanders are the first line leaders that are trained in techniques of BDAR. Each subsequent echelon of maintenance conducts BDAR. BDAR manuals outline specific procedures for most combat vehicle systems.

Categories of
Maintenance

The categories of maintenance involve the following for damaged vehicles and equipment:

- Inspecting.
- Testing.
- Servicing.
- Repairing.
- Requisitioning.
- Rebuilding.
- Recovering.
- Evacuating.

Repair and recovery of damaged vehicles is done as far forward as possible, using the lowest level echelon capable of making the repair.

When equipment cannot be repaired on site, move it only as far to the rear as necessary for repair. When all maintenance requirements of the task force cannot be met, the executive officer (XO) determines maintenance support priorities for subordinate units based on operational requirements of the task force and on the recommendations of the S-4 and battalion maintenance officer (BMO).

| | |
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| LS/A 1, ELO 4, Initiation of BDAR Process | The equipment operator/crew initiate the maintenance process on site. Once the operator/crew perform their battle damage assessment (BDA), they begin corrective action. |
|--|--|

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|--------------------------|---|
| Initial Status Report | <p>The vehicle commander makes an initial status report to the platoon leader describing the inoperable condition(s), circumstances, and location.</p> <p>When subjected to direct fire, the vehicle commander uses smoke to screen the vehicle if possible. He employs self-recovery or uses another vehicle to push or tow his vehicle to a covered position.</p> |
|--------------------------|---|

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| Fault Isolation | <p>The vehicle commander isolates the fault as quickly as possible and determines what he needs (recovery, parts, or repairs) to fix the vehicle. He does this using the procedures outlined in the BDAR manual, considering mission-essential maintenance only.</p> <p>The vehicle commander considers use of self-recovery, field fixes and expedients, and assistance from other elements in the vicinity to put his vehicle back into action. He consults the BDAR criteria in the technical manual (TM); if repairs are beyond his capability, he requests assistance as prescribed by unit standing operating procedure (SOP).</p> <p>If the vehicle commander can return his vehicle to an operational condition through the use of local resources, he initiates action to do so.</p> |
|--------------------|---|

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| Determination of need for BDAR Support | <p>When the platoon leader determines that repair is beyond the platoon's capability, he contacts the company first sergeant (1SG) or executive officer (XO).</p> <p>The 1SG or XO then dispatches the CMT as soon as it is feasible and informs the BMO over the administrative/logistics net.</p> |
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| Requesting BDAR Support | <p>The procedures for requesting support are normally in the task force (TF) SOP to include applicable communications security procedures. Information usually required include:</p> <ul style="list-style-type: none"> • Identification of unit. • Identification of equipment. • Location (map coordinates). • Nature of damage. |
|----------------------------|--|

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| LS/A 1, ELO 4, Requesting BDAR Support, continued | <ul style="list-style-type: none"> • Evaluation of on-site repair (extent of damage, level of repair, and estimated time required). • Repair parts required, if applicable. • Enemy situation, security, and NBC considerations. • Recommended route of approach. • Contact points for unit guides, if required. |
| <hr/> | |
| BDAR Support Vehicles | <p>The CMT APC and vehicle/tank retriever (VTR) are forward in the company trains. These vehicles carry the toolboxes, unit-level technical manuals, and a limited number of special tools and repair parts. (M1/M2 test equipment normally remains at UMCP because of its size; sending this equipment forward only as needed based on the BMO's and CMT's assessments.)</p> |
| <hr/> | |
| Company Maintenance Team (CMT) Actions | <p>The CMT confirms the vehicle commander's BDA before attempting repairs. The CMT must complete repair damages on site within two hours.</p> <p>If a damaged vehicle cannot be repaired within two hours, then recover it to the UMCP or field trains. The unit will place the damaged vehicle where they can get maximum use of its weapon systems for defense of the site.</p> |
| <hr/> | |
| UMCP Repairs | <p>The maintenance platoon elements or maintenance support teams (MSTs) from the FSB maintenance company will repair the damaged recovered vehicles at the UMCP. When not involved in on-site repairs, the CMTs may also repair vehicles in the UMCP. This is especially true of work requiring diagnostic test equipment that will not be taken into the combat positions.</p> |
| <hr/> | |
| Vehicle Recovery | <p>Vehicles requiring more than six hours to repair or that would otherwise overload the capability of the UMCP are sent to the field trains or directly to the FSB maintenance company collection point for repair. The CMT VTR will recover these vehicles to a maintenance collection point (MCP) or a main supply route (MSR). Then a maintenance platoon VTR; or a combination of VTR and heavy equipment transport (HET) will move the damaged vehicle to the repair point. The BMO will coordinate and direct the exact method of recovery.</p> <p>The use of HETs is preferred for transporting damaged vehicles. The restriction on HETs is that they must travel on roads and the availability of the transport vehicle. The BMO requests HET support through the FSB maintenance company.</p> |

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| LS/A 1, ELO 4, Evacuation Considerations | <p>Some crew members accompany the vehicle to the rear to assist mechanics in the repair of the vehicle and return it to the unit when repaired.</p> <p>Communications-Electronics (CE) equipment will remain in the vehicle during evacuation of the vehicle. Crew members remove all personal equipment not accompanying the vehicle and any special equipment before the vehicle leaves the area.</p> <p>During rapid forward moves such as in the exploitation, the UMCP conducts only mission-essential maintenance only (MEMO) repairs and simple recovery. Other disabled vehicles are taken to MCPs on an MSR and remain to for repair or evacuation.</p> |
| Evacuation and Repair Coordination | <p>Field trains and the maintenance company of the FSB displace forward to subsequent locations. The BMO coordinates required repair or evacuation with the battalion motor sergeant in the field trains.</p> <p>In field trains, remaining elements of the battalion maintenance platoon perform other tracked and wheeled vehicle maintenance and Class IX (repair parts and components) resupply.</p> <p>The battalion motor sergeant coordinates requirements with the HHC commander and the maintenance company of the FSB. He also coordinates maintenance requirements with the parent headquarters of any attached or supporting elements working with the task force.</p> |
| Night Maintenance Operations Considerations | <p>NOTE: Maintenance in a combat environment is a 24-hour operation. The unit will perform BDAR day and night after recovery of damaged vehicles for repair.</p> <p>The UMCP will process and integrate battle damaged vehicles into the program as soon as they are damaged. The UMCP will position the damaged vehicle in a light-proof or light-suppressing shelter. Permanent structures such as warehouses, civilian garages, and barns also provide good shelter.</p> <p>If large shelters are not available, mechanics repair small components, on or off the vehicle, under a lean-to or another shelter constructed of a tarpaulin or a poncho. Chemical light sticks provide adequate light for most detailed repairs under these conditions.</p> <p>(REF: FM 71-123, Pages 8-32 through 8-36)</p> |

LS/A 1, ELO 4,
Night
Maintenance
Staging Area

The unit will accomplish most night maintenance work in the fighting positions or in the UMCP. To prevent congestion and confusion, a staging area is set up for vehicles awaiting repair.

Tow cables or tow bars remain attached to vehicles that cannot move under their own power. This makes it easier to move the vehicle quickly when necessary.

Night
Maintenance
Safety
Measures

Forward of the UMCP, mechanics use night-vision goggles to accomplish most repairs. Mechanics should mark tools and other small components with luminous tape. Using night-vision devices for repair of equipment is a very time-consuming and dangerous process.

The units must use extreme care when accomplishing these repairs. When night-vision goggles are not available, make these repairs under lightproof shelters. Heavy vegetation or thick overhead foliage provides additional concealment.

Lesson
Exercise 4

Click here to go to [Lesson Exercise 4](#).

ELO 5

| | |
|--------------------|---|
| Action | Identify how the organization of division maintenance provides support to division units. |
| Conditions: | In a self-study environment using the material presented in this lesson. |
| Standard: | In accordance with FM 63-2, FM 63-21, and the material provided in this Preresident Training Support Package. |

LS/A 1, ELO 5,
Division Level
Maintenance

This ELO focuses on maintenance operations in the division. Maintenance tasks accomplished by direct support units, main support battalion (MSB), and the functions of the light, heavy, and missile maintenance companies of the MSB. Also, the structure and functions of the forward support battalion (FSB).

LS/A 1, ELO 5,
Division Support
Command
(DISCOM)

The division support command (DISCOM) commander provides logistics support in the division by exercising control over his units and providing advice and planning for the division logistics community.

The support battalions' (MSB and FSB) commanders are the logistics operators for the division. These two important units provide the following types of support to divisional units in their areas:

- All classes of supply.
- Maintenance support.
- Transportation assets.
- Field services (MSB only).

The DISCOM can, on a very limited basis, furnish combat service support, (CSS) to nondivisional units in the division area. The figure on page 28, depicts the organizational structure of the division support command (DISCOM) for a heavy division.

Division Support
Command
(DISCOM)

NOTE: The remainder of the material presented in this ELO will focus on the maintenance-related functions of the main support battalion (MSB) and forward support battalions (FSBs). The figure 1-1 depicts the organizational structure for the DISCOM.

LS/A 1, ELO 5,
Heavy Division
Support
Command
(DISCOM)

The following figure depicts the structure of the heavy division support command (DISCOM).

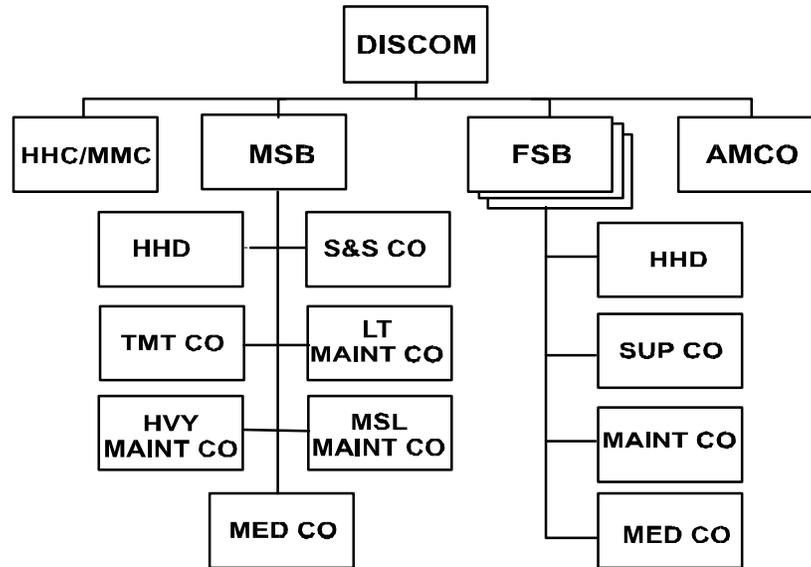


Figure 1-1. Heavy Division Support Command (DISCOM).

(REF: FM 63-21, Pages 1-2 and 1-3)

Customers of the
Main Support
Battalion (MSB)

The division has varying numbers of maneuver battalions to accomplish a specific mission. Task organized combat support (CS) and combat service support (CSS) units support the division. Though these units will vary, division elements which typically operate in the division rear and are customers of the MSB include:

- Combat engineer battalion elements.
- Chemical company elements.
- Division artillery elements.
- Aviation brigade.
- Air Defense Artillery (ADA) battalion elements.
- Division band.
- DISCOM command post (CP).

LS/A 1, ELO 5,
Customers of the
Main Support
Battalion (MSB),
continued

- Division main and rear CPs.
- Main support battalion.
- Signal battalion elements.
- Military intelligence battalion elements.
- Military police company headquarters.

(REF: FM 63-21, Page 1-2.)

DISCOM
Maintenance
Organizations

The DISCOM organizations shown in the following figure are responsible for maintenance and repair parts support to division units.

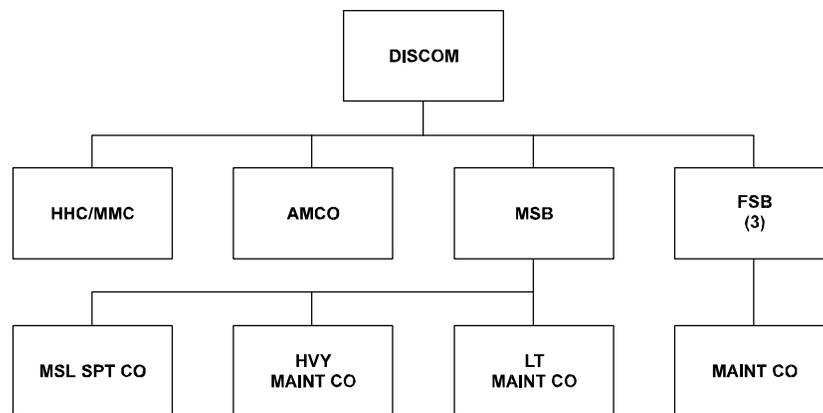


Figure 1-2 DISCOM Maintenance Organizations

Material
Management
Center

The material section of the MMC manages repair parts supply and maintenance. It designs and manages the division repair parts inventory and directs repair parts issue. The section's management is limited to the maintenance functions that are generally external to the MSB and FSB. The section monitors unit maintenance throughout the division.

(REF: FM 63-2, Page 8-1 and 8-2.)

Mission of the
MSB

The primary mission of the MSB is to provide logistics services support for division and other designated units located in the division rear and reinforcing support to the FSBs.

(REF: FM 63-2, Page 8-1)

MSB
Maintenance-
Related
Functions

MSB maintenance-related functions include the following:

- Providing division-level supply support for Class IX (parts and components).
- Operating a salvage collection point.
- Providing motor transport for distribution of heavy or over-sized cargo and equipment to the forward support battalions and evacuating from forward areas.
- Performing DS maintenance on all authorized equipment of the division.
- Providing reinforcing support to maintenance companies of the forward support battalions.

The primary maintenance missions belong to the three subordinate maintenance companies of the MSB.

MSB Light
Maintenance
Company
Mission

The MSB light maintenance company provides DS maintenance to division units not supported by the maintenance companies of the forward support battalions. It also provides reinforcing maintenance for the maintenance companies of the FSBs.

(REF: FM 63-2, Pages 8-1 and 8-2.)

MSB light
Maintenance
Company
Support
Functions

The following are support functions provided by the MSB light maintenance company:

- Technical assistance to division units.
 - The capability of maintaining an authorized stockade list (ASL) of up to 6000 lines. This includes the receipt, storage, and issue of common repair parts.
 - Repairable exchange service for selected common repair parts (CRP).
 - Quick supply store for selected common repair parts.
 - Reinforcing direct support maintenance to the maintenance companies of the forward support battalions.
 - On-site maintenance support of communications equipment.
 - Communications security (COMSEC) maintenance for all units of the division, less signal and military intelligence battalion items.
-

| | |
|---|---|
| LS/A 1, ELO 5, MSB Light Maintenance Company, Exceptions | <p>The MSB light maintenance company does NOT provide maintenance support for the following:</p> <ul style="list-style-type: none"> • Medical items. • Airdrop equipment. • Missiles. • Ammunition. • Light textiles. • Avionics. • Aircraft. • Aircraft armament |
| <hr/> | |
| MSB Heavy Maintenance Company Mission | <p>The MSB's heavy maintenance company provides direct support maintenance to units within the division. The MSTs provide reinforcing support to the maintenance companies of the FSBs (less repair parts).</p> <p>The MSB heavy maintenance company also contains teams, which provide support to the cavalry squadron and the multiple launch rocket system (MLRS) unit located in the division rear.</p> |
| <hr/> | |
| MSB Heavy Maintenance Company Support Functions | <p>Specific support functions provided by the MSB heavy maintenance company include the metalworking, machining, and repair of:</p> <ul style="list-style-type: none"> • Automotive equipment. • Small arms and artillery pieces. • Power generation items. • Engineer equipment. • Fire control instruments. • Tank turrets. |
| <hr/> | |
| Exceptions | <p>The MSB heavy maintenance company does NOT provide support for the following:</p> <ul style="list-style-type: none"> • Medical equipment. • Communications-electronics (C-E) equipment. • Communications security (COMSEC) equipment. |

LS/A 1, ELO 5,
Exceptions,
continued

- Airdrop equipment.
- Light textiles.
- Avionics.
- Aircraft armament.
- Missiles.
- Ammunition items.

(REF: FM 63-2, Page 8-3.)

MSB Missile
Support Company
Mission

Logistics concepts for air defense and land combat missile systems have two determining factors. These are the technical design and tactical employment concept of each system.

The MSB missile support company provides direct support maintenance and Class IX supply for short range air defense (SHORAD) systems. It includes supporting radars, land combat missile systems, multiple-launch rocket system (MLRS), and man-portable common thermal night sights (MCTNSs).

(REF: FM 63-2, Page 8-3.)

MSB Missile
Support Company
Functions

Specific maintenance functions provided by the MSB missile support company include the following:

- Base shop maintenance for all division land combat, MCTNS, and SHORAD missile/gun systems.
- Receipt, storage, and issue of Class IX supplies (approximately 3600 line items) for land combat, SHORAD, MLRS, and MCTNS systems.
- Tube-launched, optically tracked, wire-guided (TOW)/DRAGON/ MCTNS direct support CLASS IX and reparable exchange (RX) supply support to the forward support battalion maintenance companies.
- Quality assurance/quality control inspections of system peculiar equipment/TMDE maintenance and technical assistance inspections when required by user units.
- On-site repair for all missile systems not organic to brigades.

LS/A 1, ELO 5,
Forward Support
Battalion (FSB)
Maintenance
Company,
Mission

The FSB maintenance company is a critical component in fixing the force. It provides DS maintenance and common repair parts service in the brigade area. The company also includes a variable number of system support teams. Each team supports a tank or mechanized infantry battalion. The company receives one team for each maneuver battalion assigned to the brigade.

(REF: FM 63-2, Page 8-6.)

FSB, Maintenance
Company Support
Functions

Specific functions performed by the FSB maintenance company include the following:

- Provide DS maintenance to division and other designated elements in the brigade area. This includes repair of communications, engineer, power generation, quartermaster, chemical, and utilities equipment.
- Provide repair for artillery, missile, small arms, tank turrets, tracked and wheeled vehicles, and field artillery systems.
- Provide recovery assistance to supported units when required, consistent with limitations of METT-T.
- Provide technical assistance to supported units, which perform unit maintenance within the brigade.
- Provide technical supervision of PLL supply for supported units.
- Maintain a portion of the division ASL to support the items stocked in PLLs of supported units.
- Provide reparable exchange service for selected common repair parts.

Lesson
Exercise 5

Click here to go to [Lesson Exercise 5](#).

ELO 6

| | |
|--------------------|---|
| Action | Identify the maintenance recovery and evacuation for the main support battalion |
| Conditions: | In a self-study environment using the material presented in this lesson. |
| Standard: | In accordance with FM 63-2, and the material provided in this Preresident Training Support Package. |

| | |
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| LS/A 1, ELO 6, Recovery and Evacuation Concept | <p>When it is impossible to repair the equipment on site, then the equipment is sent to the maintenance activity best suited to do the repairs. The unit will accomplish this through recovery and evacuation.</p> <p>Using units recover equipment to their supporting maintenance activity. The maintenance activity either repairs the item or evacuates it to another activity for repair or disposition.</p> |
| Recovery Definition | <p>Recovery is the process of retrieving or freeing immobile, inoperative, or abandoned materiel.</p> |
| Purposes for Performing Recovery | <p>Vehicles and equipment that cannot be repaired on site, is moved to a place where it can be repaired, evacuated, or otherwise disposed of.</p> <p>Perform recovery operations in order to:</p> <ul style="list-style-type: none"> • Return immobilized equipment to operation. • Retrieve equipment for repair and/or return to use. • Prevent enemy capture of equipment. • Use enemy equipment for intelligence purposes or for U.S. or allied forces. |
| Recovery Responsibilities | <p>Recovery is a using unit responsibility. The unit organizes, staffs, and equips its recovery team to recover its own equipment. The BMO manages the recovery operations for the armor and mechanized infantry battalions at the battalion level.</p> <p>The battalion maintenance platoon has recovery vehicles to provide recovery support. The platoon has company maintenance teams, each of which has an organic recovery vehicle.</p> <p>In other units, the motor sergeant, motor officer, or other designated individual control recovery operations. Maintenance units may provide recovery support on an area basis to units without a recovery capability.</p> |

LS/A 1, ELO 6, Recovery Process The operator or crew of the disabled vehicle initiates the recovery operation for the vehicle. Before requesting recovery support, the operator or crew should attempt repairs and self recovery of their vehicle by using all available resources. When the tactical situation makes this impossible, the operator or crew then requests for recovery assistance from unit maintenance.

The BMO evaluates the request for assistance based on command guidance and the overall tactical and maintenance situation. The BMO assigns recovery missions to a recovery team. The recovery team will accomplish the recovery according to the unit SOP and recover damaged equipment to either the battalion UMCP or to a designated maintenance collection point (MCP).

Evacuation Evacuation begins where recovery operations cease. Equipment that cannot be returned to the battle quickly is evacuated. This evacuation is from the UMCP to the maintenance company in the BSA by maintenance units within their own capability.

Evacuation may also be by transportation units to the division MCP in the division support area (DSA) or to a corps MCP. Evacuation is a coordinated effort between maintenance and transportation elements. Evacuate severely damage equipment directly from the UMCP to any higher level of maintenance.

The DS maintenance company will identify any items for evacuation. These items consist of unserviceable equipment beyond the repair capability of the unit. The DS maintenance company will consider unserviceable assemblies from the repair process, and serviceable and unserviceable abandoned items found on the battlefield.

(REF: FM 63-2, Page 8-7 and 8-8.)

Lesson
Exercise 6

Click here to go to [Lesson Exercise 6](#).

SECTION IV SUMMARY

Review/ Summarize Lesson

The intent of this lesson is not to make you a maintenance expert. It only serves to familiarize you with the Army's maintenance system and functions. The lesson highlights some important issues for the battle staff NCO serving at battalion or brigade level.

Knowing the Army maintenance system and functions, the levels of maintenance, maintenance support for tactical operations, and the general concepts of maintenance operations will give you an advantage in supporting the unit in combat operations

Having the proper maintenance support available will lend success to the battle.

Check on Learning

The six lesson exercises that you completed during this lesson serve as the check on learning for the TLO.

Transition to Next Lesson

None.

SECTION V STUDENT EVALUATION

Testing Requirements

Prior to being enrolled into Phase II of the Battle Staff Course you must take a Phase I Exam that includes questions on material from this lesson. You must correctly answer 70% of the multiple choice questions to receive a "GO" on the Phase I exam. A "GO" is required for enrollment into Phase II.



Lesson Exercise 1: Instructions

The following four questions will test your knowledge of the materials covered in ELO 1. There is only one correct answer for each item. When you answer each question, you will be given immediate feedback. If you answer any question incorrectly, study that part of the ELO again.





Where opposing forces have relative parity in numbers and quality of equipment, the force that combines skillful use of equipment with an effective maintenance system, has a decided advantage. In this situation, maintenance is?

- A. A battlefield enhancement.
- B. A combat multiplier.
- C. An initial advantage.
- D. A subsequent advantage.





In reference to maintenance, what function is central to tactical and operational success?

- A. Assessment.
- B. Evacuation.
- C. Fixing.
- D. Transportation.





The guiding maintenance tenets are: fix forward and--

- A. Anticipatory support built on flexible levels of maintenance.
- B. Evacuate to the front.
- C. Repair rearward.
- D. Sustainment levels.





Complete the following statement.

_____ are responsible for equipment readiness.

- A. Battalion motor officers
- B. Commanders
- C. Battle Staff NCO's
- D. Warrant officers



INCORRECT

The correct answer is B.

Maintenance is a combat multiplier. Where opposing forces have relative parity in numbers and quality of equipment, the force, which combines skillful use of equipment with an effective maintenance system, has a decided advantage. PTP, page 6.



CORRECT



INCORRECT

The correct answer is C.

In reference to maintenance, the fixing function is central to tactical and operational success. PTP, page 7.



CORRECT



INCORRECT

The correct answer is A.

The guiding maintenance tenets are fix forward and anticipatory support built on flexible levels of maintenance. PTP, page 7.



CORRECT



INCORRECT

The correct answer is B.

Commanders are responsible for equipment readiness. PTP, page 8.



CORRECT





Lesson Exercise 2: Instructions

The following four questions will test your knowledge of the materials covered in ELO 2. There is only one correct answer for each item. When you answer each question, you will be given immediate feedback. If you answer any question incorrectly, study that part of the ELO again.





Complete the following statement.

_____ is the first and most critical level of the Army maintenance system.

- A. Depot maintenance
- B. Direct supports maintenance
- C. General support maintenance
- D. Unit maintenance





Where are general support maintenance capabilities located?

- A. Battalion level.
- B. Company level.
- C. Division level.
- D. Echelons above corps.





Cannibalization points are operated at which level of maintenance?

- A. Depot.
- B. Direct support.
- C. General support.
- D. Unit.





Which maintenance level is characterized by job shop/bay or production line operations?

- A. Depot.
- B. Direct Support.
- C. General Support.
- D. Unit



INCORRECT

The correct answer is D.

Unit maintenance is the first and most critical level of the Army maintenance system.
PTP, page 13.



CORRECT



INCORRECT

The correct answer is D.

General support maintenance capabilities are located at echelons above corps.
PTP, page 16.



CORRECT



INCORRECT

The correct answer is C.

Cannibalization points are operated at the general support level of maintenance.
PTP, page 17.



CORRECT



INCORRECT

The correct answer is C.

General support maintenance is characterized by job shop/bay or production line operations. PTP, page 16.



CORRECT





Lesson Exercise 3: Instructions

The following five questions will test your knowledge of the materials covered in ELO 3. There is only one correct answer for each item. When you answer each question, you will be given immediate feedback. If you answer any question incorrectly, study that part of the ELO again.





If it is determined that a battle damaged vehicle can be repaired in 2 to 6 hours, and can be towed, the repairs normally occur at which location?

- A. Command maintenance facility.
- B. Division support area.
- C. Field Trains.
- D. Unit maintenance control point (UMCP).





The battalion maintenance officer organizes the maintenance platoon in such a manner as to provide appropriate support at what three key locations?

- A. CMT, field trains, lodgment.
- B. Field trains, maneuver company, UMCP.
- C. Maneuver units, UMCP, VTR.
- D. UMCP, forward support point, PLL point.





Which of the following is/are part of the task organization of the unit maintenance collection point (UMCP)?

- A. Brigade supports area.
- B. GS maintenance support team.
- C. Maintenance battalion headquarters (-).
- D. Wheeled vehicle assets from the CMTs.





The battalion maintenance platoon organizes to support cross attachment as well as pure battalion operations. How many company maintenance teams are cross-attached to support each detached company?

- A. Four.
- B. One.
- C. Three.
- D. Two.





What document will describe the breakout of PLL parts that the maintenance team will carry forward on their vehicles?

- A. Battalion maintenance platoon SOP.
- B. Logistics manual.
- C. Maintenance schedules.
- D. Standard parts list.



INCORRECT

The correct answer is D.

If it is determined that a battle damaged vehicle can be repaired in 2 to 6 hours and can be towed, the repairs normally occur at the unit maintenance control point (UMCP).
PTP, page 18.



CORRECT



INCORRECT

The correct answer is B.

The battalion maintenance officer task organizes the maintenance platoon in such a manner as to provide appropriate support at three key locations: field trains, maneuver company, and UMCP. PTP, page 19.



CORRECT



INCORRECT

The correct answer is D.

The wheeled vehicle assets from the CMT's are part of the task organization of the unit maintenance control point. PTP, page 19.



CORRECT



INCORRECT

The correct answer is B.

One. The battalion maintenance platoon organizes to support cross attachment as well as pure battalion operations. One maintenance company team is cross attached to support each detached company(of the battalion). PTP, page 20.



CORRECT



INCORRECT

The correct answer is A.

Battalion maintenance platoon SOP will address the parts that the company maintenance team's will carry forward on the tracked vehicles, as well as the breakout of parts carried on each PLL truck and trailer. PTP, page 20.



CORRECT





Lesson Exercise 4: Instructions

The following five questions will test your knowledge of the materials covered in ELO 4. There is only one correct answer for each item. When you answer each question, you will be given immediate feedback. If you answer any question incorrectly, study that part of the ELO again.





Who are the first line leaders that are trained in the techniques of battle damage assessment and repair (BDAR)?

- A. Maintenance teams leaders.
- B. Motor officers.
- C. Platoon sergeants.
- D. Vehicle commanders.





Where can you find the procedures for requesting BDAR support?

- A. Local regulations.
- B. S-3 Policy letters.
- C. Task force SOP.
- D. Technical bulletins.





Complete the following statement.

Repair and recover damaged vehicles as far _____ as possible at the _____ echelon capable of making the repair.

- A. Backward highest
- B. Forward lowest
- C. Laterally lowest
- D. Rearward highest





Battle damage assessment and repair (BDAR) is the act of?

- A. Combat multipliers.
- B. Combat equipment that cannot be repaired on site.
- C. Determining the maintenance activity best suited to accomplish the repair.
- D. Permanent structures, such as warehouses.





Complete the following statement.

The units will designate _____ for night maintenance to prevent congestion and confusion, for vehicles awaiting maintenance.

- A. an assembly area
- B. a control point
- C. a staging area
- D. a terminal support area



INCORRECT

The correct answer is D.

Vehicle commanders are the first line leaders that are trained in the techniques of BDAR.
PTP, page 22.



CORRECT



INCORRECT

The correct answer is C.

Procedures for requesting BDAR support can be found in the task force SOP.
PTP, page 23.



CORRECT



INCORRECT

The correct answer is B.

Repair and recover damaged vehicles as far forward as possible at the lowest echelon capable of making the repair. PTP, page 22.



CORRECT



INCORRECT

The correct answer is C.

Determining the maintenance activity best suited to accomplish the repair. PTP, page 22.



CORRECT



INCORRECT

The correct answer is C.

The units will designate a staging area for night maintenance to prevent congestion and confusion, for vehicles awaiting repair. PTP, page 26.



CORRECT





Lesson Exercise 5: Instructions

The following two questions will test your knowledge of the materials covered in ELO 5. There is only one correct answer for each item. When you answer each question, you will be given immediate feedback. If you answer any question incorrectly, study that part of the ELO again.





Complete the following statement.

The primary mission of the _____ is to provide logistics and health services for division and other designated units located in the division rear and also to provide reinforcing support for the forward support battalion.

- A. Armor brigades
- B. Division CP
- C. Main supports battalion (MSB)
- D. Maintenance supports team





What does the material section of the MMC manage?

- A. Repair parts supply and technical support.
- B. Repair parts supply and maintenance.
- C. Reinforcing supports teams and maintenance.
- D. Reinforcing supports platoons and unit maintenance control points.



INCORRECT

The correct answer is C.

The primary mission of the main support battalion (MSB) is to provide logistics services for division and other designated units located in the division rear and also to provide reinforcing support to the forward support battalion. PTP, page 29.



CORRECT



INCORRECT

The correct answer is B.

The material section of the MMC manages repair parts supply and maintenance.
PTP, page 29.



CORRECT





Lesson Exercise 6: Instructions

The following three questions will test your knowledge of the materials covered in ELO 6. There is only one correct answer for each item. When you answer each question, you will be given immediate feedback. If you answer any question incorrectly, study that part of the ELO again.





Who assigns recovery missions to a recovery team?

- A. MMC.
- B. BMO.
- C. MCP.
- D. BSA.





The maintenance recovery team will not perform recovery operations on any equipment in order to _____

- A. Return immobilized equipment to operation.
- B. Retrieve equipment for repair and/or return to use.
- C. Allow the enemy to capture the equipment after repair is complete.
- D. Use enemy equipment for intelligence purposes or for U.S. or allied forces.





Who will initiate the recovery operation for a disabled vehicle?

- A. The BMO.
- B. The company commander.
- C. The maintenance recovery team.
- D. The operator or crew.



INCORRECT

The correct answer is B.

The BMO assigns recovery missions to a recovery team? PTP, page 35.



CORRECT



INCORRECT

The correct answer is C.

The maintenance recovery team will not perform recovery operations on any equipment in order to allow the enemy to capture the equipment after repair is complete.

PTP, page 34.



CORRECT



INCORRECT

The correct answer is D.

The operator or crew will initiate the recovery operation for a disabled vehicle.
PTP, page 35.



CORRECT



