TRAINING SUPPORT PACKAGE (TSP)

TSP Number/Title	55B40B04 Maintenance Operations
Task Number(s)/ Title(s)	093-400-4269 Plan Preservation and Packaging Operations for Munitions 093-400-4282 Inspect Munitions Maintenance Operations
Effective Date	21 August 1998
Supersedes TSP(s)	MP-07/B 645-55B40
TSP User	USAOMMCS, Redstone Arsenal, Alabama and Accredited Ordnance TASS Battalion
Proponent	US Army Ordnance Missile and Munitions Center and School, Munitions Training Department, Redstone Arsenal, Alabama, 35897-6970
Comments/ Recommen-dations	Send comments and recommendations directly to: U.S. Army CASCOM Training Directorate ATTN: ATCL, AO (Mr. Roy King) 401 First Street, Bldg. 1109 Fort Lee, VA. 23801-1713 (e-mail Kingr1@Lee-dns1.army.mil) DSN: 539-1129, Commercial: 804-765-1129
Foreign Disclosure Restrictions	If Allied students are scheduled to attend this class, coordination with Security Division (ATSK-AS) is required to determine if the information can be released to Allied students.

Preface

Purpose

This training support package provides the instructor with a standardized lesson plan for presenting instruction for:

LESSON TITLE:	Maintenance Operations
CONDITIONS:	In a classroom environment, given an approved Depot Maintenance Work Requirement (DMWR) or SOP, TM 9-1330-206, TM 9-1300-250, TB 43-180, SB 742-1, SOP for maintenance operations, ASIR, DA Form 2407, DA Form 245, DA Form 4508, and DD Form 1650
STANDARD:	You must restore munitions to a serviceable condition, correctly detect and report all discrepancies and comply with all environmental guidelines.

This TSP Contains

TABLE OF CONTENTS

(21 August 1998)

SECTION I. ADMINISTRATIVE DATA

All Courses Including this Lesson

COURSE NUMBER(S)	COURSE TITLE(S)
645-55B40	Ammunition Specialist, ANCOC

Task(s) Taught or Supported

TASK NUMBER	TASK TITLE
093-400-4269	Plan Preservation and Packaging Operations for Munitions
093-400-4282	Inspect Munitions Maintenance Operations

Reinforced Task(s)

TASK NUMBER	TASK TITLE

Academic Hours

The academic hours required to teach this lesson are as follows:

	ADT HOURS/METHOD
Small Group Instruction	8.0 / SGI
Total hours	8.0

Test Lesson Number

	Hours	Lesson No.
Testing:	3.0 TE2	55B40B10
Review of test results:	1.0 CO	55B40B11

Prerequisite Lesson(s)

LESSON NUMBER	LESSON TITLE
55B40B01	Surveillance Operations
55B40B02	Inspect Ammunition Operations for Safety
55B40B03	Inspect Munitions Maintenance Facilities

Clearance and Access

Unclassified - If Allied students are scheduled to attend this lesson, coordination with Security Division (ATSK-AS) is required to determine if the information can be released to Allied students.

References Required

Number	Title	Date	Additional Information
DA PAM 738-750	The Army Maintenance Management system	1 AUG 94	
SB 742-1	Ammunition Surveillance Procedures	APR 98	
TM 43-0001-47	Army Equipment Data Sheets	22 DEC 93	
TM 9-1300-250	Ammunition Maintenance	25 SEP 69	w changes 1-7
TM 9-1300-206	Ammunition and Explosives Standards	30 AUG 73	w changes 1-10
TB 43-180	Calibration and Repair Requirements for the Maintenance Army Materiel	19 DEC 94	

Related

None

Student Study Assignments

None

Instructor Requirements

One instructor

Additional Support Personnel Requirements

None

Equipment Required

Overhead Projector

Materials Required	INSTRUCTOR MATERIALS: References listed above. Viewgraphs 55B40B04, VG#01 - VG# 33 STUDENT MATERIALS: Student Hand-Out
Classroom, Training Area, and Range Requirements	One 30-person classroom
Ammunition Requirements	None
Instructional Guidance	Before presenting this lesson, instructors must thoroughly prepare by studying this lesson and identified reference material.
Proponent Lesson Plan Approvals	Name Rank Position Date _____ _____ _____ _____ _____

SECTION II. INTRODUCTION

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 0.1 hours

Motivator

Good morning/afternoon, class. I am _____. I will be your primary instructor for this lesson. The Ammunition Stockpile Reliability Program, as well as reports of problems with munitions received from the field, results in munitions that must be suspended or restricted. Permanently suspended munitions require some action before it can be released. The repair requirement, as well as requirements from modification, conversion, or demilitarization, makes it necessary to establish an ammunition maintenance program. As an ammunition NCO, you may be called upon to serve in a variety of positions that require a knowledge of the ammunition maintenance process.

Terminal Learning Objective

Note: Inform the students of the following terminal learning objective requirements.

At the completion of this lesson, you (the student) will:

ACTION:	Conduct Munitions Maintenance Operations.
CONDITIONS:	In a classroom environment and given: Approved Deport Maintenance Work Requirement (DMWR) or SOP, TM 9-1330-206, TM 9-1300-250, TB 43-180, SB 742-1, environment guidelines, SOP for maintenance, ASIR, DA Form 2407, DA Form 245, DA Form 4508, and DD Form 1650
STANDARD:	You must restore munitions to a serviceable condition, correctly detect and report all discrepancies and comply with all environmental guidelines.

Safety Requirements

None

Risk Assessment Level

Low

Environmental Considerations	None
Evaluation	Written end-of-annex examination the student must score a minimum of 70 percent to achieve a GO.
Note:	**Show VG01 (Lesson Title).**
Instructional Lead-in	While munitions are one of the basic commodities used by the Army, and while its maintenance is addressed in several Army maintenance publications, there are some aspects of the process that set it apart from other commodities.

SECTION III. PRESENTATION

1. Learning Step/Activity 1: The instructor will facilitate small group discussion on the basic requirements concerning ammunition maintenance.

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 1.0 hours
Media: Viewgraphs

Note: Present a lecturette on the basic requirements concerning munitions maintenance.

a. Maintenance Levels. Maintaining available assets of munitions in the stockpile in a serviceable condition is the responsibility of all organizations and activities having munitions on hand. (TM 9-1330-250, page 2-1)

Note: **Show VG02 (Maintenance Levels).**

(1) There are three levels of maintenance for conventional munitions performed in the field; they are organizational, direct support, and general support.

(2) These levels encompass the full scope of munitions maintenance to be performed in the theater of operations.

Note: **Show VG03 (Organizational Maintenance).**

b. Organizational Maintenance. (TM 9-1300-250, page 2-1)

(1) Organizational maintenance is performed by all activities having conventional munitions on hand, including using units.

(2) It is performed to prevent deterioration of munitions due to rough handling and exposure.

(3) Organizational units may call upon direct support (DS) units for technical advice, assistance, and support.

(4) This maintenance involves cleaning, removal of minor rust and corrosion, repair and replacement of boxes, repalletizing, repacking, repainting, and marking.

Note: **Show VG04 (Direct Support Maintenance).**

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c. Direct Support Maintenance. (TM 9-1330-250, page 2-1)

(1) DS maintenance is performed by conventional ammunition companies and includes surveillance with limited maintenance.

(2) This category of maintenance includes the functions of inspections, tests, care and preservation, and service and repair (as authorized) on all types of conventional munitions under their control in ASPs and depots.

(3) DS includes repairing, restenciling, or replacing packing materials; and declipping, reclipping, and changing the ratio linkage of small arms munitions.

(4) Replacing readily removable parts and compartments, removing exudation from artillery projectiles, and performing electrical circuit continuity testing on rocket munitions are other examples of DS operations.

Note: **Show VG05 (General Support Maintenance (GS).**

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d. General Support Maintenance (GS). (TM 9-1300-250, page 2-1).

(1) Basic procedures. All GS ammunition renovation operations have essentially five main actions: Unpack, disassemble, perform the required work, reassemble, and repack.

(2) General support maintenance consists of, but is not limited to:

(a) Removal of exterior rust and corrosion.

(b) Painting and stenciling.

(c) Major repairs or fabrications of boxes, containers, and crates.

(d) Repair and renovation of munitions.

(e) Replacement of unserviceable cartridge cases, primers, propellant, base detonating fuzes, or tracer units on artillery munitions.

(f) Replacement of unserviceable boosters, fuzes, primers, and igniters on all conventional munitions.

2. Learning Step/Activity 2: The instructor will facilitate small group discussion on Ammunition Condition Reports (DA Form 2415).

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 0.5 hours
Media: Viewgraphs

Note: **Show VG06 (Ammunition Condition Reports).**

Ammunition Condition Report (ACR) (DA Form 2415). The condition of munitions are determined through inspections conducted by ammunition surveillance inspectors, who will identify the degree of serviceability, using ammunition condition codes. (DA PAM 738-750, page 124)

Note: **Show VG07 and VG08 (Ammunition Condition Codes (ACC).**

(1) Ammunition surveillance inspectors are required to submit DA Form 2415, Ammunition Condition Report, to provide data for the control and management of unserviceable and permanently suspended munitions items. (SB 742-1, Appendix C)

Note: **Show VG09 (DA Form 2415 (ACR).**

(2) DA Form 2415 is used to report unserviceable repairable munitions in condition codes E, F, G, and N. This form will also be used to report unserviceable, uneconomically repairable munitions in condition code H, and permanently suspended munitions in condition code J.

(3) An individual DA Form 2415 will be prepared for each line item reported; however, more than one lot of identical items can be reported on the same form.

(4) Copies of the ACR will be prepared in sufficient quantities, as prescribed by local standing operating procedures (SOP), and forwarded through command channels for disposition.

(5) The processed report will normally be returned through command channels; the report with endorsement will constitute the authority for disposition of the reported item.

3. Learning Step/Activity 3: The instructor will facilitate small group discussion on Depot Maintenance Work Requirements (DMWR).

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 1.0 hour
Media: Viewgraphs

Note: **Show VG10 (DMWR 9-1315-0000-X5).**

a. Depot Maintenance Work Requirements (DMWR). DMWRs for renovation, repair, or demilitarization of munitions are composed of a series of sheets in the form of a pamphlet. Each sheet addresses an operation to be accomplished.

(1) The sequence of operations may not be applicable to a DS or GS facility. DMWRs are prepared by the U.S. Army Industrial Operations Command, for a variety of installations operating on a comparatively large production basis.

(2) The DMWR will be approved by the commanding officer or by a qualified member of his staff who has been delegated the responsibility for review and approval of the DMWR.

(3) The manner in which the field unit does a job properly will be different from the manner in which an established depot does the same job. A DMWR received in the field will serve as a guide to the ammunition officer in making up the SOP.

(4) When a working authorization has been received, with or without an assignment sheet, the unit will prepare the details and procedures for doing the work.

b. Planning Your Operation. The proper performance of maintenance operations depends primarily upon planning. Before work on any item is begun, each operation to be performed must be completely thought out. (TM 9-1330-250, page 4-1).

(1) All of the tools and equipment used to do the job must be procured and distributed to the points where they will be used. Complete rounds or items to be worked on must be inspected.

(2) Necessary replacement parts or components must be determined, procured, and stored. Supplies such as paint, varnish, copper wool, cardboard, and sealing compound must be obtained in proper quantities. Experienced personnel must be assigned to various sections of the job. Inexperienced personnel must receive training so they will be able to help when needed.

(3) Technical information must be obtained so that the job will be performed correctly. Consideration must be given to safety so that each operation may be conducted with the minimum possibility of injury to either the operator or the equipment.

(4) Once the operations are under way, provisions must be made for removing bottlenecks and increasing production, making operations more simple, increasing safety, etc.

(5) This system is used in planning jobs of other types by deciding what must be done ahead of time.

Note: **Show VG11 (Question to be Answered).**

(a) What is to be done?

(b) How is the work to be done?

(c) Who is to do the work?

(d) Where is the work to be done?

(6) These items apply themselves very well to maintenance, and the paperwork applied, to be discussed later, is merely a step in answering these questions so as to build up to an official line layout.

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4. Learning Step/Activity 4: The instructor will facilitate small group discussion on renovation facilities and maintenance buildings.

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 1.0 hour
Media: Viewgraphs

Note: **Show VG12 (Renovation Facilities) and VG13 (Maintenance Buildings).**

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a. Renovation Facilities. The maintenance building is a specially designed structure providing the maximum degree of safety for operators while, at the same time, facilitating production. Some of the features of this building are discussed in the following paragraphs:

(1) The building is constructed with laced reinforced concrete substantial dividing walls. The purpose of these walls is to prevent simultaneous detonation of the explosives in the building. They are not designed to provide complete protection for personnel. The walls are a minimum of 12 inches thick. Some buildings are constructed with twice this thickness so that completely separate operations can be conducted on both sides of the building. Each of the cubes or cells formed by the walls is limited to a maximum of 5,000 pounds of explosives (the building itself is not to exceed 25,000 lbs).

(2) The building walls and roof coverings should be of noncombustible material. The interior surfaces should be of fire retardant material and as free from cracks as possible. Seams should be taped over, and if painted, the paint should be a gloss to facilitate cleaning. The building is designed to vent an explosion.

(3) The building is designed so that materials enter one end of the building and flow to the other. Conveyors and hoists are set up throughout the building, along with larger items of machinery, electrical power, and compressed air. The work is divided so that different operations are performed in each of the cubes. The building can be adapted for numerous jobs by installing or removing equipment and machinery.

Note: **Safety in operations is a prime consideration in all maintenance facilities.**

Note: **Show VG14 (Marking and Color Coding of Areas and Equipment).**

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b. Marking. Marking and color coding of areas and equipment, water lines, high pressure air lines, hazard areas, electrical lines, etc., contribute to safety. As an example, color coding for identification of the different power lines, high pressure lines, and hazard areas could be as follows:

- High pressure water lines — Red.
- High pressure air lines —Green.
- Electrical lines — Blue.
- Marking of hazard areas — Black and yellow.

(1) Normally, safety and hazard markings are established by the maintenance facility commander and published in local policies and/or SOPs. Different geographical areas could use systems that utilize different color coding and markings requirements; therefore, local safety policies must be checked prior to the marking of safety areas and equipment.

(2) AMC Regulation 385-100 is the basis for establishing policies and procedures required for ammunition maintenance facilities; however, AMC publications are applicable to AMC facilities only. Each facility performing maintenance will comply with local policies.

(3) In overseas commands, portions of the AMC regulation may be extracted or modified to establish local policies.

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5. Learning Step/Activity 5: The instructor will facilitate small group discussion on process flow sheets.

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 0.5 hours
Media: Viewgraphs

Note: **Show VG15 (Process Flow Sheets).**

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a. Process Flow Sheets. The first form to be made out will be a process flow sheet. A process flow sheet is a chart for recording, in a compact manner and in proper sequence, the operations found in an operating line. The chart begins with the munitions to be processed coming from storage and follows it through each operation to the finished reworked item. (TM 9-1330-250, page 4-2)

Note: **Show VG16 (Operations Arrangement Sequence).**

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(1) Operations arranged in proper sequence fall naturally into five major groups. All types of munitions to be processed must go through the following operations:

- Unpacking.
- Disassembly.
- Replace/Repair.
- Reassembly.
- Repacking.

Note: **Show VG17 (Questions to be Considered).**

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(2) In planning the flow sheets, the following questions should be considered:

- Can any operation be eliminated?
- Can any of the operations be combined?
- Can any operation be performed better in a different order?
- Can any of the operations be simplified?

(3) Each operation is listed either as a primary or as a secondary operation.

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6. Learning Step/Activity 6: The instructor will facilitate small group discussion on line layouts.

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 0.5 hours
Media: Viewgraphs

Note: **Show VG18 ("U" Line Operations) and VG19 (Straight Line Operations).**

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a. Line Layouts. A clear legible line layout must be forwarded with each SOP that is submitted for review.

(1) Line layouts should show the structural material of the facility, fire protection, location of dividing walls, operational shields, and permanently installed equipment.

(2) Operational shields must be detailed to show the type of material used, height, and thickness.

(3) Permanently installed equipment must be listed whether or not it is used in the specific operations.

(4) Each bay or room must be identified by a numeral or letter.

(5) The operational sequence must be depicted by the use of standardized symbols.

(6) The location of pallets, tables, ammunition peculiar equipment (APE), etc., must be shown where they will be used. A legend must be used to briefly explain the operations, inspections, and locations of pallets, tables, APE, etc.

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7. Learning Step/Activity 7: The instructor will facilitate small group discussion on Standing Operating Procedure (SOP) development.

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 0.7 hours
Media: Viewgraphs

Note: **Show VG20 (Standing Operating Procedures (Title Page).**

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a. Standing Operating Procedures (SOP). The SOP shall be approved by the commanding officer or by a qualified member of his staff who has been delegated the responsibility for review and authority for approval of the SOPs.

Note: **Show VG21 (Standing Operating Procedures (Operation).**

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(1) **General.** In developing detailed SOPs, the information contained therein must be clear, conclusive, and easily understood by all concerned. Great care must be exercised in the use of the English terminology, taking into consideration the limited vocabulary of some personnel, involving munitions or explosives.

In overseas commands when indigenous personnel are used, SOPs will be written bilingual, in English and in the language of the host nation.

Note: **Show VG22 (SOP Considerations).**

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(2) The following questions must be considered before an SOP can be written:

- What is to be done?
- Where can it be done?
- How shall it be done?
- With what shall it be done?

- What safety precautions are necessary?

Note: **Show VG23 (Minimum Requirements).**

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(3) **Minimum requirements.** Experience has indicated that adequate, up-to-date SOPs will aid materially in the reduction of accidents. As a result of studies and experience, the following minimum requirements must be contained in the SOP:

- Safety requirements.
- Personnel limits.
- Explosive limits.
- Designation of equipment used.
- Location and sequence of operation.

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8. Learning Step/Activity 8: The instructor will facilitate small group discussion on the description and use of lot numbers.

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 1.0 hour
Media: Viewgraphs

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a. Description and use of lot numbers. The purpose of lot numbering of munitions is to provide the identification of material necessary to assure accurate control of movements of items, to conserve and maintain surveillance records, and to provide a means of withdrawing from service defective, deteriorated, hazardous, or obsolete munitions and explosive material.

Note: **Show VG24 (Old Lot Numbers).**

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(1) The old lot numbering system, which consisted of a manufacturer's identification symbol and a task and serial number, will be in the field until all items marked with this system are exhausted or destroyed. Old lot numbers were generated in the following manner:

(a) The manufacturer's identification symbol consisted of one, two, or three letters assigned in a manner indicating the identity of the arsenal, plant, depot, or station.

(b) Each lot number had an interfix number between the manufacturer's identification symbols and the serial number. The interfix number indicated the lots made according to a specific design or manufacturing procedure.

(c) The serial number identified the lot according to the sequence of production. A number was assigned to each lot. The serial number began with the number 1 and continued in sequence until production of the item was terminated or completed.

Note: **Show VG25 (New Lot Numbers).**

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(2) The new ammunition lot numbering system consists of a manufacturer's identification symbol, a numeric code depicting the year of production, an alpha code representing the month of production, a lot interfix number followed by a hyphen, and a lot sequence number. An alpha character may be used as an ammunition lot suffix to denote a reworked lot.

(a) The ammunition lot number does not exceed fourteen characters in length, and no characters are separated by spaces. The minimum number of characters used is thirteen.

(b) The following illustrates the construction of the new ammunition lot number:

- Manufacturer's identification symbol.
- Two-digit numeric code identifying the year of production.
- Single alpha code signifying the month of production.
- Lot interfix number.
- Lot sequence number.

Note: **Show VG26 (Lot Number Suffixes).**

- Ammunition lot suffix (the alpha suffix).

b. Description and use of lot numbers for maintenance operations.

(1) The old lot numbering system for renovated, modified, or regrouped operations, which are performed subsequent to acceptance of the munitions into the stockpile and to restore them to issuable condition, is as follows:

(a) Ordinary maintenance, when new components replace like components a lot suffix will be assigned by the responsible service.

Note: Given an Example: U.S. Army, Korea, Special Ammunition Depot 200 replaces fuzes on complete rounds of lot LOP-1-8; the suffix furnished changes the lot number to LOP-1-8A, B, C, etc., as applicable.

(b) Extensive maintenance, where different components are added or work is extensive enough to warrant model number change.

Note: Given an Example: Cartridge, 90mm: HE, M71 changes to cartridge, 90mm HE-T M71A1; Fuze, M52 to M525; Fuze M500A1 to M520A1.

(c) New lots will be formed in accordance with the requirements of the maintenance directive. Lot numbers will be assigned in the normal manner except that the interfix number will start with 500 instead of 1, and the manufacturer's symbol will be that of the facility performing the work.

(d) Lot numbers are furnished to the maintenance facility, from the Industrial Operations Command (IOC), Rock Island, Illinois, on request.

(2) The new lot numbering system for renovation and modification is basically the same as the old system:

(a) Ordinary maintenance.

(b) Extensive maintenance.

(c) Maintenance regrouping. When numerous lots are regrouped to form one lot, regardless of whether or not ordinary or extensive maintenance is performed in conjunction with regrouping, a new lot number will be assigned.

Note: Given an Example: U.S. Army, Fort Amador, Canal Zone regroups 81mm mortar rounds lots MA-2-24, MA-2-26, and MA-2-28 etc. The new lot number CRV81AOO1GOO1 is assigned.

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9. Learning Step/Activity 9: The instructor will facilitate small group discussion on Ammunition Data Cards (DD Form 1650).

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 0.5 hours
Media: Viewgraphs

Note: **Show VG27 (Ammunition Data Card (DD Form 1650).**

Ammunition Data Cards.

(1) An Ammunition Data Card (DD Form 1650) is an easily referenced record of the initial history of a lot of munitions and explosive materiel, which contains all required data pertaining to each lot of munitions.

(2) When maintenance operations are performed, a new ammunition data card will be prepared by the facility performing the maintenance and attached to the old card.

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10. Learning Step/Activity 10: The instructor will facilitate small group discussion on Ammunition Peculiar Equipment.

Method of instruction: SGI
Instructor-to-student ratio: 1:12
Time of instruction: 0.7 hours
Media: Viewgraphs

Note: **Show VG28 (Ammunition Peculiar Equipment (APE).**

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a. Ammunition Peculiar Equipment (APE). Ammunition peculiar equipment is equipment designed, fabricated, procured, tested, and adopted to standard items by commodity commands to accomplish munitions operations, including surveillance, maintenance, demilitarization, and storage functions. (TM 43-0001-47).

Note: **Show VG29 (Equipment Requirements).**

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b. Equipment requirements. To accomplish the required work, certain equipment must be available. The type of equipment will depend upon the complexity of work to be done.

(1) Deterioration.

(2) Design changes.

(3) Safety.

Note: **Show VG30 (Safety Design Features).**

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c. Safety design features. Features that make munitions effective must be considered when providing tools and equipment necessary to perform munitions operations. Explosives are sensitive to shock, flame, or electrostatic discharge. Therefore, equipment peculiar to munitions operations must be designed to minimize these hazards.

Note: **Show VG31 (Operational Shields).**

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d. Operational shields. When hazards cannot be minimized to a safe level, special shields or machines operated by remote control must be used. Operational shields are used to remove primers, boosters, base detonating fuzes, etc.

APE is issued to installations (CONUS and overseas) on hand receipt from IOC, IAW AR 700-20.

e. Description of specific APE.

Note: **Show VG32 (APE 1237—Primer Inserting Machine).**

It is not within the scope of this lesson to describe each piece of equipment that is currently available. However, we will discuss briefly the items that are most frequently used in maintenance operations.

Note: **Reference TM 43-0001-47 for equipment discussion.**

SECTION IV. SUMMARY

Note: **Show VG33 (Summary).**

Method of instruction: SGI.
Instructor-to-student ratio: 1:12
Time of instruction: 0.5 hours

Review/ Summarize Lesson

During this lesson, we have discussed:

1. Maintenance levels.
2. Ammunition Condition Report (ACR).
3. Deport Maintenance Work Requirements (DMWR).
4. Planning your operations.
5. Renovation facilities.
6. Process flow sheets.
7. Line layouts.
8. SOPs.
9. Description and use of lot numbers.
10. Description and use of lot numbers for maintenance operations.
11. Ammunition Data Cards.
12. Ammunition Peculiar Equipment.

Check on Learning

Determine if students have learned the material presented by:

a. Soliciting student questions and explanations.

b. Asking questions and getting answers from the students.

c. Correcting student misunderstandings.

Transition to Next Lesson

Your next lesson will be on preparing surveillance samples for shipment.

SECTION V. STUDENT EVALUATION

Testing Requirements	Upon completion of this annex, your performance will be evaluated through a comprehensive end-of-annex examination.
Note:	Refer student to the Student Evaluation Plan.
Feedback Requirement	a. Schedule and provide feedback on the evaluation and any information to help answer students' questions about the test. b. Provide remedial training as needed.
Note:	Rapid, immediate feedback is essential to effective learning.

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STUDENT HAND OUT
55B40B04

1. Maintenance Levels

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_____

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a. Organizational Maintenance: Is performed by all activities having conventional munitions on hand including using units. It is performed to prevent deterioration of munitions due to rough handling and exposure. This maintenance involves cleaning, removal of minor rust and corrosion, repair and replacement of boxes, repalletizing, repacking, repainting, and marking.

b. Direct Support Maintenance:

(1) Direct support maintenance is performed by conventional ammunition companies and includes surveillance with limited maintenance.

(2) This level of maintenance includes the functions of inspections, tests, care and preservation, and service and repair (as authorized) on all types of conventional munitions under their control in all munitions storage and issue facilities.

(3) Direct support maintenance includes but is not limited to repairing, restenciling, or replacing packing materials, declipping, reclipping, and changing ratio linkage of small arms munitions; replacing readily removable parts and components; removing exudation from artillery projectiles; and performing electrical circuit continuity testing on rocket munitions.

(4) Packing material authorized at the direct support level is limited in quantities due to the requirements to store in dry facilities. Available dry storage space is only found in munitions storage magazines, which is needed for the storage of on-hand munitions assets. The fluctuation of day-to-day requirements for packing material makes it extremely difficult to maintain levels so that actual levels of packing materials will be on hand when required. A source of available packing materials is from unit turn-ins from training exercise firings.

c. General Support Maintenance:

(1) General support maintenance munitions renovation operations have essentially five main actions:

(a) Unpack.

(b) Disassemble.

(c) Perform The Required Work.

(d) Reassemble.

(e) Repack.

(2) General support maintenance consists of but is not limited to removal of exterior rust and corrosion; painting and stenciling; major repair or fabrication of boxes, containers, and crates; and repair and replacement of unserviceable boosters, fuzes, primers and igniters, cartridge cases, and propellants and tracer units on conventional munitions.

2. Ammunition Condition Reports: The condition of munitions is determined through inspections conducted by ammunition surveillance inspectors, who will identify the degree of serviceability using ammunition condition codes.

a. DA Form 2415, Ammunition Report, is used to provide data for the control and management of unserviceable and permanently suspended munitions items.

b. DA Form 2415, is used to report unserviceable repairable munitions items in condition codes E, F, G, and N. This form will also be used to report unserviceable, uneconomically repairable munitions items in condition code H and permanently suspended munitions in condition code J.

c. An individual DA Form 2415 will be prepared for each line item reported; however, more than one lot of identical items can be reported on the same form.

d. Copies of the ACR will be prepared in the quantities prescribed by local standing operating procedures (SOPs) and forwarded through command channels for disposition.

e. The processed report will normally be returned through command channels; the report with endorsement will constitute the authority for disposition of the reported item.

3. Depot Maintenance Work Requirements (DMWR):

a. DMWRs for renovation, repair, or demilitarization of munitions are composed of a series of sheets in the form of a pamphlet. Each sheet addresses an operation to be accomplished.

b. The sequence of operations may not be applicable to a DS or GS facility. DMWRs are prepared by the U.S. Army Industrial Operations Command for a variety of installations operating on a comparatively large production basis.

c. The DMWR will be approved by the commanding officer or by a qualified member of his staff who has been delegated the responsibility for review and approval of the DMWR.

d. The manner in which the field unit does a job properly will be different from the manner in which an established depot does the same job. A DMWR received in the field will serve as a guide to the ammunition officer in making up the SOP.

e. When a working authorization has been received, with or without an assignment sheet, the unit will prepare the details and procedures for doing the work.

_____
_____
_____
_____

DMWR 9-1315-0000-X5

2-3. OPERATION NO. 3 - REMOVE CARTRIDGE FROM FIBER CONTAINER.

a. Description of Operation.

(1) Receive fiber container from Operation No. 2.

(2) Remove sealing strip from fiber container.

(3) Remove fiber container lid.

(4) Remove cartridge from fiber container.

(5) Inspect fiber container for serviceability in accordance with criteria in TM 9-1300-251-34.

(6) Place fiber container lid on primer end of cartridge.

(7) Transfer:

(a) Cartridge to Operation No. 4.

(b) Serviceable (reusable) fiber containers to storage.

(c) Unserviceable fiber containers to PDO.

b. Special Safety Requirements.

(1) Operator will wear flame-retardant coveralls/hand covering and conductive safety shoes.

(2) Fiber container lid must be in place on primer end of cartridge case during handling and transportation.

c. Equipment Requirements.

(1) Remover, pneumatic lid - APE 1003M1 w/kit 1003E003.
OR
Machine, automatic lid removal - APE 1270 w/kit 1270E003.

(2) Coveralls/head covering, flame-retardant - NSN 8415-00-279- 8719.

(3) Shoes, conductive safety.

d. Material Requirements.

None

4. Planning Your Operation:

_____
_____
_____
_____

a. The proper performance of a maintenance operation depends primarily upon planning. Before work on any item is begun, each operation to be performed must be completely thought out. All of the tools and equipment used to do the job must be procured and distributed to the points where they will be used. Complete rounds or items to be worked on must be inspected.

(1) What is to be done?

_____
_____
_____
_____

(2) How is the work to be done?

_____
_____
_____
_____

(3) Who is to do the work?

_____
_____
_____
_____

(4) Where is the work to be done? _____

_____
_____
_____
_____

5. Renovation Facilities:

_____
_____
_____
_____

a. The maintenance building is a specially designed structure that provides the maximum degree of safety for operators while, at the same time, facilitating production.

b. The building is constructed with laced reinforced concrete substantial dividing walls. The purpose of these walls is to prevent simultaneous detonation of the explosives in the building. They are not designed to provide complete protection for personnel. The walls are a minimum of 12 inches thick (some buildings are constructed with twice this thickness so that completely separate operations can be conducted on both sides of the building). Each of the cubes or cells formed by the walls is limited to a maximum of 5,000 pounds of explosives (the building itself is not to exceed 25,000 lbs).

AMMUNITION MAINTENANCE BUILDING

c. The building walls and roof coverings should be of noncombustible material. The interior surfaces should be of fire-retardant material and as free from cracks as possible. Seams should be taped over and, if painted, the paint should be a gloss to facilitate cleaning. The building is designed to vent an explosion.

d. The building is designed so that materials enter one end of the building and flow to the other. Conveyors and hoists are set up throughout the building, along with larger items of machinery, electrical power, and compressed air. The work is divided so that different operations are performed in each of the cubes. The building can be adapted for numerous jobs by installing or removing equipment and machinery.

e. Marking and color coding of areas and equipment, water lines, high-pressure air lines, hazard areas, electrical lines, etc., contribute to safety. As an example, color coding for identification of the different power lines, high-pressure lines, and hazard areas could be as follows:

_____
_____
_____
_____

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