TECHNICAL MANUAL
OPERATOR’S MANUAL
FOR
MULTIPLE INTEGRATED LASER
ENGAGEMENT SYSTEM
(MILES)
SIMULATOR SYSTEM, FIRING, LASER: M77
NSN 1265-01-154-9887
FOR
CHAPARRAL WEAPON SYSTEM

HEADQUARTERS, DEPARTMENT OF THE ARMY
OCTOBER 1984
REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Armament, Munitions and Chemical Command, ATTN: AMSMC-MAS, Rock Island, IL 61299-6000. A reply will be furnished to you.

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CHAPTER 1
INTRODUCTION

SECTION I. GENERAL INFORMATION

SCOPE

TYPE OF MANUAL. This manual shows you how to install, checkout, align, operate, and maintain the Multiple Integrated Laser Engagement System (MILES) Air-to-Ground Engagement System/Air Defense (AGES/AD), M77. for the CHAPARRAL weapon system.

This manual covers only authorized operator maintenance. Any maintenance problems not covered should be referred to organizational maintenance personnel.

NOTE

To use this manual you should be able to:

Operate, boresight, aim and fire the CHAPARRAL weapon system (see TM 9-1425-1586.10).

Complete DA Forms 2402 and 2404.

If you cannot do these tasks, ask your NCOIC or Instructor to show you how. When you can do all these tasks, go on with this manual.

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PURPOSE OF EQUIPMENT. MILES AGES/AD equipment for the CHAPARRAL Weapon System consists of a laser transmitter and a detector system. It permits realistic combat training without the hazards of using live ammunition.

LIMITATION ON EQUIPMENT. MILES-equipped weapons have the same range and operational capabilities as the normal weapons but a dirty laser transmitter lens may reduce the effective range of the transmitters.

MAINTENANCE FORMS AND RECORDS. Department of the Army forms and procedures used for equipment maintenance are those as prescribed in DA PAM 738-750, The Army Maintenance Management System (TAMMS).

HAND RECEIPT MANUAL. This manual has a companion document with a TM number followed by HR” (which stands for Hand Receipt). The TM 9-1265-208-10-HR consists of preprinted hand -receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must account for. As an aid to property accountability, additional HR manuals may be requisitioned from the following source in accordance with procedures in Chapter 3, AR 310-2.

Commander
The U.S. Army Adjutant General Publications Center
2800 Eastern Boulevard
Baltimore, MD 21220

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIRs). If your MILES equipment for the Chaparral Weapon System needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don’t like about your equipment. Let us know why you don’t like the design or performance. Put it on an SF 368 (Quality Deficiency Report). Mail the Quality Deficiency Report to us at Commander, U.S. Army Armament, Munitions and Chemical Command, ATTN: AMSMCQAD, Rock Island, IL 61299-6000. We’ll send you a reply.

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REFERENCE INFORMATION
This listing includes the Nomenclature Cross Reference List. List of Abbreviations, and an explanation of terms (glossary) used in this manual

### NOMENCLATURE CROSS REFERENCE LIST

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Official Nomenclature</th>
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<tbody>
<tr>
<td>Adapter Set</td>
<td>Adapter Set, Simulator System, Laser: CHAPARRAL</td>
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<tr>
<td>ATWESS</td>
<td>Antitank Weapons Effect Signature Simulator</td>
</tr>
<tr>
<td>Battery Box</td>
<td>Battery Box Assembly</td>
</tr>
<tr>
<td>Chaparral Simulator System</td>
<td>Simulator System, Firing Laser: CHAPARRAL Weapon</td>
</tr>
<tr>
<td>Control Indicator Assembly (CIA)</td>
<td>Console Simulator System, Laser: For M113 APC</td>
</tr>
<tr>
<td>Detector Belt</td>
<td>Detector Belt Assembly. Segment No. 1; Segment No. 2.</td>
</tr>
<tr>
<td>Interface Control Assembly (ICA)</td>
<td>Console, Simulator System. Laser: Vehicle Interface</td>
</tr>
<tr>
<td>Kill Indicator (CVKI) KILL/HIT/MISS</td>
<td>Indicator, Simulator System, Laser: Combat Vehicle</td>
</tr>
<tr>
<td>Laser Transmitter CHAPARRAL</td>
<td>Transmitter Assembly, Simulator System. Laser: CHAPARRAL</td>
</tr>
<tr>
<td>Rail Assembly</td>
<td>Rail Assembly. Simulator System. Laser: CHAPARRAL</td>
</tr>
<tr>
<td>WESS</td>
<td>Simulator, Weapon Fire, CHAPARRAL</td>
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### LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AGES/AD</td>
<td>Air-to-Ground Engagement System/Air Defense</td>
</tr>
<tr>
<td>ATWESS</td>
<td>Antitank Weapons Effect Signature Simulator</td>
</tr>
<tr>
<td>CIA</td>
<td>Control Indicator Assembly</td>
</tr>
<tr>
<td>ICA</td>
<td>Interface Control Assembly</td>
</tr>
<tr>
<td>MILES</td>
<td>Multiple Integrated Laser Engagement System</td>
</tr>
<tr>
<td>PMCS</td>
<td>Preventive Maintenance Checks and Services</td>
</tr>
<tr>
<td>WESS</td>
<td>Weapons Effect Signature Simulator</td>
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ATWESS  Pyrotechnic device used to simulate backblast, flash, noise, and smoke of a CHAPARRAL missile firing.

ATWESS Cartridge  Explosive round used in ATWESS.

Combat Vehicle Kill Indicator  MILES device attached to vehicles to provide external flashing light. Indicates that vehicle is under opposing fire ("NEAR MISS"). Has been "HIT," or "KILLED."

Control Indicator Assembly (CIA)  Receives detected laser pulse signals from detector belts. Decodes these signals and activates appropriate audio and visual alarms associated with the CVKI and intercom. Displays information on attacking weaponry.

Controller  Umpire or Referee in a MILES training exercise.

Controller Gun  Device used to test MILES detector systems. Also used to disqualify soldiers or vehicles from an exercise.

Controller Key  Green key used by Controller to reset MILES transmitters and control consoles.

Fastener Tape  Hook and pile tape. Used to hold vehicle detector belts and other MILES equipment in place.

HIT  Simulated contact with opposing fire insufficient to disable vehicle or cause a fatality.

Interface Control Assembly (ICA)  Contains electronic circuitry to activate the laser transmitter when the weapon trigger is pressed.

KILL  Simulated contact with opposing fire sufficient to disable vehicle or cause a fatality.

Laser  Light Amplification by Stimulated Emission of Radiation

Laser Beam  Invisible beam of light which simulates weapon fire.

Laser Detector Assembly  Device that senses laser beams directed at it.

Laser Transmitter  Device that sends a laser beam.

MILES  Multiple Integrated Laser Engagement System. MILES consists of a laser transmitter and a detector system. It permits realistic combat training without the hazards of using live ammunition.
NEAR MISS
Simulated closeness to contact with opposing fire.

Simulator
Training device which takes the place of real equipment and which has many of its characteristics.

Orange Weapon Key
Activates ICA. Silences vehicle intercom when inserted in Control Indicator Assembly. Also used to "SELF-KILL" vehicle.

WESS
An ATWESS array. Pyrotechnic device used to simulate backblast, flash, noise, and smoke of a CHAPARRAL missile firing.
SECTION II. EQUIPMENT DESCRIPTION

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

PURPOSE OF MILES SIMULATOR SYSTEM, LASER: CHAPARRAL WEAPON SYSTEM

The MILES Simulator System, Laser: CHAPARRAL Weapon System, permits the vehicle to take part in realistic combat training exercises. Actual firing conditions of all vehicle weaponry is simulated using laser beams. ATWESS firing devices add to the system's realism.

Laser detectors mounted on the CHAPARRAL Weapon System sense enemy fire. MILES system electronics determine the accuracy and simulated damage of enemy fire. The system also detects the type of weapon directing enemy fire against the CHAPARRAL Weapon System.

FEATURES AND CAPABILITIES

- Easily installed and removed.
- Simulates firing capability of CHAPARRAL Weapon System.
- ATWESS firing devices add realism.
- Normal firing procedures used for weaponry.
- Detects all opposing fire.

1. Attacking weapon accuracy
   a. "NEAR MISS"
   b. "HIT"
   c. "KILL"

2. Attacking weapon identification
   - Uses eye safe battery-powered laser transmitters.
   - Operates in temperatures from -350C (-31°F) to 62°C (144°F).
   - Compatible with all other MILES training devices.
   - High visibility CVKI strobe light signals CHAPARRAL "NEAR MISS," "HIT," or "KILL."

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