

**UNITED STATES MARINE CORPS**  
ENGINEER EQUIPMENT INSTRUCTION COMPANY  
MARINE CORPS DETACHMENT  
686 MINNESOTA AVE  
FORT LEONARD WOOD, MO 65473

## **LESSON PLAN**

### **SHOP OPERATIONS**

LESSON ID: BEER-A01

**CONSTRUCTION EQUIPMENT REPAIRER COURSE**

**CID A1613B1**

**REVISED 04/21/2014**

**APPROVED BY** \_\_\_\_\_

**DATE** \_\_\_\_\_

**INSTRUCTOR NOTE**

Study guides need to be issued before class begins. Master copy is located in the lower left hand drawer of the instructor desk.

**INTRODUCTION**

**(10 MINS)**

**(On slide #1)**

1. **GAIN ATTENTION.** The elements of any good shop come from Marines that are functional in their positions. There are multiple billets to be held in a maintenance shop, not just "mechanic." While obtaining the skills and knowledge necessary to become a good mechanic, you the student need to know some other elements that play a key role in the overall shop functionality. The ORM process, the basic structure of a shop, how to use a Technical Manual and parts list, how to properly fill out paperwork involved with tasks, how tool control works, and the basic pieces of equipment that you will see in the Marine Corps.
2. **OVERVIEW.** Good morning/afternoon, my name is \_\_\_\_\_, the purpose of this lesson is to give you the basic knowledge of how a shop functions. It will be covered by going over ORM, maintenance levels and phases, engineer equipment characteristics, the use of publications and identifying them, identifying and how to complete records and forms, identification of tool kits, and the correct use of tools and toolbox inventory.

**(On slide #2)**

3. **LEARNING OBJECTIVES**

**INSTRUCTOR NOTE**

Introduce learning objectives.

- a. **TERMINAL LEARNING OBJECTIVE.**

(1) Provided references, maintenance facility, maintenance forms, personnel, tools, and engineer equipment, conduct shop operations, to maintain unit readiness without injury to personnel or damage to equipment. (1341-ADMN-1001)

(2) Provided references, conduct inventory of tool sets, chests, and kits, to reconcile inventory records for accountability and serviceability. (1341-ADMN-1002)

**(On slide #3)**

**b. ENABLING LEARNING OBJECTIVES.**

(1) Provided reference, identify the operational risk management process, per the MCO 3500.27. (1341-ADMN-1001a)

(2) Provided reference, identify the maintenance structure, per the MCO P4790.2\_. (1341-ADMN-1001b)

(3) Provided reference, identify the characteristics of engineer equipment, per the TM 11275-15/3D. (1341-ADMN-1001c)

(4) Provided reference, a NAVMC 10560 (LTI), identify the mechanics required entries, per the TM 4700-15/1\_. (1341-ADMN-1001d)

(5) Provided references, perform technical manual research per the TM 11503A-OI/3, TM 11503A-OI/4 and TM 10794B-OI/A. (1341-ADMN-1001e)

(6) Given an assigned maintenance role, computer and (LTI), create a service request for approval, per the user productivity kit (UPK). (1341-ADMN-1001f)

(7) Provided references, perform parts research per the TM 10794B-OI/A and TM 11503A-OD. (1341-ADMN-1001g)

(8) Given an assigned maintenance role, computer and required equipment forms/records, create a parts request for approval, per the user productivity kit (UPK). (1341-ADMN-1001h)

(9) Given an assigned maintenance role, computer and required equipment forms/records, update the service request to record maintenance status, per the user productivity kit (UPK). (1341-ADMN-1001i)

**(On slide #4)**

(10) Provided references, a general mechanics tool kit (GMTK), and inventory sheet, conduct an inventory for accountability per the TM 4700-15/1\_, and SL-3-11668A. (1341-ADMN-1002a)

(11) Provided references, a (GMTK), and inventory sheet, check for serviceability of tools per the TM 4700-15/1\_, and SL-3-11668A. (1341-ADMN-1002b)

**(On slide #5)**

4. **METHOD/MEDIA.** This lesson will be taught utilizing the lecture, demonstration and practical application methods. Media used will be computer generated graphics, student outline and actual item objects.

**(On slide #6)**

5. **INSTRUCTIONAL RATING FORMS.** Tell the students that have been handed instructional rating forms to put them on the corner of their desk until the end of class when they will be given time to fill them out.

**INSTRUCTOR NOTE**

Explain Instructional Rating Forms to students.  
IRF's are located in the lower left hand drawer of the instructor desk.

**(On slide #7)**

6. **EVALUATION.** You will be evaluated on this period of instruction on training day 5. You will be evaluated with a written exam and performance exam.

**(On slide #8)**

7. **SAFETY/CEASE TRAINING (CT) BRIEF.** If at any time you the student see anything unsafe or are told by an instructor to stop. Stop immediately. Safety at this course is paramount.

**TRANSITION:** Are there any questions relating to how this lesson will be conducted or how you'll be evaluated? (Pause: and receive any questions.) If not, let's discuss ORM

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(On slide #9)

**BODY**

(33 HRS)

**1. OPERATIONAL RISK MANAGEMENT (50 min)**

Operational Risk Management, commonly referred to as ORM, was established by OPNAV Instruction 3500.39 and adopted by the Marine Corps under Marine Corps Order 3500.27. It is a method for identifying hazards, assessing risks, and implementing controls to reduce the risk associated with any operation.

(On slide #10)

a. **ORM Concept** . Operational Risk Management is a decision making tool to be used by the Marine Corps at all levels. It is used to increase operational effectiveness, anticipate hazards, and reduce the potential for loss. Its use increases the probability of a successful mission.

(On slide #11)

(1) When the ORM concept is applied, we increase our ability to make informed decisions. This is accomplished by providing the best baseline of knowledge and experience from those individuals associated with the mission or task that is being assessed.

(2) We can also minimize risks to acceptable levels based on mission accomplishment. You must remember that the risks associated with war are greater than those associated with peacetime, but applying the ORM process is exactly the same.

(On slide #12)

(3) Applying the ORM concept will also help reduce mishaps, lower costs, and provide more efficient use of resources.

**(On slide #13)**

b. **Operational Risk Management Terms**. There are four terms that need to be understood when using operational risk management. They are:

(1) HAZARD - This is any condition with the potential to cause personal injury, death, property damage, and/or mission degradation.

(2) RISK - This is an expression of possible loss in terms of severity and probability.

(3) RISK ASSESMENT - This is a process of detecting hazards and assessing associated risks.

**(On slide #14)**

(4) OPERATIONAL RISK MANAGEMENT - This is a process of dealing with risk associated with military operations, which includes risk assessment, risk decision making, and implementing effective risk controls.

**(On slide #15)**

c. **Operational Risk Management Process**. The ORM process is a clear five-step system of minimizing those risks associated with any type of operation, mission, and daily routines. The five steps are: identifying hazards, assessing hazards, making risk decisions, implementing controls, and supervising. The process may seem time consuming but after continual use it should become a simple, fast, and thorough process.

**(On slide #16)**

(1) Identifying hazards. This is where the individual outlines or charts major steps in an operation. It is commonly referred to as the operational analysis. In this step, you will

conduct a preliminary hazard analysis by listing all hazards associated with each step and listing all of the causes associated with that hazard.

**(On slide #17)**

(2) Assess hazards. Once all hazards are identified, identify the associated risk of that hazard in terms of probability and severity.

**(On slide #18)**

(3) Make risk decisions. In this step, develop risk control options. Start with the most serious risk first. Select controls to reduce, minimize, or eliminated the risk. You must remember that in some cases mission accomplishment will override some of the controls you want to emplace. Once the controls are in place, it is time to make your decision.

(a) Decide if the benefit of the operation outweighs the risk. If it does, then the operation should continue on.

(b) If the risk outweighs the benefit, then you must communicate that risk with higher authority in the chain of command.

**(On slide #19)**

(4) Implement controls. These are measures that can be implemented to eliminate hazards or reduce the degree of risk associated with the hazard. This can be accomplished by introducing engineering controls, administrative controls, and using personal protective equipment.

**(On slide #20)**

(a) Engineering controls. These are engineering methods that are established to reduce risks. They can be implemented by changing the design or material selection. Material substitution can also be used as long as it is technically feasible, economical, and conforms to established standards.

**(On slide #21)**

(b) Administrative controls. This method is used to reduce risks through specific administrative actions. This can be accomplished by:

1 Providing suitable warnings, markings, signs, and notices.

2 Establishing written policies, programs, instructions, and standard operating procedures.

**(On slide #22)**

3 Training personnel to recognize hazards and take appropriate precautionary measures.

4 Limiting the exposure to a hazard either by reducing the number of personnel/assets or the length of time they are exposed.

**(On slide #23)**

(5) Supervise. In the final step of the ORM process, leaders will conduct follow-up evaluations of the controls to ensure that they remain in place and have the desired effect. Continue to monitor for changes that may require further Operational Risk Management. Ensure that you take corrective action when necessary.

**(On slide #24,25)**

d. **Three Levels of Operational Risk Management**. ORM exists on three levels: time-critical, deliberate, and in-depth. The commander selects which level to operate on based upon the mission, time available, and proficiency level of personnel and assets available. It is always preferable to perform a deliberate or in-depth risk management process for all evolutions, but time and resources are not always available. One of the objectives of ORM training is to develop sufficient proficiency in applying the process so that ORM becomes an automatic or intuitive part of our decision making methodology. In an operational environment leaders should be able to employ



this time-critical process to make sound and timely decisions that generate tempo and facilitate decisive results.

**(On slide #26)**

(1) Time critical. This is an "on the run" mental or oral review of the situation using the five-step process without recording the information on paper. The time critical level is employed by experienced personnel to consider risks while making decisions in a time-compressed situation.

(a) This is the normal level of ORM used during the execution phase of training or operations, as well as in planning during crisis response scenarios.

(b) It is particularly helpful in choosing the appropriate course of action when an unplanned event occurs during the execution of a planned operation or daily routine.

**(On slide #27)**

(2) Deliberate. This is the complete application of the five-step process. It is used in planning an operation or evaluating procedures. Experience and brainstorming are primarily used to identify hazards and develop controls. This is the most effective when conducted in a group. Examples of deliberate applications include planning of upcoming operations, review of standard operating, maintenance or training procedures, and damage control/disaster response planning.

**(On slide #28)**

(3) In-depth. This is a deliberate process with a more thorough assessment (the first two of the five steps) involving research of available data, use of diagram and analysis tools, formal testing, or long term tracking of the hazards associated with the operation to identify and assess the hazards. It is used to more thoroughly study the hazards and their associated risks in a complex operation or system, or one in which the hazards are not well understood. Examples of the in-depth application are; long term planning of complex operations, introduction of new equipment, materials and missions, development of tactics and training curriculum, and major system overhaul and repair.

**(On slide #29)**

e. **The Four Principles of Operational Risk Management.**

There are four overall guiding principles of ORM. They are:

(1) Accept risk when the benefits outweigh the cost. MCDP 1, War fighting, states, "Risk is inherent in war and is involved in every mission. Risk is also related to gain normally greater potential gain requires greater risk." Our naval tradition is built upon principles of seizing the initiative and taking decisive action. The goal of ORM is not to eliminate risk, but to manage the risk so that the mission can be accomplished with the minimum amount of loss.

**(On slide #30)**

(2) Accept no unnecessary risk. MCDP 1 also states, "We should clearly understand that the acceptance of risk does not equate to the imprudent willingness to gamble..." Take only risks necessary to accomplish the mission.

**(On slide #31)**

(3) Anticipate and manage risk by planning. Risks are more easily controlled when they are identified early in the planning process.

**(On slide #32)**

(4) Make risk decisions at the right level. The leader directly responsible for the operation makes risk management decisions. Prudence, experience, judgment, intuition, and situational awareness of leaders directly involved in the planning and execution of the mission are the critical elements in making effective risk management decisions. When the leader responsible for executing the mission determines that the risk associated with that mission is too high or goes beyond the commander's stated intent, he should seek additional guidance.

**(On slide #33)**

f. **RISK ASSESSMENT MATRIX.** A matrix can be used to accomplish the second step of the ORM process. Using a matrix to quantify and prioritize the risk(s) does not lessen the inherently subjective nature of risk assessment. A matrix does provide a consistent framework for evaluating risk. Many different matrices can be developed and used for various applications; any risk assessment tool should include the elements of hazard severity and mishap probability. Once these

two elements are framed into the matrix, a risk assessment code (RAC) can be assigned to the specific hazard.

**(On slide #34)**

(1) Hazard severity. Hazard severity assesses the worst credible consequence that can occur as a result of a hazard. Severity is defined by the potential degree of injury, illness, property damage, loss of assets, (time, money, personnel) or effect on mission. Hazard severity categories are assigned as Roman numerals according to the following criteria.

**(On slide #35)**

(a) Category I - The hazard may cause death, loss of facility/asset or result in grave damage to national interests.

(b) Category II - The hazard may cause severe injury, illness, property damage, damage to national or service interest or degradation to efficient use of assets.

**(On slide #36)**

(c) Category III - The hazard may cause minor injury, illness, property damage, damage to national, service or command interests or degradation to efficient use of assets.

(d) Category IV - The hazard presents a minimal threat to personnel safety or health, property, national, or command interests or efficient use of assets.

**(On slide #37)**

(2) Mishap probability - The probability that a hazard will result in a mishap or loss. Based on an assessment of such affected populations, experience, or previously established statistical information. Mishap probability will be assigned an English letter according to the following criteria:

**(On slide #38)**

(a) Sub-category A - Likely to occur immediately or within a short period of time. This situation is expected to occur frequently to an individual item/person or continuously to a fleet, inventory, or group.

(b) Sub-category B - Probably will occur in time. This designation indicates that a mishap is expected to occur

several times to an individual item/person or frequently to a fleet, inventory, or group.

(c) Sub-category C - May occur in time. The incident can reasonably be expected to occur sometime to an individual item/person or several times to a fleet, inventory, or group.

(d) Sub-category D - Unlikely to occur.

**(On slide #39)**

(3) Risk Assessment Code (RAC). The RAC is an expression of risk which combines the elements of hazards, severity, and mishap probability. Using the matrix in Figure 1, the RAC is expressed as a single Roman numeral (one through five) that can be used to help determine hazard reduction priorities.

- (a) RAC 1 - Critical
- (b) RAC 2 - Serious
- (c) RAC 3 - Moderate
- (d) RAC 4 - Minor
- (e) RAC 5 - Negligible

(4) Purpose: By implementing controls Marines can mitigate the severity of a hazard and/or reduce the probability of a mishap occurring. The proper use of the ORM Process should result in a lower risk assessment code.

**(On slide #40)**

**Transition**: Now that we understand the concept, terms, process, levels, and principles of Operational Risk Management. Are there any questions on any of the material that I have covered.

**(On slide #41)**

**If not I have questions for you.**

**Q. What are the five steps of the Operational Risk Management process? A. Identify hazards, Assess hazards, Make risk decisions, Implement controls, and supervise. Q. What are the three levels of Operational Risk Management? A. Time-critical, deliberate, and in-depth.**

(On slide #42)

(BREAK 10 MIN)

**Transition:** Did anyone think of any more questions while you were on break? If not let's talk about maintenance structure.

(On slide #43)

## 2. MAINTENANCE STRUCTURE (1 hr)

(On slide #44)

### a. Terms and Acronyms

(1) DL: Deadline

(a) To completely remove a piece of gear from service due to necessary repairs, damage, and/or malfunctions that have already or could eventually render it unsafe or impossible to operate.

(On slide #45)

(2) PMCS: Preventive Maintenance Checks and Services

(a) Maintenance performed by mechanics and operators at intervals to preserve the life of components and assemblies.

(b) Involves inspecting, cleaning, servicing, lubricating, adjusting, and minor repair.

(3) CM: Corrective Maintenance

(a) Action taken to repair an item of equipment after failure which degrades its operational capabilities.

(4) Demand Supported Items (Formally PEB)

(a) Demand-supported stocks are those quantities of expendable and nonexpendable items which are on

hand based on supported or limited stockage criteria and are authorized to support mission requirements.

**(On slide #46)**

b. **Maintenance Overview**

(1) The Marine Corps utilizes different stages or levels of maintenance.

(a) Specific responsibilities are assigned to each level of maintenance.

(b) Levels are further subdivided into echelons to more accurately define capabilities and responsibilities.

(c) Maintenance is allocated according to personnel, tools, equipment, and parts availability.

**(On slide #47)**

(2) There are three levels and five echelons of maintenance

(a) Organizational Maintenance

1 1st and 2nd echelons of maintenance (EOM)

(b) Intermediate Maintenance

1 3rd and 4th echelons of maintenance (EOM)

(c) Depot Maintenance

1 5th echelon of maintenance (EOM)

**(On slide #48)**

(3) ORGANIZATIONAL MAINTENANCE

(a) Maintenance performed by, and is the responsibility of the using unit on its assigned equipment.

(b) Operators (1<sup>st</sup> EOM) and mechanics (2<sup>nd</sup> EOM) share responsibilities for ensuring maintenance is performed.

(c) Maintenance performed ensures equipment readiness through PMCS and CM.

**(On slide #49)**

(4) 1<sup>ST</sup> EOM

(a) Performed by the user, wearer, or operator.

(b) Includes the proper care, use, operation, cleaning, preservation, lubrication, and adjustment

(c) They are authorized to perform minor repairs, testing, parts replacement according to applicable TMs (TM-10 series) and authorized repair parts and tools.

**(On slide #50)**

(5) 2<sup>ND</sup> EOM

(a) Performed by specially trained personnel (mechanics).

(b) Authorized additional tools and parts, supplies, test equipment, and skilled personnel to perform maintenance beyond the capabilities and facilities of first echelon.

(c) Responsibilities include performance of scheduled maintenance, diagnosis and isolation of readily traced equipment malfunctions. Replacement of major assemblies/components which can be readily removed/installed and do not require critical adjustment.

(d) Replacement of easily accessible parts not authorized at first echelon.

**(On slide #51)**

(6) INTERMEDIATE MAINTENANCE

(a) Maintenance performed by designated activities in support of using units.

(b) Maintenance includes the calibration/repair or replacement of damaged/unserviceable parts and provides contact team to support using organizations.

(c) Made up of 3<sup>rd</sup> and 4<sup>th</sup> echelons but may include some 2<sup>nd</sup> echelon to fulfill organizational overflow requirements.

**(On slide #52)**

(7) 3<sup>RD</sup> EOM

(a) Diagnosis and isolation of equipment/modular malfunctions.

(b) Adjustment and alignment of modules using test, measurement, and diagnostic equipment (TMDE).

(c) Repair by replacement of modular components and parts which do not require extensive post-maintenance testing or adjustment.

(d) Limited repair of modular components requiring cleaning, seal replacement, application of external parts and repair kits.

(e) Accomplishment of minor body work and evaluation of emissions of internal combustion engines.

**(On slide #53)**

(8) 4<sup>TH</sup> EOM

(a) Associated with semi fixed or permanent shops of intermediate maintenance activities.

(b) Maintenance includes diagnosis, isolation, adjustment, calibration, alignment and repair of malfunctions to internal parts.

(c) Replacement of defective modular components not authorized at lower echelons.

(d) Repair of major modular components by grinding or adjusting items such as valves, tappets and seats.

(e) Replace internal and external parts such as integrated and printed circuits.

(f) Performance of heavy body, hull turret and frame repair.



**(On slide #54)**

(9) DEPOT MAINTENANCE

(a) Maintenance requiring major overhaul or the complete rebuilding of parts, subassemblies, assemblies and end items.

(b) Commonly referred to as rebuild centers.

(c) Manufactures parts.

(d) Performs required modifications and testing.

(e) Performs maintenance beyond the responsibilities of lower echelons and provides them with technical assistance.

(f) Provides stocks of serviceable equipment.

(g) 5th echelon of maintenance (EOM).

**(On slide #55)**

(10) 5<sup>TH</sup> EOM

(a) Maintenance normally performed by depot maintenance activities and at intermediate maintenance activities when authorized.

(b) It includes overhaul or rebuild of end items and modular components.

(c) Repairs which exceed the capability of lower echelon units where special environmental facilities or specific tolerances are required.

(d) Special inspection and modification requiring extensive disassembly or elaborate test equipment.

(e) Manufacturing items not available through Marine Corps supply.

(f) Provides stocks of serviceable equipment for exchange support.

**(On slide #56)**

**TRANSITION:** During this period of instruction you learned about the different levels of maintenance. We then learned how each level is broken down into echelons to further define maintenance responsibilities.

(On slide #57)

Before we go on break does anyone have any questions? I have some questions for you. Q: What echelon of maintenance is the most important? A: 1<sup>st</sup> echelon. Q: What level of maintenance returns equipment to a mission capable status? A: Intermediate level of maintenance. After a ten minute break, we will review engineer equipment.

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(On Slide #58)

(BREAK 10 MIN)

**TRANSITION:** Did you think of any questions while you were on break? If not let's talk about Engineer equipment.

(On slide #59)

### 3. ENGINEER EQUIPMENT (1 hr)

(On Slide #60)

<b>INSTRUCTOR NOTE</b>
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Show picture of a TRAM.
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(On slide #61)

a. TRAM

(1) DESCRIPTION AND FUNCTION

(a) Tractor, Rubber-Tired, Articulated Steering, Multipurpose.

(b) Diesel-powered, four-wheel drive, rubber-tired, articulated steering.

(c) Capable of operating in rough terrain and in up to 60 inches of water.

(d) Outfitted with a 2-1/2 Yard 4-In-1 Multi-Purpose Bucket, a 10,000 pounds Forklift Attachment.

(e) Maximum speed 24 mph (39 km/h)

(f) Manufactured by John Deere Co.

**(On Slide #62)**

**INSTRUCTOR NOTE**

Show picture of an MCT.

**(On slide #63)**

b. **MCT**

(1) DESCRIPTION AND FUNCTION

(a) Diesel-engine driven, militarized crawler type, medium-drawbar pull tractor.

(b) Equipped with Roll Over Protection Structure (ROPS) and Falling Objects Protective Structure (FOPS).

(c) Hydraulically powered semi-U (straight) type blade with a minimum drawbar pull of 35,000 pounds.

(d) Equipped with all components necessary to enable the tractor to function the following attachments: a 3-shank ripper or a rear-mounted winch and drawbar/towing coupler.

(e) Manufactured by John Deere Co.

**(On Slide #64)**

**INSTRUCTOR NOTE**

Show picture of a BACKHOE LOADER.

**(On slide #65)**

c. **BACKHOE LOADER**

(1) DESCRIPTION AND FUNCTION

- (a) Highly mobile, light weight and rubber tired.
- (b) Equipped with a front-end loader and backhoe excavator.
- (c) Capable of operating hydraulic power tools.
- (d) Reaches road speeds in excess of 20 mph.

**(On Slide #66)**

**INSTRUCTOR NOTE**

Show picture of a GRADER.

**(On slide #67)**

**d. GRADER**

(1) DESCRIPTION AND FUNCTION

- (a) Self-propelled grading machine powered by a diesel engine.
- (b) Rubber tires, six-wheel drive and an articulated frame with front-wheel steer design.
- (c) Equipped with a 12' blade with a maximum shoulder reach of 6' outside the wheels and has a minimum lift above ground of 16".
- (d) Reconfigurable to accept an armored cab. The advanced joy stick control system replaces the traditional array of levers and steering wheel, which greatly simplifies motor grader operation by placing total machine, drawbar and moldboard control into both of the operator's hands.
- (e) Applications of the 120M include grading coarse and fine soil, creating low and high bank slopes, flat and V-ditches, scarifying, removing snow and building and maintaining roads and airfields.

**(On Slide #68)**

**INSTRUCTOR NOTE**

Show picture of a KALMAR RT022.

(On slide #69)

e. KALMAR RT022

(1) DESCRIPTION AND FUNCTION

(a) Light Capability Rough Terrain Forklift.

(b) Diesel powered, air transportable used for lifting palletized loads up to 2.2 metric tons or 4,850lbs.

(c) Equipped with a telescopic boom with side shift, tilt, spread and oscillate functions, 2-wheel, 4-wheel, and crab steering modes.

(d) Required to load and unload palletized cargo from trucks, trailers, ships, airplanes and ISO containers

(e) Manufactured by Kalmar.

(On Slide #70)

**INSTRUCTOR NOTE**

Show picture of an MMV.

(On slide #71)

f. SKYTRACK MMV

(1) DESCRIPTION AND FUNCTIONS

(a) Extendable Boom Fork Lift

(b) Military Millennium Vehicle (MMV)

(c) Diesel powered, for lifting loads up to 11,000 pounds.

(d) Air transportable, rough-terrain, self-deployable material handler.

(e) Primary function is to provide operating forces the capability to move/load/unload supplies, equipment, vehicles, containers, palletized cargo from amphibious/merchant

ships, aircraft and vehicles over beaches as well as inland via unimproved/hard surfaces.

**(On Slide #72)**

**INSTRUCTOR NOTE**

Show picture of a 1150.

**(On slide #73)**

g. 1150

(1) DESCRIPTION AND FUNCTION

- (a) Full-tracked, diesel engine driven tractor.
- (b) Hydraulically operated angle blade and winch.
- (c) Air transportable.
- (d) Used for earthmoving and general construction work.
- (e) Manufactured by Case.
- (f) Travels up to 6.3 mph (10 km/h).

**(On Slide #74)**

**INTERIM TRANSITION**: During this period of instruction, you gained information on the characteristics of different pieces of engineer equipment. If there are no questions we will take a break and then move to the bay and you will receive a demonstration on the characteristics of Construction equipment.

**(BREAK 10 MIN)**

**INTERIM TRANSITION**: Are there any more questions before the demonstration?

### **INSTRUCTOR NOTE**

Have students make their way to the maintenance bay to review the equipment within. Have students take breaks as required or as Instructed.

**DEMONSTRATION. (1HR 45 min)** Have the students gather around the bucket loader to explain the articulated steering and the clamshell bucket. Next have the students gather around the grader to explain the articulated frame and how the blade moves for different applications. Next move to the MCT to show how to tilt the cab in order to work on the tractor.

**STUDENT ROLE:** Observe the different characteristics of the construction equipment.

**INSTRUCTOR(S) ROLE:** show and explain all the characteristics on the construction equipment.

**1. Safety Brief: (If applicable)** Give safety brief to students about not jumping off the equipment and utilizing three points of contact when climbing on and off the gear.

**2. Supervision and Guidance:** Be sure to keep all the students in the group and make sure that they are following along.

**3. Debrief: (If applicable)** Now that I have demonstrated the characteristics of the construction equipment located in the bay, you will now know how some of the gear works.

**(On Slide #75)**

**TRANSITION:** During this period of instruction, you gained information on the characteristics of different pieces of engineer equipment. Do you have any questions? **Before we go on break does anyone have any questions? I have some questions for you. Q. How much can the KALMAR RT 022 lift? A. 2.2 metric tons or 4,850 lbs Q. who manufactures the TRAM? A. John Deere.** After a ten minute break, we will take a look at technical publications.

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(On Slide #76)

(BREAK 10 MIN)

**TRANSITION:** Did you think of any questions while you were on break? If not let's talk about technical manuals

(ON SLIDE #77)

4. **References and Forms** (1 hr 30 min)

(On slide #78)

**INSTRUCTOR NOTE**

Blank LTI sheets are located on the shelf in the south east corner of the class room.

a. **Responsibilities**

(1) It is your responsibility to ensure you are using the proper record or form and that you are using it correctly.

(2) TM 4700-15/1 and UM 4790-5 are the references that provide guidance in regards to the use of maintenance records and forms.

(a) TM 4700-15/1 provides instructions for the preparation, use, and disposition of required records and forms.

(b) UM 4790-5 provides functional procedures of the maintenance process.

(On slide #79)

b. **NAVMC 10560**

(1) PURPOSE



(a) Provides a checklist for performing and recording preventive maintenance checks and services (PMCS) and Limited Technical Inspections (LTI).

(b) The equipment owner, user or custodian is responsible for initial preparation to include the heading.

**(On slide #80)**

(2) TYPES

(a) Acceptance LTI's - Performed by maintenance personnel upon receipt of equipment and prior to placing the equipment in service.

(b) LTI's prior to Repair - The equipment chief will ensure that any equipment requiring repairs is inspected and results recorded on the NAVMC 10560 before the equipment is repaired.

(c) Preventive Maintenance - The maintenance unit, with the assistance of the operator performs required services, records them on the NAVMC 10560 and signs the worksheet indicating that the services have been performed.

**(On Slide #81)**

**INSTRUCTOR NOTE**

Show example of the LTI **on slides**. As you go through the slides **discuss** why each block is filled out the way it is.

(3) Section "A" filled out by the equipment dispatcher.

(4) Use Servicing Symbols (SS) to list PMCS requirements.

(a) A - Adjust. Used when an adjustment is required during a PM Service. (Example: D-3 adjust valve mechanism clearance.)

(b) C- Clean. Used to identify requirements for cleaning during the PM Service. (Example: Clean battery box.)

(c) I - Inspect. Used to identify requirements for specific inspection during the PM service. (Example: Inspect brake shoes for wear.)

(d) S - Service. This entry will denote a service requirement such as oil filter / engine oil change. Cleaning the air filter or hydraulic strainers may also be noted with this symbol. (Example: Service hydraulic oil, filter and strainer.)

(e) T - Tighten. This entry will be used when a specific assembly is required to be tightened or torqued. (Example: Torque wheel mounting nuts.)

(5) Use Legend for Marking (SS) to list CM requirements.

(a) N/A - Not applicable to this particular type of equipment. The equipment chief or dispatcher usually marks this off. (Example: D-17 a carburetor is not found on a D-7G.)

(b) M - Missing is self-explanatory. An item that belongs on this piece of equipment is simply not there. (Example: D-21 fuel tank cap is not on the vehicle. You would place an M in the Servicing Symbol Block #21, Section D.)

(c) CHECK-MARK - Satisfactory. The component is present and has no defects or discrepancies. (Example: D-9 the water pump, fan and shroud are in good working order.)

(d) X - Adjustment required. When the repair can be corrected immediately, the mechanic should take the steps to do so. (Example: D-2 valve cover loose.)

(e) XX - Repair required. This marking is used when a part is in need of repair. (Example: D-37 broken wire under dash.)

(f) XXX - Replacement required. This symbol is used when a part has to be replaced. (Example: D-36 front right headlight is out. Replace headlight.)

(g) D - Immediate deadline or D/L. This symbol is used when further operation will cause damage to the equipment and/or the operator. (Example: F-13 the vehicle has no brakes and cannot be stopped safely. This deadlines the unit until the brakes can be repaired.)

(h) U - Unsatisfactory. This symbol is mainly used in Section A. The boxes marked appearance or operator's daily PM.

(i) MR - Modification required. This is just as it reads. A modification has not been completed and is still

required.

(6) Enter information into the header.

(a) Nomenclature - Enter the Nomenclature listed on the Data Plate.

(b) Make - Enter the make or manufacturer of the equipment.

(c) Model - Enter the model number of the equipment.

(d) Organization - Enter the full name of the activity that owns the equipment.

(e) Date - Enter the date the NAVMC 10560 is being prepared.

(f) Hours - Enter the equipment hour meter reading if so equipped, otherwise leave blank.

(g) Miles - Enter odometer reading if so equipped, otherwise leave blank.

(h) Registration No. - Enter the USMC registration number.

(i) Engine Make/Model - Enter the equipment engine make and model. List both engines if applicable.

(j) Engine Serial No. - Enter the equipment's engine serial number. List both engines if applicable.

(k) Attachments - Enter the equipment's attachments nomenclature, make and model and serial number.

(l) Indicate Purpose - Use an "X" to indicate if the NAVMC 10560 is used for:

1 Technical Inspection

2 Limited Technical Inspection

3 Hourly PM - Enter which hour if applicable.

4 Other (state) - List a description.

5 The Legend for marking is used to complete Equipment Record Folder, Publications Available, Appearance, Operators Daily PM, Fire Extinguisher and Tools and Equipment.

(7) SECTION "B"

(a) List all items that are not satisfactory in the (SS) column of Sections "D" - "M".

(b) List all Modification and Technical Instructions that need to be accomplished.

(c) List all items listed in section "B" onto the ERO.

**(On slide #82)**

(8) SECTION "D" through "M"

(a) Section D - Engine and Power Unit

**INSTRUCTOR NOTE**

Explain the servicing symbols marked in this section.

(b) This section is used to check the engine and related components.

(c) The "SS" column is where the Servicing Symbols (SS) or the Legend for Marking (SS) is placed.

**(On slide #83)**

(9) Section E - Power Trains

(a) This section is used for the power trains. U-Joints, gear housings, transmissions, brake shoes/discs and drums.

(10) Section F - Skids / Frame and Suspension

(a) This section is used for the main frame, outriggers, tires and hydraulic cylinders.

**(On slide #84)**

(11) Section G - Attachments / Blades / Cutting Edges

(a) This section is used for attachments, winch cables and cutting edges.

(12) Section H - Pumps and Compressors Water / Hydraulic / Pneumatic

(a) This section is used for separate pumps and compressors. For example: a 250 CFM Air Compressor or a 55 GPM Water Pump.

(b) If this section does not apply it would be lined out.

(13) Section I - Mobile Electric Power Generating Source

(a) This section is for end item generators.

(b) This section will be lined out if it does not apply to the specific piece of equipment.

**(On slide #85)**

(14) Section J - Refrigeration / Air Conditioning

(a) This section is used for refrigeration and air conditioning assemblies. This section would be used for end items also.

(b) This section would be lined out.

(15) Section K - Water Supply Equipment

(a) This section is for water purification units or laundry units.

(b) This section would be lined out.

(16) Section L - Chain and Power Saw

(a) This section would be used when working on chain saws. Special Tool Kits and some Equipment (420 Backhoe) contain chain saws which will require periodic maintenance.

(b) If not applicable this section would be lined out.

(17) Section M - Marine Equipment

(a) This section is used for watercraft and related equipment.

(b) If not applicable this section would be lined out.

**(On slide #86)**

(18) Section N - Modification Instructions

(a) Enter all applicable MI / TI numbers in this block. The Title of the MI / TI is entered in the block immediately following the MI / TI number.

(b) Enter a checkmark in the "Performed" block to indicate if the modification has or has not been performed.

(19) Section O - Instructions

(a) This section contains simple instructions for completing this form.

(b) Number 5 refers you to the Equipment Technical Manual for detailed instructions and service / maintenance requirements for completing this form.

(20) Section P - Signature Block

(a) In the Mechanic / Operator (Name, Grade, Organization) block enter the name, grade and organization of the person preparing sections "B" through "M".

(b) In the Maintenance / Operations Chief (Name, Grade, Organization) block enter the name, grade and organization of the maintenance / operations chief of the mechanic / operator entered in the previous block.

(c) In the Date block enter the date (Julian) the ERO was assigned.

(d) The Maintenance / Operations Officer will sign the appropriate block as required.

(e) The Responsible Officer will sign the appropriate block as required.

**INSTRUCTOR NOTE**

Explain to the students that they are to transfer markings from the "SS" columns to section "B", remarks and recommendations of the LTI sheet.

**(On slide #87)**

(21) GCSS-MC will be used with the NAVMC 10560 to record PMCS and CM services.

(22) Requirements listed in 'Section B' must be transferred to a Service Request.

(23) After the Maintenance Officer / Chief verifies that the requirements have been transferred, the NAVMC 10560 may be destroyed.

**(On Slide #88)**

**INTERIM TRANSITION:** We just finished covering the NAVMC 10560, are there any questions? If not, let's take a break and then move on to the practical application.

**(BREAK 10 MIN)**

**INTERIM TRANSITION:** Are there any questions before the practical application.

**INSTRUCTOR NOTE**

Perform the following practical application. Have students take breaks as required or as instructed.

**PRACTICAL APPLICATION. (1HRS 30 min)** Have the students complete the practical application given to the students from the instructor, on the NAVMC 10560.

**PRACTICE:** Fill out the NAVMC 10560 utilizing your student hand out.

**PROVIDE-HELP:** Tell the students that the problems are marked by red tags and have one instructor with the students on the tractor to make sure that they find all of the problems with the MCT 850JR.

- 1. Safety Brief:** Give a safety brief to the students not to jump off the tractor and to utilize three points of contact when getting on and off the tractor.
- 2. Supervision and Guidance:** Have the students break up into groups and have one instructor with the students while on the tractor, and assist the students as needed.
- 3. Debrief: (If applicable)** Now that we have completed practical applications four, on the NAVMC 10560 you will now be able to properly fill out the NAVMC 10560 when you need to do maintenance on construction equipment.

**INSTRUCTOR NOTE**

Field questions and ask them questions.

(On Slide #89)

**TRANSITION** During this period of instruction, you gained information on the LTI sheet. Do you have any questions? **If not, I have some for you. Q: What are the two references used for records and forms? A: UM 4790.5C and TM 4700-15/1H**  
**Q: What form provides a checklist for performing and recording preventive maintenance checks and services (PMCS) and Limited Technical Inspections (LTI). A: LTI SHEET/NAVMC 10560**

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(On Slide #90)

(BREAK 10 MIN)

**TRANSITION** Did you think of any questions while you were on break? If not let's talk about Parts Manuals.

(On Slide #91)

5. **TECHNICAL MANUAL** (1 hr 30 min)

**INSTRUCTOR NOTE**



**Before starting the class, have the students log on to the computers and open up the TM's so that you can demonstrate how to read and navigate them throughout the class.**

**(On slide #92)**

a. **Introduction**

(1) Every piece of equipment in the Marine Corps utilizes Technical Manuals (TM) and repair parts lists (SL-4, PC, etc.)

(a) These manuals are necessary for performing maintenance and ordering parts.

(b) TMs provide step by step maintenance procedures in order to perform the maintenance accurately and efficiently.

(c) Parts lists provide requisitioning data for every component or item on their associated piece of gear.

**(On slide #93)**

b. **TM**

(1) Ensures the correct action is taken to solve or prevent problems in a timely manner.

(2) TMs provide the mechanic and operator with PMCS, troubleshooting and CM procedures to include:

- (a) Inspections
- (b) Adjustments
- (c) Preventive maintenance intervals
- (d) Troubleshooting and testing
- (e) Removal/installation of parts
- (f) Disassembly/reassembly of components
- (g) Special tools and TMDE

**(On slide #94)**

(3) With new pieces of gear come new technical manuals.

(a) Some may be constructed differently than others but they all cover the same basic concept as previously explained.

(b) New TMs are generally designed by the Manufacturer of the piece of equipment.

1 The Marine Corps adds a "Short Title" and information applicable to our supply system and maintenance procedures.

**(On slide #95)**

(4) Identifying Front Cover Information

**INSTRUCTOR NOTE**

TMs may have a few items in common as far as design but they all provide the same intent. One area they share similarities is on the front cover.

(a) Short Title = TM 11503A-OI/4

1 TM= Indicates this is a Technical Manual

2 11503= Item Designator number (MCT)

3 A= Part of the ID number, indicates model. Lack of model designator means more than one model is covered.

4 OI= This manual covers Organizational (Operator/Crew) and Intermediate (Field) maintenance.

**(On Slide #96)**

**INSTRUCTOR NOTE**

Show example of TM cover pages **on slide**. Also show the students where the short titles are on the manuals in front of them and break it down to show them what each part means.

**INSTRUCTOR NOTE**

Here are cover pages from two different TMs. The one on the left is for an MCT. The one on the right is for an MMV. Note the location of the short title. They both also explain what type of maintenance the technical manual will cover. The two cover pages have their similarities but are also somewhat different. \*Ensure students recognize what they are looking at on their copies of these TMs. Use the MCT TM as an example for the different types of TMs there are.

**(On slide #97)**

(b) The Medium Crawler Tractor utilizes multiple technical manuals to cover various maintenance aspects.

1 Operation and test (TM 11503A-OI/3)

- a. Theories of operation.
- b. Identifying problems using common sense and diagnostic trouble codes.

2 Repair (TM 11503A-OI/4)

- a. Repair of components authorized at maintenance levels indicated in the short title.

3 CTM (Component Technical Manual)

- a. Repair of major assemblies.
- b. Engine, in-depth fuel system and winch.

**(On slide #98)**

c. **How to Read**

(1) The manufacturer TMs seem less inclusive than older Marine Corps TMs but goes farther into detail and are seemingly simpler to read and comprehend. (e.g. Separate manuals for winch, ripper, etc.)

(2) Introductions, safety information and a table of contents are presented within the first section/s of the TM.

**(On slide #99)**

d. **MCT TM**

**INSTRUCTOR NOTE**

Show example of Contents and explain the following. Information is broken down per assembly, not individual parts. They list these in "Sections." Each section is given a numerical value in sequential order. Each value corresponds with a tab on the right hand side of the page. Each section throughout the manual is tabbed in the same vertical position viewed within the table of contents. This black tab is extended to the very edge of each page and is therefore visible with the manual closed. This makes referencing sections quicker and more efficient.

**(On slide #100)**

e. **MMV TM**

**INSTRUCTOR NOTE**

Point out the location of Chapter 3. (For instance) Show them the work package number and page number. Explain to them that Chapter 1 contains General Information. Chapter 2 contains Troubleshooting Procedures. Chapter 3 contains Preventive Maintenance procedures. Chapter 4 contains Organizational Maintenance procedures. Chapter 5 contains Intermediate Maintenance procedures. Chapter 6 contains Supporting information including a full repair parts listing.

(1) Table of Contents

(a) Located in the front of the manual, lists all chapters in the publication.

(b) Chapters divide the manual into major categories of information.

(c) Each Chapter is divided into work packages, which are identified by a 6-digit number (e.g., 0001 00, 0108 00) located on the upper right-hand corner of each page.

(d) If you cannot find what you are looking for in the Table of Contents, refer to the alphabetical Index at the back of the manual.

**(ON SLIDE #101)**

(2) Every piece of equipment in the Marine Corps utilizes Technical Manuals (TM) and repair parts lists (SL-4, PC, etc.)

(a) These manuals are necessary for performing maintenance and ordering parts.

(b) TMs provide step by step maintenance procedures in order to perform the maintenance accurately and efficiently.

(c) Parts lists provide requisitioning data for every component or item on their associated piece of gear.

**(On Slide #102)**

**INTERIM TRANSITION:** Are there any questions before the practical application? If not take a break.

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**(On Slide #104)**

**(BREAK 10 MIN)**

**INTERIM TRANSITION:** If there are no questions let's move onto the practical application.

**INSTRUCTOR NOTE:**

Have students scan through the first section of the MCT TM and stop when they get to the Contents section. Do the same for the MMV TM. Walk the students through the first couple questions from the practical application. Continue until you are confident that they can handle using the TMs on their own.

**INSTRUCTOR NOTE**

Perform the following practical application.

**PRACTICAL APPLICATION. (7 HRS)** Have the student's complete practical application given to the student from the instructor on the Technical Manuals.

**PRACTICE:** Utilize the manuals answer the questions in the student hand out.

**PROVIDE-HELP:** Walk around the classroom and aid the students in finding the information they need to answer their questions.

**1. Safety Brief:** No safety concerns with this class.

**2. Supervision and Guidance:** Walk around the room and assist the students as needed.

**3. Debrief: (If applicable)** Now that we have completed practical applications one, two and three on the technical manuals you will now be able to properly read the manuals when you need to do maintenance on construction equipment.

#### **INSTRUCTOR NOTE**

Instruct students to complete practical applications from the study guide. Allow them a ten minute break every 50 minutes of study time. After they complete each practical application check their answers so that you know that they are doing them properly.

**TRANSITION:** During this period of instruction, you learned about the different types of technical manuals applicable to new and pieces of equipment. You were taught how there are differences that you need to be aware of but that TMs cover similar points. Do you have any questions? If not I have some for you and then we will take a break.

**(On Slide #103)**

Q. What is the number 11503 in the short title? A. the ID number. After a ten minute break, you will return to the classroom and begin the practical applications from your study guides.

**(BREAK 10 MIN)**

**TRANSITION:** Are there any more questions before we talk about GCSS-MC.

(On slide #105)

6. GCSS-MC (30min)

(On slide #106)

a. **Definition:** Global, Combat, Support system - Marine Corps.

(On slide #107)

(1) GCSS-MC is the centerpiece to everything we do as maintenance marines.

(2) It's used to request repairs or services (i.e. working party). As well as order parts, track those parts and record that the part has been either used or stored, once received.

(3) GCSS-MC is also used to open work orders called Service Requests, which is the form used to do all the things mentioned above.

(On slide #108)

(4) GCSS-MC provides the capability to see what equipment needs to be repaired, order parts, identify where the parts are located and who is available to perform the work.

(On slide #109)

b. **FUNCTIONS OF THE SERVICE REQUEST**

(1) Includes but not limited to:

(a) Preventive maintenance ;Maintaining the equipment.

(b) Corrective maintenance ;Repairing the equipment.

(c) SL-3; Replacing items that belong to the equipment (i.e. Tools in a toolbox.)

(d) Modifications ;Adding a modification to a piece of equipment.

(e) Calibration ;Sending an item out to be calibrated.

**(On slide #110)**

c. Groups

(1) Within GCSS-MC the service request header's Group field is used to identify both the unit (i.e. MWSS-172 (UIC: M05172)) and a created platoon code (i.e. HE (heavy equipment platoon)). The examples used when combined within GCSS-MC would be reflected as M05172\_HE.

d. Locators and Sub-inventory

(1) Within the operating forces maintenance shops manage and store authorized quantities of low-cost, fast-moving items (repair parts/common hardware) for mechanics and technicians performing equipment maintenance. The type of storage used, often referred to as a Pre-Expended Bin (PEB or Layette) it is identified within GCSS-MC using the Sub-inventory and Locator code fields.

The Sub-inventory storage code of HE\_LAY would identify that the location for the parts is the HE platoon and they are contained within the layettes.

The Locator code identifies where (i.e. what bin) within the layette/PEB the parts are located at.

**(On slide #111)**

e. Creating a Service Request

**(On slide #112)**

f. Creating a Parts request

**(On slide #113)**



g. Accounting for materials and time

(On slide #114)

**INTERIM TRANSITION:** We just finished talking about GCSS-MC, are there any questions? If not, let's move on to the demonstration.

(On Slide #115)

**INSTRUCTOR NOTE**

Go through the demonstration on creating a service request, Creating a Parts Request and Updating a Service Request utilizing the UPK on GCSS-MC. The GCSS-MC UPK discs and the student handouts are located in the lower left hand drawer of the instructor desk.

**DEMONSTRATION. (45 MIN)** Have the students log on to the computers and input their GCSS-MC disk (located in the instructor desk) and demonstrate to them all of the information that they have to input to **create a service request**. Explain to the students that performing additional keyboard/mouse actions not prescribed in the hand out, and/or entering incorrect data into the Service Request may result in a failing grade on the test.

**STUDENT ROLE:** Observe and follow along how to fill out all of the information within GCSS-MC on creating a Service Request.

**INSTRUCTOR(S) ROLE:** Show and explain how to input all of the information within GCSS-MC.

- 1. Safety Brief: (If applicable)** There are no safety concerns associated with this Demonstration.
- 2. Supervision and Guidance:** Make sure that the students are following along and not just clicking through the UPK.
- 3. Debrief: (If applicable)** Now that I have demonstrated how to fill out the information within GCSS-MC you will now be able to create a service request.

**INTERIM TRANSITION:** We just finished the demonstration, are there any questions? If not, we will take a break and then move on to the practical application.

(10 min Break)

**INTERIM TRANSITION:** Any more questions before the practical application?

**INSTRUCTOR NOTE**

Have the students begin the practical application. The GCSS-MC UPK discs and the student handouts are located in the lower left hand drawer of the instructor desk.

**PRACTICAL APPLICATION. (1 hr )** Have the student's complete practical application given to the students from the instructor, on **creating a service request**. Explain to the students that performing additional keyboard/mouse actions not prescribed in the hand out, and/or entering incorrect data into the Service Request may result in a failing grade on the test.

**PRACTICE:** Utilizing the UPK on the student disk, the practical application LTI worksheet, and the practical application worksheet. Fill out the required entries on the UPK for GCSS-MC on creating a Service Request.

**PROVIDE-HELP:** Tell the students that before they close the debrief form they have to raise their hands so that the instructor can see the grade that the student got on the practical application.

- 1. Safety Brief:** N/A Due to classroom environment.
- 2. Supervision and Guidance:** Field all questions as needed.
- 3. Debrief: (If applicable)** Now that we have completed practical application on opening a service request you will now be able to properly fill out the service request when you need to do maintenance on construction equipment.

**TRANSITION:** We just finished the practical application on creating a service request, are there any questions? If not, I have some for you and then we will take a break.

**Q: What does the acronym GCSS-MC mean? A: Global Combat Support system-Marine Corps. Q: How would you define a locator? A: A Rack, Row or Bin.**

(10 min Break)

**TRANSITION:** Are there any more questions before we talk about Parts Manuals.

(On slide #117)

**7. PARTS MANUAL/SL-3 (1 hr)**

(On slide #118)

a. **Parts Manuals**

(1) John Deere (MCT 850JR)

(a) PC10086 (Parts Catalog)

1 Lists all repair parts and components applicable to the MCT.

(2) JLG (MMV, EBFL)

(a) TM 10794B-OI/A (repair AND parts manual combined)

1 Lists all repair parts and components applicable to the MMV.

(3) SL-3-11668A (GMTK Stock List)

(a) In general, an SL-3 provides a listing of parts and/or components that make an item complete or are to be used with/for an item.

(b) Tool inventories will be conducted using an SL-3.

(On slide #119)

b. **MCT Parts Manual**

(1) PC10086 (MCT Parts Catalog)

(a) Cover page is read in the same manner as the TM.

(b) Pages 00I-2 through 00I-29 (general information and contents).

1 Provide information regarding the equipment's serial numbers, remarks and abbreviations and contains the alphabetical index with page numbers referencing where parts and components are located throughout the manual.

(2) Pages 0131-2 through 4201-10 (parts/components listing).

(a) Provides a listing of parts, components and requisition data.

1 Pages 00II-1 through 00II-21 (Numerical Index).

2 Used to look up part numbers in an alpha-numeric format.

**(On Slide #120)**

**INSTRUCTOR NOTE**

Show example of the Alphabetical Index **on** slide. Each part is listed in alphabetical sequence. The page number is given for each part listed.

**(On Slide #121)**

**INSTRUCTOR NOTE**

Show example of the Parts Listing **on** slide.

(3) This line provides part information and is referenced to the illustration using a key number.

**(On Slide #122)**

**INSTRUCTOR NOTE**

Show example of the Numerical Index **on** slide. Column one displays the part number associated with that particular part. Column two displays the key number; remember the engine from the previous slide? And column three displays the page number the part is located on.

**(On slide #124)**

c. **TM 10794B-OI/A** (MMV repair manual and parts list)

(1) This TM is a repair manual but it also incorporates a full repair parts list for the MMV.

(2) The first section was covered during a previous instruction.

(3) Repair parts are located within Chapter 6. This chapter provides you with references, diagrams, schematics, torque limits, tool ID lists, expendable / durable items list, load rating chart and a repair parts list (on page 0107 00-1).

**INSTRUCTOR NOTE**

Ensure students are able to locate this part of the TM. Turn to the correct page that gives parts information

**(On slide #125)**

(4) The first section of the Repair parts list provides you with general information (Scope) on how to read/understand the information within.

(5) SMR Codes:

(a) It authorizes the requisitioning, issue and disposition of spares and repair parts as indicated by the Source Maintenance and Recoverability (SMR) codes.

(b) These are five digit codes that provide you with the source of the particular part, levels of maintenance authorized to remove, use and replace the part. Who is authorized to repair the part or component and who is authorized to dispose of the item.

**(On slide #126)**

**INSTRUCTOR NOTE**

Break down the code box given below. Explain what page the codes are identified on and how to read/understand each position.

Pg 0107 00-2	0107 00-3		0107 00-4
SOURCE CODE	MAINTENANCE CODE		RECOVERABILITY CODE
XXxxx	xxXXx		xxxxX
1st two positions	3rd position	4th position	5th position
How you get an item.	Who can install, replace or use the item.	Who can do complete repair* on the item.	Who determines disposition action on an unserviceable item.

**(On Slide #127)**

**INSTRUCTOR NOTE**

On slide, show students another breakdown of the codes. Explain to students that PAOZZ is an SMR code and that we are just using it as an example

**(On slide #128)**

**INSTRUCTOR NOTE**

Have students read/understand these codes using the TM, KFOZZ, XBHZZ, PAHZZ, PAFHD

**(On slide #129)**

(6) Just like the SL-3 and the MCT parts manual, this TM provides illustrations of the parts listed.

(7) Lists are composed of functional groups and in installation sequence.

(8) Each group lists parts in ascending figures and item number sequence.

(9) Bulk items and repair parts kits are listed separately in their own functional group.

(10) Items listed are shown on the associated illustrations.

**(On Slide #130)**

**INSTRUCTOR NOTE**

On slide, show students a close up of the repair parts listing. Explain what they see. Click in order to show a blown up view of the listing.

(11) Repair parts list provide requisition data.

(12) The parts are listed within their groups or major assemblies.

**(On slide #131)**

(13) The next section of the parts list is an NSN cross reference.

(a) When a National Stock Number is given, use the NIIN (remove the first four numbers of the NSN) to identify where the part is located in the parts listing by figure and item number.

(b) Used to visually identify parts with a known NSN and to gather requisitioning data and identify components of the SMR code.

(c) Following the NSN cross reference is the Parts number cross reference.

(d) It is read and used for the same reasons as the NSN cross reference.

**(On slide #132)**

d. **Components List**

(1) SL-3-11668A (General Mechanics Tool Kit)

(a) Used to list and identify tools within the kit.

(b) Provides requisitioning data, nomenclature and a inventory checklist.

(c) Illustrations are a part of the SL-3 to further identify tools within the kit.

**(On slide #133)**

(d) The first portion of this SL-3 provides you instructions on the following:

1 How to use the manual and what each column indicates.

2 Components and publications requisitioning information.

3 Special notes on the material contained.

**(On slide #134)**

(2) The next section makes up the majority of the manual.

(a) First provides you with technical data applicable to that particular components list.

(b) Then goes right into the listing.

**(On Slide #135)**

**INSTRUCTOR NOTE**

On slide, show students the illustration and have them identify it in their copies of the SL-3.

(3) Illustrations are given to visually identify each component.

(4) Each component is assigned an item number and is cross referenced to its NSN, identification and unit of measure within the parts listing.

**(On Slide #136)**

**INSTRUCTOR NOTE**

On slide, show students the blown up view of the item number and identification.

(5) Remember the illustration from the previous slide? What was the number given for the safety glasses? Notice the correlation.

(6) There is no NSN given due to the fact that this kit is new and under warranty. The components will be requisitioned through normal supply channels and the manufacturer of the set.

**(On Slide #137)**

**INSTRUCTOR NOTE**

On slide, show students the inventory signature page.

(7) This page provides lines for signatures when inventories of the tool box assigned are conducted. There will be one SL-3 assigned to each tool box and it is the mechanics responsibility to ensure all tools are properly accounted for on a regular basis. This is a supervised event and therefore a line is provided for their signature as well.

**(On Slide #138)**

**INTERM TRANSITION:** This period of instruction covered parts manuals. We discussed the differences between manuals from



different manufacturers and vehicles. Proper use of both is essential for parts ordering accuracy. Are there any questions? If not let's take a break.

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(On Slide #140)

(BREAK 10 MIN)

**INTERIM TRANSITION:** Did you think of any questions while you were on break? If not let's begin your Practical Application.

**INSTRUCTOR NOTE**

Perform the following practical application. Allow students to take breaks as required or as Instructed.

**PRACTICAL APPLICATION. (4 HRS)** Have the students complete practical applications given to the students from the instructor, on the MMV Repair Parts List and the MCT 850JR Parts Catalog.

**PRACTICE:** Answer all the questions located in the study guide on Practical Application numbers five and six.

**PROVIDE-HELP:** Walk around the class room and provide guidance to the students on their Practical Applications.

- 1. Safety Brief:** There is no safety concerns associated with this Practical Application.
- 2. Supervision and Guidance:** Walk around the class room answer questions and provide guidance to the students.
- 3. Debrief: (If applicable)** Now that we have completed practical applications five and six, on the parts manual and the SL-4 you will now be able to properly look up parts so that you can fix construction equipment.

**INTERIM TRANSITION:** Are there any questions on your practical application? If not, we are now going to take a break and then we will talk about creating a parts request within GCSS-MC.

**(BREAK 10 MIN)**

**INTERIM TRANSITION:** Are there any more questions before the demonstration

**INSTRUCTOR NOTE**

Perform the following demonstration.

**DEMONSTRATION. (30 MIN)** Have the students log on to the computers and input their GCSS-MC disk (located in the instructor desk) and demonstrate to them all of the information that they have to input to **create a Parts Requisition**. Explain to the students that performing additional keyboard/mouse actions not prescribed in the hand out, and/or entering incorrect data into the Service Request may result in a failing grade on the test.

**STUDENT ROLE:** Observe and follow along how to fill out all of the information within GCSS-MC on creating a Parts Requisition.

**INSTRUCTOR(S) ROLE:** Show and explain how to input all of the information within GCSS-MC.

- 1. Safety Brief: (If applicable)** There are no safety concerns associated with this Demonstration.
- 2. Supervision and Guidance:** Make sure that the students are following along and not just clicking through the UPK.
- 3. Debrief: (If applicable)** Now that I have demonstrated how to fill out the information within GCSS-MC you will now be able to create a Parts Requisition.

**INTERIM TRANSITION:** Are there any questions about the demonstration? If not, let's move into the practical application.

**INSTRUCTOR NOTE**

Have the students begin the practical application. The GCSS-MC UPK discs and the student handouts are located in the lower left hand drawer of the instructor desk. Allow students to take breaks as required or as Instructed.

**PRACTICAL APPLICATION. (3 HRS)** Have the student's complete practical application given to the students from the instructor, on creating a parts requisition. Explain to the students that performing additional keyboard/mouse actions not prescribed in the hand out, and/or entering incorrect data into the Service Request may result in a failing grade on the test.

**PRACTICE:** Utilizing the UPK on the student disk, the practical application LTI worksheet, and the practical application worksheet. Fill out the required entries on the UPK for GCSS-MC on creating a parts requisition.

**PROVIDE-HELP:** Tell the students that before they close the debrief form they have to raise their hands so that the instructor can see the grade that the student got on the practical application.

1. **Safety Brief:** N/A Due to classroom environment.
2. **Supervision and Guidance:** Field all questions as needed.
3. **Debrief: (If applicable)** Now that we have completed practical application on creating a parts requisition you will now be able to properly fill out the service request when you need to do maintenance on construction equipment.

**INTERIM TRANSITION:** Now that you have learned how to create a parts requisition are there any questions? If not then let's take a break and then we will talk about how to update a service request.

**(BREAK 10 MIN)**

**INTERIM TRANSITION:** Any more questions before the demonstration.

**INSTRUCTOR NOTE**

Perform the following demonstration. Allow students to take breaks as required or as Instructed.

**DEMONSTRATION. (1 hr)** Have the students log on to the computers and input their GCSS-MC disk (located in the instructor desk) and demonstrate to them all of the information that they have to input to update a Service Request. Explain to the students that performing additional keyboard/mouse actions not prescribed in the hand out, and/or entering incorrect data into the Service Request may result in a failing grade on the test.

**STUDENT ROLE:** Observe and follow along how to fill out all of the information within GCSS-MC on updating a Service Request.

**INSTRUCTOR(S) ROLE:** Show and explain how to input all of the information within GCSS-MC.

- 1. Safety Brief: (If applicable)** There are no safety concerns associated with this Demonstration.
- 2. Supervision and Guidance:** Make sure that the students are following along and not just clicking through the UPK.
- 3. Debrief: (If applicable)** Now that I have demonstrated how to fill out the information within GCSS-MC you will now be able to update a Service Request.

**INTERIM TRANSITION:** Now that you have learned how to update a service request are there any questions? If not then let's take a break and then you will update a service request.

**(BREAK 10 MIN)**

**INTERIM TRANSITION:** Any more questions before the practical application.

#### **INSTRUCTOR NOTE**

Have the students begin the practical application. The GCSS-MC UPK discs and the student handouts are located in the lower left hand drawer of the instructor desk. Allow students to take breaks as required or as Instructed.

**PRACTICAL APPLICATION. (1 HRS 30 MIN)** Have the student's complete practical application given to the students from the

instructor, on updating a service request. Explain to the students that performing additional keyboard/mouse actions not prescribed in the hand out, and/or entering incorrect data into the Service Request may result in a failing grade on the test.

**PRACTICE:** Utilizing the UPK on the student disk, the practical application LTI worksheet, and the practical application worksheet. Fill out the required entries on the UPK for GCSS-MC on updating a service request.

**PROVIDE-HELP:** Tell the students that before they close the debrief form they have to raise their hands so that the instructor can see the grade that the student got on the practical application.

- 1. Safety Brief:** N/A Due to classroom environment.
- 2. Supervision and Guidance:** Field all questions as needed.
- 3. Debrief: (If applicable)** Now that we have completed practical application on updating a service request you will now be able to properly fill out the service request when you need to do maintenance on construction equipment.

**TRANSITION:** Now that we are done with the practical application, are there any questions over them? If not than I have one for you. Q: What is the difference between a parts request and a service request? A: Service requests are used to request/track work on a piece of equipment. Parts requests are used to order/track parts requisitions.

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**(BREAK 10MIN)**

**TRANSITION:** Did you think of any questions while you were on break? If not let's begin your Demonstration and Practical Application on the SL-3 in your study guide.

**INSTRUCTOR NOTE**

Perform the following demonstration and practical application.  
Allow students to take breaks as required or as Instructed.

**DEMONSTRATION. (1 HRS)** Have the students gather around the General Mechanics Tool Kit (GMTK) and show them how to fill out the SL-3. Then go through the tools and explain the tools located in the tool kit and what they are used for. **THE PURPOSE OF THIS DEMONSTRATION IS TO SHOW THE STUDENTS HOW TO INVENTORY, CHECK FOR SERVICEABILITY, AND THE PROPER USE OF TOOLS.**

**STUDENT ROLE:** Observe how to fill out the SL-3, and observe the different tools and their purposes so that you can properly inventory tools and use them.

**INSTRUCTOR(S) ROLE:** Show and explain how to inventory the GMTK and identify the tools and what they are used for.

- 1. Safety Brief: (If applicable)** There is no safety concerns associated with this Demonstration.
- 2. Supervision and Guidance:** Make sure that you ask the students what the tools are called while showing them what tools are located in the GMTK.
- 3. Debrief: (If applicable)** Now that I have demonstrated how to fill out the SL-3 that is used for inventorying the GMTK and showed you the different tools and told you what they are used for you will now be able to inventory your tool box and use the tools properly.

**INTERIM TRANSITION:** Now that we have finished the demonstration are there any questions? If not then we will move on to your practical application.

**PRACTICAL APPLICATION. (1 HRS 30 MIN)** Have the students break into three even groups and cover down on a tool box and complete practical applications given to the students by the instructor, on the SL-3. **THE PURPOSE OF THIS PRACTICAL APPLICATION IS TO SHOW THE STUDENTS HOW TO INVENTORY, CHECK FOR SERVICEABILITY, AND THE PROPER USE OF TOOLS.**

**PRACTICE:** Properly conduct an inventory of the GMTK utilizing the SL-3.

**PROVIDE-HELP:** Walk around the class room and make sure that the students are utilizing the correct symbols when they are conducting their inventory.

**1. Safety Brief:** There is no safety concerns associated with this practical application.

**2. Supervision and Guidance:** Make sure that the students are filling out the SL-3 properly, have the students in each group take turns filling out the SL-3, and quiz each group on the names of the tools while they conduct their inventory.

**3. Debrief: (If applicable)** Now that we have completed practical applications seven, on the SL-3 you will now be able to properly fill out the SL-3 and be able to account for the tools that will be issued to you.

**TRANSITION:** During this period we have went over tool box inventory procedures, are there any questions? If not I have a couple for you. Q: When do you inventory your tool box. A: issued tool boxes will be inventoried monthly. Q: what is the legend for inventorying a tool box. A: C-complete, M-missing, I-Incomplete, U-unserviceable. Q: What must you do when inventorying a tool box. A: visually inspect and work all tools to insure proper operation.

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(On slide #141)

**INSTRUCTOR NOTE**

Summarize the TLO and ELOs of Shop Operations

**SUMMARY**

(10 min)

Shop Operations is about keeping the work load responsibilities to those within certain skill levels and tools/parts availability. The Marine Corps maintenance structure defines this. You learned about different pieces of equipment that you

will most likely encounter in your units. In order to work on these pieces of gear, you need to know how. Technical manuals break down the information in a way that guides you through multiple maintenance procedures for your respective level. The work to be performed needs to be annotated somehow. You need to maintain records on every piece of gear to see if there are any potential issues that keep arising. But what if we need parts? You have been instructed on the proper use of parts manuals and supply request forms. So what types of tools should I expect to use? If you remember the "Tool Inventory" conference, your question will be answered. You saw the General Mechanics tool kit, that is field with most of the tools you will use on a day to day basis. You should by now have the knowledge to successfully complete the remainder of this course.

**(BREAK 10MIN)**