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TECHNICAL MANUAL

OPERATOR'S MANUAL

FOR

MULTIPLE INTEGRATED LASER

ENGAGEMENT SYSTEM,

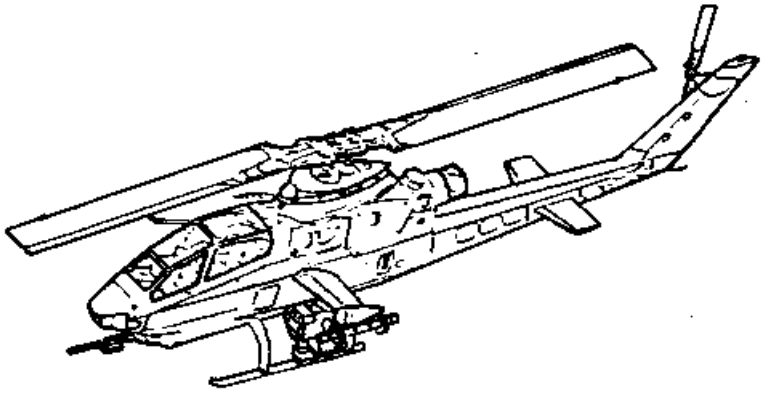
(MILES)

SIMULATOR SYSTEM, FIRING, LASER: M80

AH-1S ATTACK HELICOPTER

WEAPON SYSTEM

NSN 1270-01-165-6240



HEADQUARTERS, DEPARTMENT OF THE ARMY

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TECHNICAL MANUAL
No. 9-1 270-223-10

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., October 9, 1984

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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, IL61299-6000. A reply will be furnished to you.

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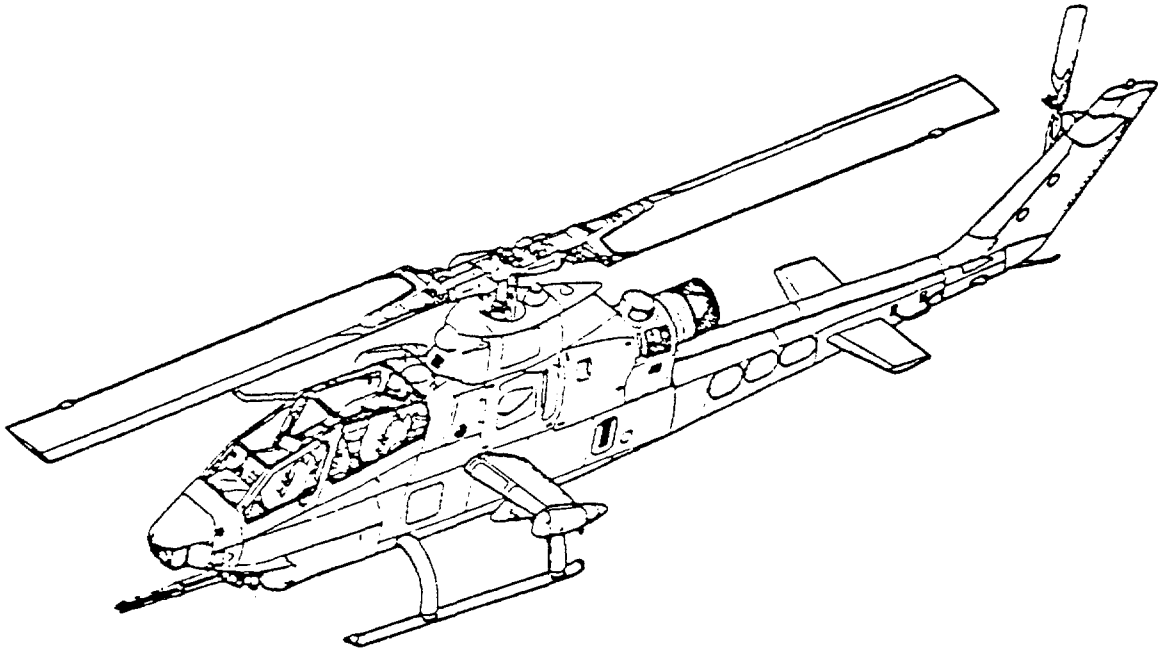
CHAPTER 1

INTRODUCTION

SECTION I. GENERAL INFORMATION



SCOPE

TYPE OF MANUAL. This Technical Manual shows you how to install, operate. and maintain Multiple Integrated Laser Engagement System (MILES)/Air-to-Ground Engagement System/Air Defense (AGES/AD) equipment for the AH-1S Attack Helicopter. Step-by-step instructions are given for all procedures necessary to use the MILES system.

This manual covers only authorized Operator maintenance. Any maintenance problems not covered should be referred to organizational ("0" Level) maintenance personnel.

NOTE

To use this Technical Manual you should be able to:

Energize and operate the AH-1S Attack Helicopter electronics.

Boresight, aim, and fire all AH-1S Attack Helicopter weapons in accordance with TM 55-1520-236-10.

Complete DA Forms 2402 and 2404.

If you are unable to do the above tasks, ask your NCOIC or Instructor to show you how and continue with this manual.

PURPOSE OF EQUIPMENT. MILES AGES/AD equipment for the AH-1S Attack Helicopter consists of three battery-operated laser transmitters 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 a transmitter.

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 9-1270-223-10-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 AH-1S Attack Helicopter 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: DRSMC-MAO(R), Rock Island, IL 61299. We'll send you a reply.

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

Common Name	Official Nomenclature
Adapter Set	Adapter Set, Simulator System. Laser: For AH-1S Attack Helicopter
AH-1S Helicopter Simulator	Simulator System. Firing Laser: M80 for AH-1S Attack Helicopter
Aircraft Kill Indicator (AKI)	Indicator, Simulator System. Laser: Aircraft KILL/HIT/MISS
Aircraft Loaders Control Assembly	Adapter Assembly. Simulator System. Laser: Console (ALCA)
Battery Box	Battery Box Assembly
Cockpit Kill Indicator (CKI)	Adapter Assembly. Cockpit Kill Indicator
Controller Gun	Controller Gun, Simulator System. Laser
Detector Belt	Detector Belt Assembly. Aircraft Segment No. 1
FLASHWESS	Adapter Assembly. Simulator. Weapon Fire
Launch Rack Detector	Detector Assembly: TOW Launch Rack
Launch (ATWESS)	Launcher Assembly. Simulator System. Laser: Aircraft Weapon
Smoke Indicator	Indicator. Simulator System Laser: Smoke
TOW Programmer Control Panel	Control Panel. Simulator System. Laser: TOW Program Interrupt
TOW Transmitter	Transmitter Assembly, Simulator System. Laser: Airborne TOW
Trigger Test Interface (TTI)	Trigger Test Interface Assembly, Launcher
TSU-Alignment	Control Assembly, Simulator System, Laser: TOW-TSU Alignment
2.75 Transmitter	Transmitter Assembly, Simulator System, Laser: 2.75-Inch Rocket
20 mm Transmitter	Transmitter Assembly, Simulator System, Laser: 20 mm Cannon

LIST OF ABBREVIATIONS

AGES/AD	Air-to-Ground Engagement System/Air Defense
AH-1S	Attack Helicopter
AKI	Aircraft Kill Indicator
ALCA	Aircraft Loaders Control Assembly
ALT	Airborne Laser Tracker
APU	Auxiliary Power Unit
ATWESS	Antitank Weapons Effect Signature Simulator
CKI	Cockpit Kill Indicator
ECAS	Enhanced Cobra Armament System
IR	Infrared Radiation
MILES	Multiple Integrated Laser Engagement System
MRAD	Multiple Range Alignment Device
MWLD	Man Worn Laser Detector
PMCS	Preventive Maintenance Checks and Services
RMS	Rocket Management System
TCP	TOW Control Panel
TOW	Tube Launched. Optically Tracked. Wire Guided Missile System
TSU	Telescopic Sight Unit
TTI	Trigger Test Interface
WESS	Weapons Effect Signature Simulator

GLOSSARY

Aircraft Loaders Control Assembly	Receives detected laser pulse signals from detector belts. Decodes these signals and activates appropriate audio and visual alarms associated with the AKI/Smoke device and CKI. Contains programming for TOW/TSU transmitter.
Aircraft Kill Indicator (AKI)	Provides external flashing signal light which indicates that helicopter is under opposing fire ("NEAR MISS"). has been "HIT" or "KILLED." Attaches to left skid.

GLOSSARY (Continued)

ATWESS	Device installed in the rocket pod of AH-1S to provide simulated backblast, flash, noise, and smoke of a TOW firing.
ATWESS Cartridge	Pyrotechnic round used in ATWESS.
Cockpit Kill Indicator (CKI)	Contains electronic circuitry that activates AKI and intercom warning signals. Also contains a key receptacle for testing and activating system and an emergency system OFF switch. Located in cockpit.
Detector Assembly	Device which senses laser beams directed at it.
HIT	Simulated contact with opposing fire insufficient to disable vehicle or cause a fatality.
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 the laser beam.
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.
Smoke Indicator	Contains a smoke grenade that is ignited when the AH-1S has been "KILLED." Attaches to left skid adjacent to AKI.
Weapon Key	Used for the following: Reset/Initialize the 20 mm Interface, the CKI, and the 2.75-inch Rocket System. Resets and silences the alarm on the ALCA, and the MWLD. Selects the TOW Weapon System load lines.

SECTION II. EQUIPMENT DESCRIPTION

EQUIPMENT CHARACTERISTICS. CAPABILITIES, AND FEATURES

PURPOSE OF MILES SIMULATOR SYSTEM, LASER: AH-1S HELICOPTER

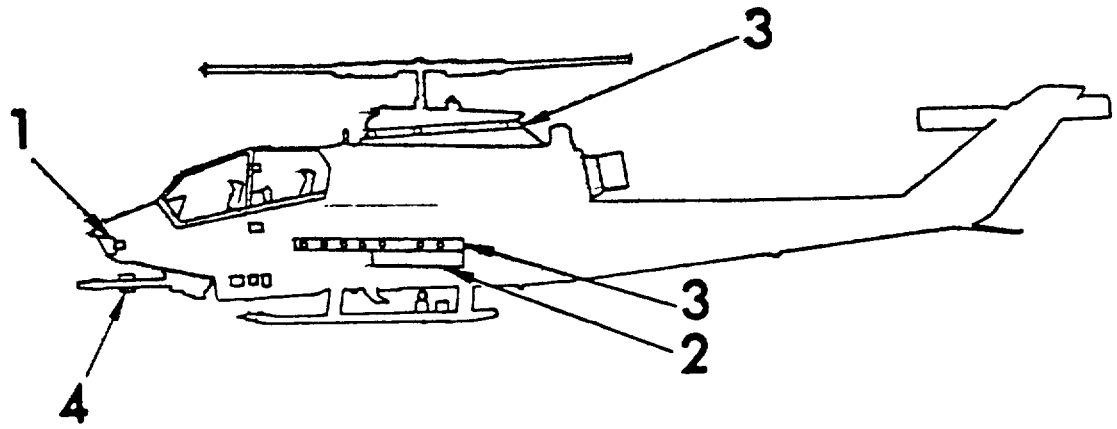
The MILES Simulator System, Laser: AH-1S Attack Helicopter, permits the helicopter and crew to take part in realistic combat training exercises. Actual firing conditions of all helicopter weaponry is simulated using laser beams. FLASHWESS and ATWESS devices add to the system's realism.

Laser detectors mounted on the AH-1S exterior sense enemy fire. MILES system electronics determines the accuracy and simulated damage of enemy fire. The system also detects the type of weapon directing enemy fire.

FEATURES AND CAPABILITIES

- Easily installed and removed.
- Simulates firing capability of AH-1S Attack Helicopter weapons.
    1. 2.75-inch Rocket Launcher
    2. TOW missile
    3. 20 mm Cannon
- FLASHWESS and ATWESS devices add realism.
- Normal firing procedures used for all weapons.
- 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 -35°C (-31°F) to 62°C (1440F).
- Compatible with all other MILES training devices.
- High visibility AKI strobe and smoke indicator light signals vehicle "NEAR MISS", "HIT" or "KILL."

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS



***TOW/TSU Laser Transmitter* (1).** Simulates firing effects of the airborne TOW weapon by transmitting a special coded laser signal. Factory installed inside Telescopic Sight Unit (TSU) during aircraft assembly.

***Antitank Weapons Effect Signature Simulator (ATWESS)* (2).** Provides flash, smoke, and noise to simulate the firing effects of the airborne TOW missile. Four ATWESS devices are located in each of the externally-mounted launchers.

***Detection System* (3).** Receives laser pulses from MILES-equipped opposing weapons. Generates, amplifies, and routes electrical signals to the ALCA. Built-in microelectronics determine if the weapon that transmitted the signal can disable the AH-1S and whether the signal is a HIT, KILL, or NEAR MISS. Detectors are attached to the sail belt, TOW launch racks, and on bottom and rear of launchers.

***20 mm Cannon Laser Transmitter* (4).** Simulates firing effects of 20 mm Cannon by transmitting a coded laser signal. Located on the Chin Turret weapon.