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**UNITED STATES MARINE CORPS
WEAPONS TRAINING BATTALION
MARINE CORPS COMBAT DEVELOPMENT COMMAND
QUANTICO, VIRGINIA 22134-5040**

DETAILED INSTRUCTOR GUIDE

LESSON TITLE

M16A2 SERVICE RIFLE PREVENTIVE MAINTENANCE

COURSE TITLE

SUSTAINMENT LEVEL RIFLE MARKSMANSHIP (PHASE I, II, III)



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UNITED STATES MARINE CORPS
Weapons Training Battalion
Marine Corps Combat Development Command
Quantico, Virginia 22134-5040

INSTRUCTOR PREPARATION CHECKLIST

ESSENTIAL DATA

LESSON DESIGNATOR	SLR.2
LESSON TITLE	M16A2 Service Rifle Preventive Maintenance
DATE PREPARED	1 October 1999
TIME	45 min
METHOD	Lecture, demonstration, and practical application
LOCATION	Indoor/outdoor classroom
INSTRUCTORS REQUIRED	One Primary Marksmanship Instructor (PMI) and Range Coaches as necessary
REFERENCES 05538C-10/1	MCRP 3-01A and TM
TRAINING AIDS/EQUIPMENT	M16A2 service rifle with sling, magazines, cleaning kit, CLP, and rags



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DETAILED OUTLINE

M16A2 SERVICE RIFLE PREVENTIVE MAINTENANCE

INTRODUCTION
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1. **GAIN ATTENTION.** Your service rifle must be maintained in a state of operational readiness at all times. It is imperative to become familiar with its weaknesses, strengths, parts, and accessories and to guard it against damage caused by the environment. Following correct preventive maintenance procedures reduces the likelihood of stoppages, maintains mechanical accuracy, and extends the service life of the rifle.
2. **OVERVIEW.** This lesson will cover limited preventive maintenance, lubrication prior to firing, cleaning in abnormal conditions, and user serviceability inspection.
3. **INTRODUCE LEARNING OBJECTIVES.** The Terminal Learning Objective and Enabling Learning Objectives pertaining to this lesson are as follows:
 - a. **TERMINAL LEARNING OBJECTIVE.** Given an M16A2 service rifle, cleaning gear, and lubricants, without the aid of references, perform preventive maintenance on the rifle IAW TM 05538C-10/1A and MCRP 3-01A. (PVTX.11.2)
 - b. **ENABLING LEARNING OBJECTIVES**
 - 1) Given an M16A2 service rifle, cleaning gear, and lubricants, without the aid of references, conduct limited preventive maintenance of the rifle IAW TM 05538C-10/1A and MCRP 3-01A. (PVTX.11.2a)
 - 2) Given an M16A2 service rifle, cleaning gear, and lubricants, without the aid of references, lubricate the rifle prior to firing IAW TM 05538C-10/1A and MCRP 3-01A. (PVTX.11.2b)
 - 3) Given an M16A2 service rifle, cleaning gear, and lubricants, without the aid of references, clean the rifle in abnormal conditions IAW MCRP 3-01A. (PVTX.11.2c)
 - 4) Given an M16A2 service rifle, without the aid of references, perform a user serviceability inspection of



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the rifle IAW MCRP 3-01A. (PVTX.11.2d)



4. METHOD. This lesson will be taught in a classroom setting using lecture, demonstration, and practical application.

5. EVALUATION. Preventive maintenance is routinely evaluated throughout live fire exercises.

TRANSITION: Rifle maintenance in the field must be practiced on a daily basis. The rifle should be inspected daily for evidence of rust and overall serviceability. A clean, properly lubricated, well-maintained rifle will fire when needed. Preventive maintenance is a continuous effort.

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INSTRUCTOR'S NOTE: *Demonstrate the procedures in this lesson as they are explained.*

1. (5 MIN) LIMITED PREVENTIVE MAINTENANCE

Limited preventive maintenance includes the following steps:

a. Disassembly

- 1) Place the rifle in Condition 4.
- 2) Break the rifle down shotgun style by removing the rear takedown pin.
- 3) Remove the bolt carrier group. Do not disassemble the bolt carrier group further.

b. Procedures for Cleaning the Rifle Bore in a Field Environment

- 1) Assemble the cleaning rod and attach the bore brush.
- 2) Soak the bore brush with CLP.
- 3) Push the bore brush completely through the barrel from the chamber end.

CAUTION

Push the bore brush from the chamber completely through the bore and compensator before pulling the bore brush back through the bore. Do not attempt to pull the brush back before it has cleared the



muzzle. To do so may cause the bore brush to become lodged in the bore.

- 4) Draw the bore brush back through the bore until it clears the chamber. Repeat this process as necessary to remove all carbon and fouling from the bore.
- 5) Remove the bore brush from the cleaning rod and attach the patch holder.
- 6) Push the patch from the chamber end all the way through the muzzle. Remove the patch from the patch holder.
- 7) Pull the cleaning rod back through the bore. Run additional patches through the bore as necessary until the patch comes out clean.

c. Procedures for Cleaning the Rifle Chamber in a Field Environment

- 1) Attach the chamber brush to the handle section of the cleaning rod.
- 2) Insert the chamber brush into the chamber.
- 3) Twist the chamber brush clockwise while at the same time pushing and pulling the brush into and out of the chamber.
- 4) Remove residue from the chamber area with a patch on the cleaning rod.

d. Amphibious Operations. If the weapon has come into contact with salt water, wash the weapon with fresh water. As soon as the situation permits, perform detailed cleaning of the weapon in accordance with TM 05538C-10/1A.

Confirm by questions.

TRANSITION: Lubrication is performed as part of the detailed procedure for preventive maintenance. Lubrication procedures are also performed in preparation for firing.



2. (2 MIN) LUBRICATING THE M16A2 SERVICE RIFLE PRIOR TO FIRING

When firing daily, perform the following lubrication on the rifle:

- a. Lubricate the gas rings in the bolt carrier by placing a few drops of CLP in the exposed holes of the bolt carrier. This will keep the bolt moving freely inside the bolt carrier.
- b. Lightly coat the outside of the bolt carrier with CLP to keep the bolt carrier moving freely in the receiver.
- c. Lubricate the trigger mechanism to keep the trigger pull consistent and smooth.

Confirm by questions.

TRANSITION: Combat situations can place Marines in a variety of climates. Therefore, it is important to know how to take care of the rifle in any environment.

3. (10 MIN) CLEANING THE M16A2 SERVICE RIFLE IN ABNORMAL CONDITIONS

The climatic conditions in various locations require special knowledge about cleaning and maintaining the rifle. The conditions that will affect the rifle the most are: hot, wet tropical; hot, dry desert; arctic or low temperature; and heavy rain and fording.

- a. Hot, Wet Tropical Climate
 - 1) Perform normal maintenance.
 - 2) Clean and lubricate your rifle more often. Inspect hidden surfaces for corrosion. Pay particular attention to spring-loaded detents.
 - 3) Use lubricant more liberally.
 - 4) Empty and check the inside of the magazine more frequently. Wipe dry and check for corrosion.
 - 5) When practical, keep the rifle covered.



b. Hot, Dry Desert Climate. Hot dry climates are usually areas that contain blowing sand and fine dust. Dust and sand will get into the rifle and magazines, causing stoppages. It is imperative to pay particular attention to the cleaning and lubrication of the rifle in this type of climate.

- 1) Corrosion is less likely to form in these environments, and lubrication will attract more dirt. For this reason, use lubrication more sparingly.
- 2) Whenever practical, keep the rifle covered.

c. Arctic or Low Temperature Climate. Clean and lubricate the rifle in a warm room, with the rifle at room temperature, if possible. Lubricating Oil, Arctic Weapons (LAW) can be used below a temperature of zero degrees Fahrenheit and must be used below -35 degrees Fahrenheit.

- 1) Keep the rifle covered when moving from a cold to a warm environment to prevent condensation or from a warm to a cold environment to prevent freezing.
- 2) Condensation will form on the rifle when it is moved from outdoors to indoors. If possible, leave the rifle in a protected but cold area outdoors. When bringing the rifle inside to a warm place, it should be disassembled and wiped down several times as it warms.
- 3) Always try to keep the rifle dry.
- 4) Unload and hand function the rifle every 30 minutes, if possible, to help prevent freezing of functional parts.
- 5) Do not lay a warm rifle in snow or ice.
- 6) Keep the inside of the magazine and ammunition wiped dry. Moisture will freeze and cause stoppages.

d. Heavy Rain and Fording Operations

- 1) When practical, keep the rifle dry and covered.
- 2) Always try to keep water out of the barrel. If water does get in, drain and (if possible) dry with a patch. It is necessary when water is in the barrel to break the seal by pulling back slightly on the charging handle so the water will drain. Make sure the drain hole in the stock is clear so the water can run out.
- 3) Perform normal maintenance.



Confirm by questions.

TRANSITION: The procedures for the care and cleaning of the M16A2 service rifle will help keep the rifle in a serviceable condition and combat ready. The function check completes preventive maintenance of your rifle; a user serviceability inspection is conducted any time prior to firing to ensure the rifle is in an acceptable operating condition.

4. (23 MIN) USER SERVICEABILITY INSPECTION

INSTRUCTOR'S NOTE: Use the EDIP technique to instruct the user serviceability inspection:

1. Explain each step.
2. Demonstrate each step.
3. Allow students to imitate that step as you explain it one more time.
4. After all steps are explained, demonstrated, and imitated, allow time for students to practice the entire procedures on your command.
5. Allow students approximately 15 minutes of practice time or until they are proficient in the technique.
6. Fault check student performance of the techniques. Enforce safety precautions.

a. Function Check. A function check is performed to ensure the rifle operates properly after the weapon has been reassembled. To perform a function check:

- 1) Ensure the magazine is removed, the chamber is empty, the bolt is forward, the safety is on, and the ejection port cover is closed.
- 2) Pull the charging handle to the rear and release. Ensure the selector lever is on SAFE and pull the trigger. The hammer should not fall.
- 3) Place the selector lever on SEMI. Pull the trigger and hold it to the rear. The hammer should fall. Pull the charging handle to the rear and release. Release the trigger and pull again. The hammer should fall.



- 4) Pull the charging handle to the rear and release. Place the selector lever on BURST. Pull the trigger and hold it to the rear. The hammer should fall. Pull the charging handle to the rear three times and release. Release the trigger and pull again. The hammer should fall.
- 5) Pull the charging handle to the rear and release. Place the selector lever on SAFE.

b. User Serviceability Inspection. This inspection is performed prior to firing to ensure the rifle is in an acceptable operating condition. This inspection is done prior to any combat operation such as a patrol, being posted, etc. This inspection does not replace a Limited Technical Inspection (LTI) or pre-fire inspection conducted by a qualified armorer. To perform a user serviceability inspection:

- 1) Conduct a function check.
- 2) Check the rifle to ensure the following:
 - a) The compensator is tight.
 - b) The barrel is tight.
 - c) The front sight post is straight.
 - d) The front sight post is adjustable.
 - e) The handguards are serviceable.
 - f) The rear sight elevation and windage knobs are adjustable and have distinct clicks.
 - g) The stock is tight on the lower receiver.
 - h) The weapon is properly lubricated for operational conditions.
 - i) The barrel is clear of obstructions.
 - j) The sling keeper can be adjusted and secured.
- 3) Ensure magazines are serviceable.
 - a) Load the rifle with an empty magazine. Ensure that the magazine can be seated.
 - b) Without depressing the bolt catch, pull the charging handle to the rear. Ensure that the bolt locks to the rear.



- c) Depress the upper portion of the bolt catch and observe the bolt moving forward on an empty chamber. Ensure the bolt moves completely forward and locks in place.
- d) Repeat this procedure with all magazines.

Confirm by questions and practice.

TRANSITION: A Marine must learn to inspect his weapon for user serviceability before firing it to prevent damage to the weapon, or harm to himself or other Marines.

OPPORTUNITY FOR QUESTIONS:
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1. Respond to questions from the class.
2. Prompt Marines with questions to the class.
 - a. QUESTION: When must Marines perform user serviceability inspections on their weapons?

ANSWER: This inspection is done prior to any combat operation such as a patrol, being posted, etc. It must also be conducted prior to live fire training.

- b. QUESTION: What is the authorized lubricant for the M16A2 service rifle in extreme cold/arctic conditions?

ANSWER: LAW (Lubricating Oil, Arctic Weapons) may be used in temperatures below zero degrees Fahrenheit and must be used at temperatures below -35 degrees Fahrenheit.

INSTRUCTOR'S NOTE: Ask Marines as many questions as necessary to ensure they fully understand the material presented in this lesson.

SUMMARY:
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The objective of any conflict is control of the ground and the people on it. The rifle is the primary means to accomplish this mission and must therefore be maintained in a serviceable condition. This lesson covered limited preventive maintenance, lubrication, maintenance in abnormal conditions, and user serviceability inspection. A properly maintained rifle reduces the likelihood of stoppages and maintains the



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accuracy of the rifle, thereby improving combat readiness.