Chapter 7

Training Devices and Aerial Targets

This chapter discusses training devices and aerial targets available to support Air Defense Artillery systems. The best weapon system in the world is useless without highly trained operators and maintainers. Training devices promote and maintain operator, maintainer, and gunner skills and proficiency while shortening training time and saving resources. Training devices can be simulators, interactive mockups, virtual modeling, static equipment maintenance trainers, and aerial targets. Aerial targets are used to train gunners and crews during gunnery training and systems qualifications.

MANPADS STINGER TRAINING DEVICES

7-1. A number of training devices support Stinger training. Described in the following paragraphs are:

- Field Handling Trainer (FHT)
- Tracking Head Trainer Set (THT)
- Stinger Troop Proficiency Trainer (STPT)
- Improved Moving Target Simulator (IMTS)

STINGER FIELD HANDLING TRAINER

7-2. The Stinger Field Handling Trainer (FHT) is used at the unit level and service schools. The Stinger gunner uses the FHT to practice manual skills of weapon handling, operations, sighting and ranging. The FHT can be used to visually track live aircraft or remotely piloted vehicle target system (RPVTS). It allows the gunner to practice mating and removal of the gripstock, and insertion and removal of the battery coolant unit (BCU). The FHT is the same size, weight, and appearance as the Stinger weapon round. Audio indications of target acquisition and IFF responses are not a feature of the FHT (figure 7-1, page 7-2).

STINGER TRACKING HEAD TRAINER SET

7-3. The Stinger Tracking Head Trainer (THT) has the same seeker and general appearance as the weapon round except for the performance indicator assembly. The performance indicator assembly provides a means to critique the gunner after target engagement when an engagement is, or is not, correctly performed. The THT is used to train gunners in tasks required for engagement of aircraft. It is used at the unit level for sustainment training, at service schools to train entry-level personnel, and in the IMTS for target engagement. A benefit of the THT is quality training for operators and the reduction of ammunition expenditures (figure 7-2, page 7-2).

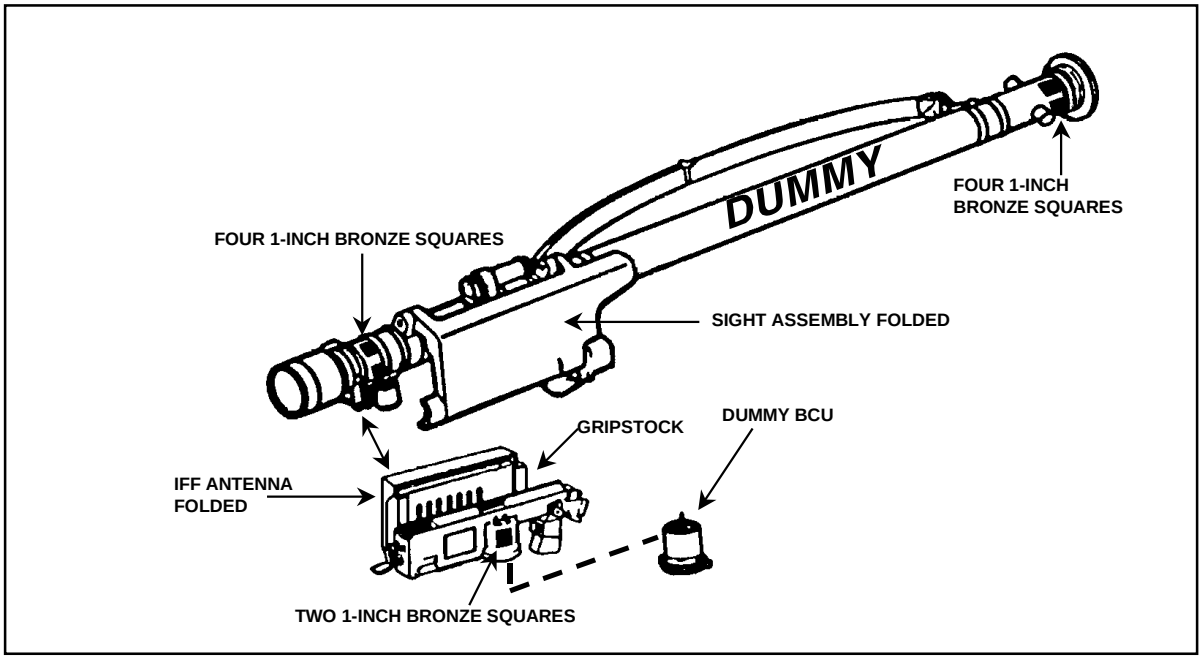


Figure 7-1. Stinger Field Handling Trainer

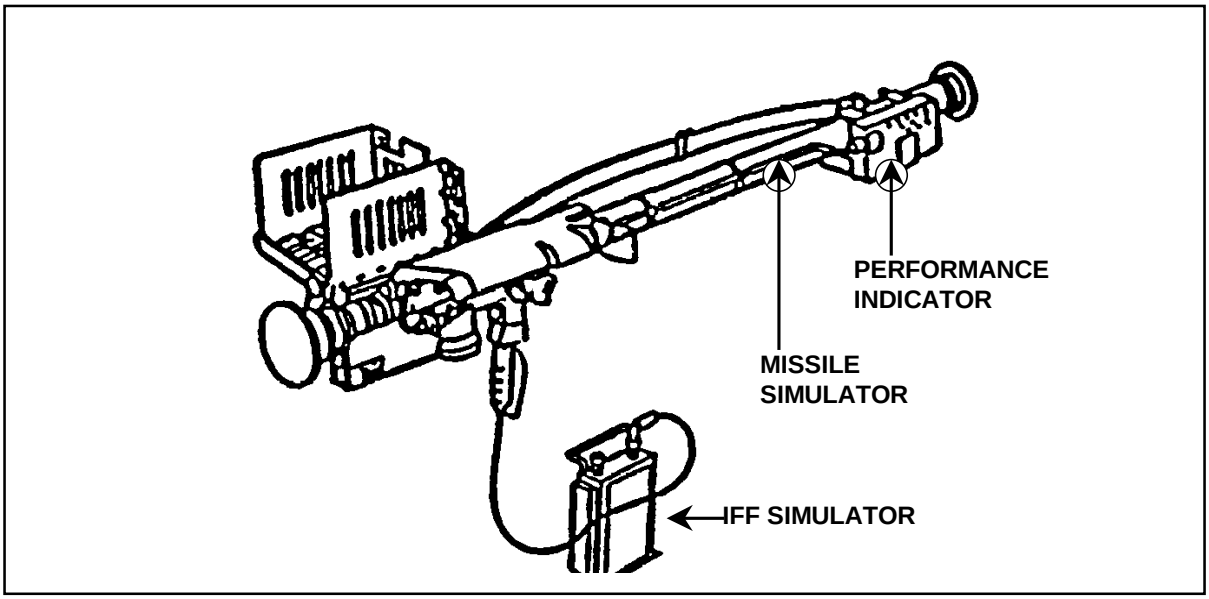


Figure 7-2. Tracking Head Trainer

STINGER TROOP PROFICIENCY TRAINER

7-4. The Stinger Troop Proficiency Trainer (STPT) is a computer-based device that generates digitized targets and background onto the weapon system's optics (figure 7-3, page 7-3). The STPT is used for realistic training of both active and reserve component Stinger gunners in a simulated wartime

environment. It eliminates the need for live aircraft, aerial targets, firing ranges, and missile expenditures. The STPT is used for training entry-level personnel and for sustainment training of engagement skills at the unit.

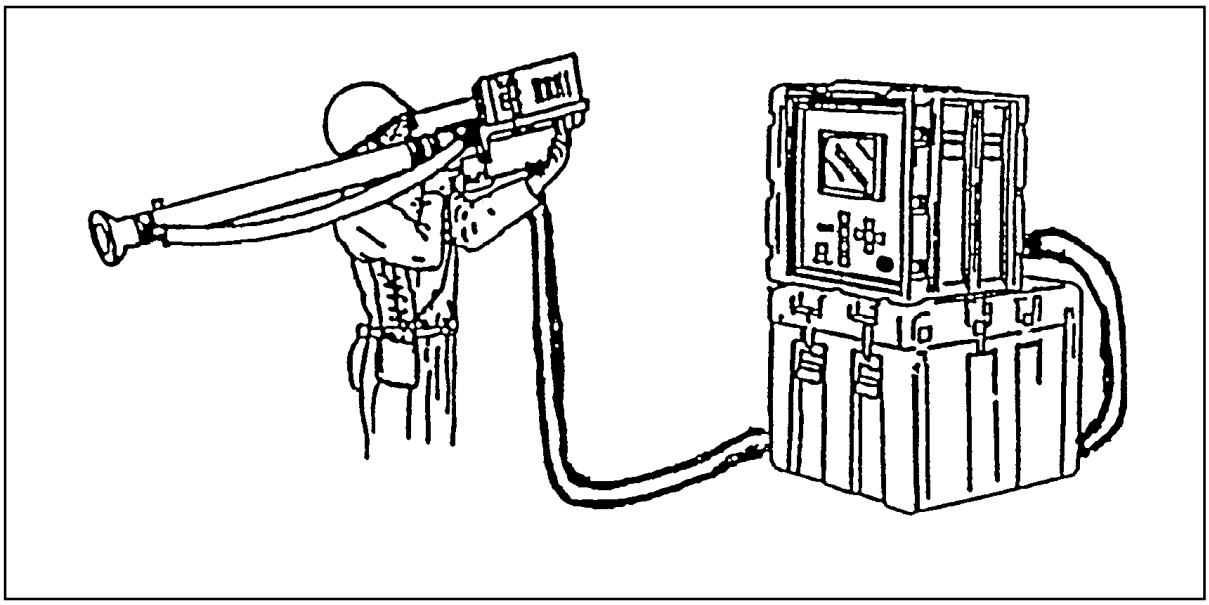


Figure 7-3. Stinger Troop Proficiency Trainer

STINGER CAPTIVE FLIGHT TRAINER

7-5. The Captive Flight Trainer is a Stinger missile guidance assembly in a launch tube. The CFT provides operator training in target acquisition, tracking, engagement, loading and unloading at the service school and sustainment training on these tasks in the unit.

STINGER IMPROVED MOVING TARGET SIMULATOR

7-6. The Improved Moving Target Simulator (IMTS), AN/FSQ-187, is a computer-driven indoor training facility. The IMTS projects battlefield background scenes and moving aircraft targets on a 360°, 40-foot diameter hemispherical dome screen to create a realistic battlefield environment.

7-7. An instructor console located in the dome controls all scenario selections for video IR projections, sound generation, target maneuvers, and countermeasures. Up to three Stinger gunners can be trained simultaneously. Student performance evaluations are possible during training exercises, using the instructor console. The IMTS is used to train Stinger gunners in target acquisition and engagement skills at the unit level, service schools and overseas commands (figure 7-4, page 7-4).

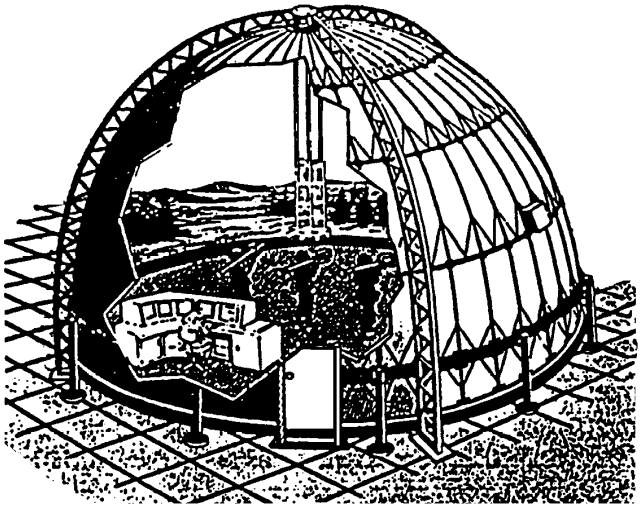


Figure 7-4. Improved Moving Target Simulator

BRADLEY STINGER FIGHTING VEHICLE/LINEBACKER TRAINING DEVICES

7-8. The following training devices are described:

- BSFV Institutional Conduct of Fire Trainer (ICOFT)
- BSFV Unit Conduct of Fire Trainer (UCOFT)
- Through Sight Video Camera
- Precision Gunnery System
- Bradley TOW Missile Simulation Round
- Linebacker Force on Force Trainer
- Captive Flight Trainer

BSFV INSTITUTIONAL CONDUCT OF FIRE TRAINER

7-9. The BSFV Institutional Conduct of Fire Trainer (ICOFT) is used strictly in the institutional training environment. The system has four crew stations controlled by a single computer system, and allows training of BSFV gunners and commanders. The ICOFT provides computer-generated scenarios of realistic battlefield video, with sound for simulated target engagements using the BSFV capabilities. The computer also provides communication with the gunner during scenarios.

BSFV UNIT CONDUCT OF FIRE TRAINER

7-10. The BSFV Unit Conduct of Fire Trainer (UCOFT) is the main device for initial and sustainment training of BSFV 25-mm gunnery skills at the unit level in CONUS and OCONUS units. It is a modular computer-based gunnery trainer for the BSFV commander and gunner. The UCOFT provides

computer-generated battlefield video scenarios with sound effects for simulated target engagements used for training and evaluation (figure 7-5).

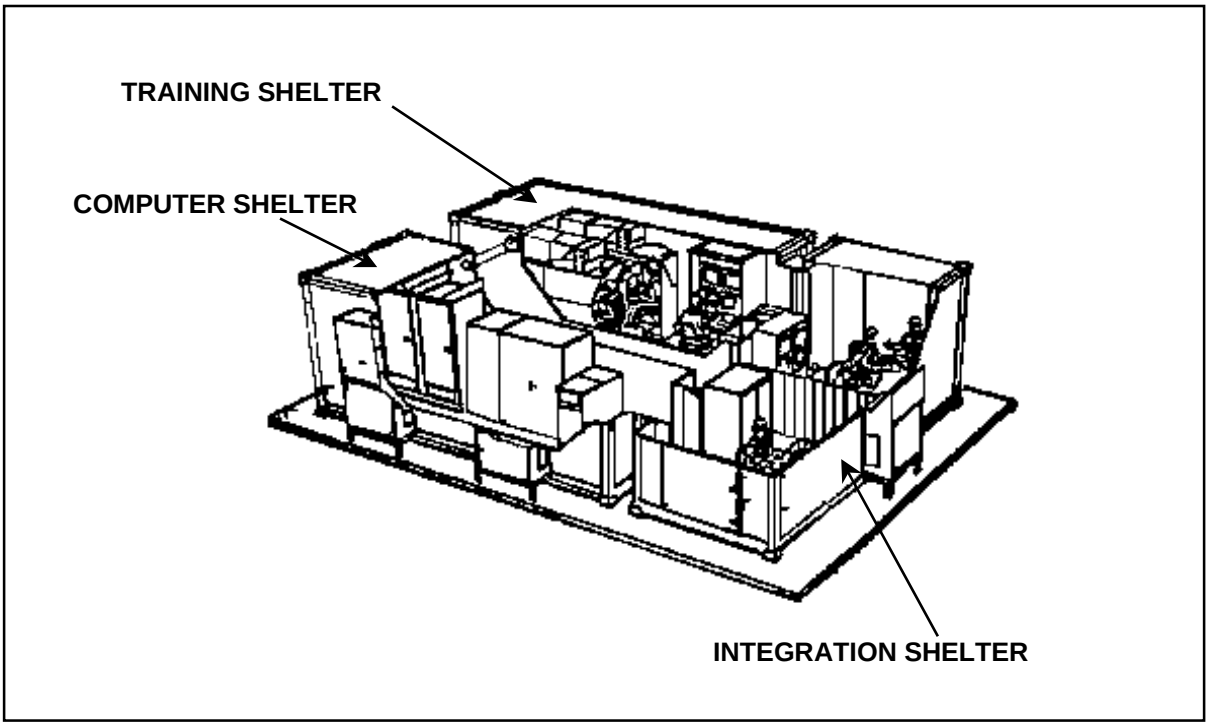


Figure 7-5. Unit Conduct of Fire Trainer

THROUGH SIGHT VIDEO CAMERA

7-11. The Through Sight Video Camera (TSVC) is a vehicle appended system that provides a video and sound recording of gunnery or tactical engagement exercises in real time. It is used in the institution and field environment for gunnery training to provide an evaluation and critique of actual engagement sequences. It provides immediate playback through use of an onboard monitor.

PRECISION GUNNERY SYSTEM

7-12. The Precision Gunnery System (PGS) is a vehicle mounted training device that improves proficiency in precision 25-mm gunnery without using ammunition. It can be used in the institution, on full-scale ranges and during tactical training exercises to train both normal and degraded modes of gunnery. It displays ballistic information for each round fired, is fully compatible with MILES and provides a review of engagements during After Action Reviews (AAR).

BRADLEY MISSILE SIMULATION ROUND

7-13. The Bradley Missile Simulation Round (MSR) is used to train Bradley crews in non-fire TOW tasks. It is the same size and weight as a real TOW

missile. It is used to practice uploading, unloading, removing misfires and storing TOW.

LINEBACKER FORCE ON FORCE TRAINER

7-14. The Force on Force Trainer (FOFT) is a training device for the Linebacker. It will be used to replicate Stinger engagements in MILES FOFT exercises. It will provide simulation of missile firings, weapon effects, signature simulation and real time target assessment. The FOFT will be used for realistic training in combat training center exercises for gunners in a simulated wartime environment.

STINGER CAPTIVE FLIGHT TRAINER

7-15. The Captive Flight Trainer is a simulated Stinger missile guidance assembly in a launch tube. The CFT will be used to provide operator training in target acquisition tracking, engagement, loading and unloading at the service school and sustain these tasks in the unit.

AVENGER TRAINING DEVICES

7-16. The following Avenger training devices are described:

- Institutional Conduct of Fire Trainer
- Captive Flight Trainer
- Force on Force Trainer
- Table Top Trainer
- Troop Proficiency Trainer

AVENGER INSTITUTIONAL CONDUCT OF FIRE TRAINER

7-17. The Avenger Institutional Conduct of Fire Trainer (ICOFT) is a computer-based device that generates digitized battlefield scenarios on video display terminals for the Avenger weapons system. The ICOFT provides full training of all target engagement tasks. Each ICOFT consists of one instructor station and six student stations. The ICOFT is primarily used to train IET enlisted students in their combat mission of target engagement, however, RC and OBC personnel are also trained using the ICOFT.

AVENGER CAPTIVE FLIGHT TRAINER

7-18. The Captive Flight Trainer (CFT) is an actual Stinger missile without the rocket motor and warhead. The guidance section provides realistic target engagement training for Avenger teams in field units.

AVENGER FORCE-ON-FORCE TRAINER

7-19. The Avenger Force-On-Force Trainer (FOFT) is an integrated laser engagement simulator used in the MILES FOFT exercises. It provides simulation of missile firings, weapons effects, signature simulation, and real time target assessment. The FOFT is used for realistic training in combat training center exercises for gunners in a simulated wartime environment.

AVENGER TABLE TOP TRAINER

7-20. The Avenger Table Top Trainer (TTT) is an interactive graphics trainer with the principle features of the Avenger turret/gunner station. A 17-inch monitor presents the out-of-window (canopy) view and the gunner's FLIR display. In addition, a FLIR field-of-view (FOV) footswitch and a tactical gunner handstation provide the gunner-machine interface.

AVENGER TROOP PROFICIENCY TRAINER

7-21. The Avenger Troop Proficiency Trainer (TPT) provides real time, free-play, and interactive simulation of stationary and remote operations. The TPT is used in conjunction with tactical equipment at unit level to train and sustain crewmember engagement skills and to train entry level personnel at the institution.

SENTINEL TRAINING DEVICES

7-22. Sentinel training devices described are:

- Sentinel Troop Proficiency Trainer
- Sentinel Institutional Maintenance Trainer
- Sentinel Training System

SENTINEL TROOP PROFICIENCY TRAINER

7-23. The Sentinel Troop Proficiency Trainer (TPT) is embedded into and used with the actual Sentinel equipment. The TPT will display incoming and outgoing information that will stimulate operator procedural actions. This will provide real time, free play interactive simulation that is representative of initialization, BIT/BITE, operations and the evaluation of data/error messages. The TPT will provide reports of operator actions and summary reports used to determine operator performance to standard.

SENTINEL INSTITUTIONAL MAINTENANCE TRAINER

7-24. The Sentinel Institutional Maintenance Trainer (SIMT) is a 3D trainer used for maintenance training. It is an institutional trainer consisting of an instructor console and four student stations. The instructor console will be able to initialize, control and monitor any combination of training stations. The SIMT is capable of training at least 100 different maintenance tasks.

SENTINEL TRAINING SYSTEM

7-25. The Sentinel Training System (STS) is capable of training students to operate the Sentinel system. The STS simulates the functional, physical operations and characteristics of the system. The Instructor/Operator Station (IOS) has the capability to interface with and control up to eight student stations to provide personnel training in the operator tasks associated with the Sentinel system. The IOS has the capability to monitor any selected student station.

FAAD C3I TRAINING DEVICES

7-26. SHORAD is a complex system of new technologies and C^3I is the glue that binds these weapons systems together. C3I provides the ADA

commander information about force operations as well as engagement operations. The FAAD C3I training devices will serve to promote C3I operators' efficiency in the tactical operations centers, A2C2, sensor C2, and battery command post nodes. The training devices described are the Institutional Conduct of Operations Trainer, and the C3I Troop Proficiency Trainer

INSTITUTIONAL CONDUCT OF OPERATIONS TRAINER

7-27. The FAADS C^3I Institutional Conduct of Operations Trainer (ICOT) is a scheduled future computer-based training device. It will simulate all software operations of the C^3I nodes (A^2C^2 BTOC, battery CP, Sensor C^2 nodes) such as air tracks, symbology, range and bearing data, weapon control orders, status's, ADW, fault simulation, BIT operations and continuous operations. Each ICOT will consist of six student stations and one instructor station. The ICOT will be used for realistic training for all C^3I operators and ADA officers. This device will train initial entry and transition personnel at the institution.

C3 I TROOP PROFICIENCY TRAINER

7-28. The C3I Troop Proficiency Trainer (TPT) is an embedded device within the system that supports a stand-alone capability to train operators to initiate and monitor critical actions. The TPT allows the operator to sustain operational skills in garrison or in the field without external training devices.

PATRIOT TRAINING DEVICES

7-29. Patriot training devices serve to train initial entry personnel and sustain unit operator and maintainer efficiency in fighting the Air Defense battle and maintaining the Patriot system's operational readiness. The training devices described are:

- Patriot Organizational Maintenance Trainer
- Patriot Conduct of Fire Trainer
- Patriot Radar Set March Order and Emplacement Trainer
- Patriot Communications System Task Trainer
- Patriot Data Link Upgrade Task Trainer
- Patriot Radar Frequency Comparator Task Trainer
- Patriot Cooling Liquid Electron Tube Removal and Replacement Task Trainer
- Patriot Antenna Element Task Trainer
- Patriot Embedded Trainers
- Patriot Empty Round Trainer
- Patriot Missile Round Trainer
- Patriot Intermediate Maintenance Instructional Trainer

PATRIOT ORGANIZATIONAL MAINTENANCE TRAINER

7-30. The Patriot Organizational Maintenance Trainer (POMT) provides a realistic static mockup of the Engagement Control Station (interior and exterior) with operator consoles interchangeable to the battalion Information

Coordination Central (ICC) configuration, and the interior and exterior of the Radar Set shelter

7-31. The POMT consists of the active maintenance trainer simulator and the parts task trainer. It is used to train maintenance personnel in the use of Display Aided Maintenance (DAM), non-display aided maintenance (non-DAM), and BITE indicator procedures to diagnose, fault locate, remove and replace defective components, and use software routines for the RS, the ECS, and ICC.

PATRIOT CONDUCT OF FIRE TRAINER

7-32. The Patriot Conduct of Fire Trainer (PCOFT) is an institutional training device for Patriot. It is a computer-driven battlefield system training device used at the USAADASCH and OCONUS. The PCOFT allows running Patriot tactical TPT software using four enhanced weapons control computer operator tactical trainers. The PCOFT has eight student consoles that are reproductions of the Patriot ECS and ICC tactical system operator consoles. One instructor station is used for controlling and monitoring the student consoles. The PCOFT is used to train battalion Tactical Directors, Tactical Director Assistants, and firing battery Tactical Control Officers and Tactical Control Assistants. Training is conducted on initialization procedures and AD battles, individually or paired Fire Unit (FU), paired battalion or netted FU, and battalion. One PCOFT can simulate up to four battalions.

PATRIOT RADAR SET MARCH ORDER AND EMPLACEMENT TRAINER

7-33. The Patriot Radar Set March Order and Emplacement Trainer (RS MO&E) trainer is an institutional training device. The MO&E trainer will be a mock-up of the Patriot RS physical characteristics as applied to MO&E tasks. The trainer consists of an RS trailer with electrical power, a rotating platform with antenna face, a shelter and outriggers.

7-34. The MO&E trainer will be used to train Patriot missile crew members, operators and system mechanics, system maintenance technicians, and AD officers in MO&E tasks. All MO&E tasks can be trained using this device instead of the tactical systems.

PATRIOT COMMUNICATIONS SYSTEM TASK TRAINER

7-35. The communication system task trainer consists of two tactical UHF radio stacks, a patch panel, an antenna control unit, three communications systems controls and a power distribution panel to provide hands-on training in initialization, operation, and maintenance of the AN/GRC-103 UHF radio communications systems.

PATRIOT DATA LINK UPGRADE TASK TRAINER

7-36. The Patriot Data Link Upgrade **(**DLU) task trainer consists of a rack of tactical DLU equipment to provide hands-on training in operation of the DLU system. Although the same basic classroom configuration as the data link terminal (DLT) used for the DLU modified DLT on the ECS, the assemblies comprising the trainer will be different. The DLU modification will add the SINCGARS radio AN/VRC-9O as the over-the-air communications link. A fiber optics unit will not be included due to its cost. Instead, the radio

transmitters will need to be loaded (dummy load) the same as the unmodified DLT. A signal will be picked up, and the signal connected to the other DLU receiver via hardwire. The DLU task trainer enables the student to perform the following emplacement tasks:

- Energize DLT module A2
- De-energize DLT module A2
- DLT power-up
- Radio AN/VRC-9O loading
- DLT self-test
- DLT synchronizing
- Security unit TSEC/KY-57 loading

PATRIOT RADAR FREQUENCY COMPARATOR TASK TRAINER

7-37. The Patriot Radar Frequency (RF) Comparator task trainer is a mockup of the tactical radar RF Comparator and consists of tactical and mockup Battery Replaceable units (BRU). The following is a list of the removal and replacement tasks that can be taught with the RF Comparator task trainer:

- Remove and replace radome with support and cooling (A139)
- Pressure switch (S1). Remove and replace
- Tube axial fan 81 or 82. Remove and replace
- Radome Feed assembly. Remove and replace
- Main Comparator horn assembly (A140) housing
- Microwave device assemblies A142, A143, or A144
- Microwave device assemblies A142, A143, or A144 air duct hose assembly

PATRIOT COOLING LIQUID ELECTRON TUBE REMOVAL AND REPLACEMENT TASK TRAINER

7-38. The Patriot Cooling Liquid Electron Tube Removal and Replacement (CLET) (R&R) task trainer is a mockup of the right rear of the RS shelter, a simulated CLET rear door, and all associated hardware to perform R&R procedures. The CLET mockup includes four coolant hoses and two electrical cables.

PATRIOT ANTENNA ELEMENT TASK TRAINER

7-39. The antenna element task trainer is a task training device used to train the removal and insertion of the individual elements in the Patriot phased array radar antenna. The radar antenna systems group diagnostics are performed using either the ECS or the POMT. Identifying particular faulty elements will be accomplished using full-scale silk screen drawings, partial scale photographs, or overhead projections of line drawing or photographs. Using one of these media in lieu of tactical equipment better fills requirements of student and instructor safety and convenience, and off-loads time from tactical equipment to training devices.

PATRIOT EMBEDDED TRAINERS

7-40. Patriot Embedded Trainers (ET) are troop proficiency trainers (TPT) with software programs that are built into the tactical system and provide training in simulated AD battle scenarios. Tactical Directors (TD), Tactical Control Officers (TCO), Tactical Director Assistants (TDA), and Tactical Control Assistants (TCA) receive sustainment training and collective training in detection, acquisition, identification, and engagement in ECM environments.

PATRIOT EMPTY ROUND TRAINER

7-41. The Patriot Empty Round Trainer (ERT) canister is a reworked expended Patriot missile round canister with appropriate markings. The ERT is used in both the institution and unit to train Patriot missile crewmembers in transporting, handling, and unloading procedures of expended round canisters.

PATRIOT MISSILE ROUND TRAINER

7-42. The Patriot Missile Round Trainer (MRT) emulates a Patriot ready-round missile in size, weight, shape, and electrical connections. The MRT is used in both institution and unit to teach Patriot missile crewmembers handling, loading, and electrical checks without using a ready round.

PATRIOT INTERMEDIATE MAINTENANCE INSTRUCTIONAL TRAINER

7-43. The Patriot Intermediate Maintenance Instructional Trainer (PIMIT) is a training device used to provide intermediate maintenance level training to students in the use of diagnostic programs, adjustments and calibration procedures, use of Test, Measuring and Diagnostic Equipment (TMDE), parts location, and troubleshooting of system malfunctions.

THAAD TRAINING DEVICES

7-44. THAAD training devices are used to support New Equipment Training (NET), institutional training, and unit training. THAAD system embedded training (ET) capabilities will be used to the maximum extent possible. The following devices are described in detail in the THAAD Operational Requirements Document (ORD):

- THAAD Institutional Conduct of Fire Trainer (ICOFT)
- THAAD Missile Round Trainer (MRT)
- THAAD Missile Round Pallet Trainer (MRPT)
- THAAD Institutional Maintenance Trainer (IMT)
- THAAD Explosive Ordnance Disposal Trainers (EODT)
- THAAD March Order and Emplacement Trainer (MOET)
- THAAD Embedded Training (ET) capability

INSTITUTIONAL CONDUCT OF FIRE TRAINER

7-45. The purpose of the ICOFT is to train THAAD personnel in the operation of system integration, hardware and software. The ICOFT will consist of three nodes, BMC3I, Radar, and Launcher. The ICOFT Control Console will

control the nodes. This training device will provide realistic institutional training for BM/C4I, Radar, and Launcher operators/crewman, and commanders and staff. The device will simulate system hardware interfaces and provides institutional training of operational functions. It will be used to train operator/maintainers on the hardware and software of the three systems segments independently, simultaneously, or collectively as an integrated system. Each of the three nodes will run tactical software (embedded training, Interactive Electronic Technical Manuals (IETM), and help aids) and replicate tactical system operations. The ICOFT nodes can be configured in all THAAD system configurations so skills learned on the ICOFT will be directly transferable to the actual system. The ICOFT also includes Part Task Trainers (PTT) to teach initial switch settings and operator/maintainer removal and replacement functions.

INSTITUTIONAL MAINTENANCE TRAINER

7-46. The IMT will provide performance – oriented maintenance/repair training. This device is designed to train critical tasks associated with diagnosis and fault isolation of the THAAD weapon system. This feature is required in order to assess the repairer's performance. The IMT must replicate the tactical system in 3-D fidelity to train all critical tasks selected by the proponent school for the device, identified to maintain the THAAD system. This device provides realistic training without, the need for large quantities of costly tactical equipment. Skills learned on this devise must be directly transferable to the tactical equipment. The IMT consists of BM/C3I, radar and launcher PTT, 3-D mock-ups of the radar Cooling Equipment Unit (CEU), and instructor stations that are interchangeable between the PTT and CEU. The IMT emulates the THAAD system by responding in the same manner and having the same performance fidelity as the objective system.

MISSILE ROUND TRAINERS

7-47. The Missile Round Trainer consist of two separate configurations, the Missile Round Pallet Trainer (MRPT) and the Missile Round Trainer (MRT). The purpose of the Missile Round Pallet Trainer (MRPT) and the Missile Round Trainer (MRT) is to train operators in the handling of the THAAD missile at the institution and unit. Both configurations are used in conjunction with the THAAD launcher for training. The MRPT and MRT will simulate the weight, balance and physical characteristics of the THAAD missile and will be used to train load/reload, hangfire and misfire procedures, and to practice missile handling and transporting procedures.

EXPLOSIVE ORDNANCE DISPOSAL TRAINERS

7-48. The purpose of this device is to train Explosive Ordnance Disposal (EOD) personnel to recognize inherent hazards associated with the components of the missile and practice EOD handling procedures. There are two (2) separate EOD trainers. They are the Practical Explosive Ordnance Disposal System Trainer (PEST) and the Classroom Explosive Ordnance Disposal System Trainer (CEST). The PEST is a full-scale inert model of the production THAAD missile and canister. The CEST is a half-scale inert model of the production THAAD missile and canister that has a cutaway of the areas containing explosive, hazardous and classified components.

MARCH ORDER AND EMPLACEMENT TRAINER

7-49. The purpose of this device is to train THAAD personnel to march order and emplace the THAAD radar. It is used in conjunction with the HEMTT tractor for training. The MOET consist of the Antenna Element (AE), Prime Power Unit (PPU), Cooling Equipment Unit (CEU), and Electronics Equipment Unit (EEU). These components are described in the following paragraphs.

7-50. **Antenna Element**. The trainer will replicate the appearance and size of the AE. The simulator will be used to train soldiers in the actual road march, march order and emplacement procedures. It will be used to train the soldiers in the proper connection of the electrical and cooling lines to the CEU, and signal data lines to the EEU.

7-51. **Prime Power Unit**. The trainer will replicate the appearance and size of the PPU. The simulator will be used to train soldiers in the actual road march, march order, and emplacement procedures. The PPU will also train the soldiers in proper connection of the electrical lines to the CEU.

7-52. **Cooling Equipment Unit**. The trainer will replicate the appearance and size of the CEU. The simulator will be used to train soldiers in the actual road march, march order, and emplacement procedures. It will train soldiers in the proper connection of the electrical and cooling lines to the AE.

7-53. **Electronics Equipment Unit**. The trainer will replicate the appearance and size of the EEU. The simulator will be used to train soldiers in the actual road march, march order, and emplacement procedures. It will train soldiers in the proper connection of the electrical, signal and data lines to the AE.

EMBEDDED TRAINING

7-54. Unit sustainment training will be accomplished through the use of an embedded Troop Proficiency Trainer (TPT) capability in the THAAD system software that simulates operational tactical battlefield information and provides training to support both Engagement Operations (EO) and Force Operations (FO). The TPT will allow operators, commanders, and staff to maintain proficiency in tactical decision making procedures and console operations. During embedded training operators will interact with the system in the same manner as they would under actual combat conditions. Training may be conducted within a single battery or battalion or concurrently with other THAAD batteries and battalions to support joint and combined training.

JOINT RADIO OPERATOR AND MAINTENANCE PROCEDURES SIMULATOR

7-55. The joint radio operator and maintenance procedures simulator (JROMPS) was developed as a cheap and versatile training device for operators and maintainers of the JTIDS radio. It emulates all functions of JTIDS through a computer link to a JTIDS mockup. JROMPS can effectively train personnel on the initialization of JTIDS, the parameters necessary for data entry, operational procedures/scenarios, automatic diagnostics and corrective maintenance.

AERIAL TARGETS FOR TRAINING

7-56. Normally, all ADA live-fire training is conducted using high performance unmanned aerial targets. These targets must be capable of simulating combat aircraft characteristics and will require the ADA weapon system to use its maximum capability. Numerous types of aerial targets, operated by troop units or furnished and operated by contract personnel, are available for ADA service practice.

7-57. Three categories of aerial targets are described in the following tables. They are drone targets, towed targets, and ballistic and troop operated targets.

DRONE TARGETS

Table 7-1. Drone Targets

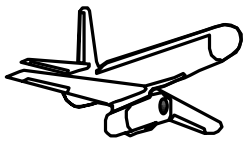
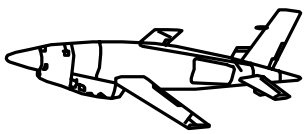
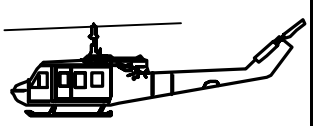
	Description	Characteristics	Augmentation
 **MQM-107 Streaker**	Subscale Subsonic Fixed wing	Speed: 250 to 500 knots Altitude: 50 to 40,000 ft Flight time: 60 minutes Guidance: command	Formation flights are possible depending on range. Scoring available. (each: $243,610) (usage fee: $9111) (scoring service: $3099)
 **BQM-34 Firebee**	Subscale Subsonic Fixed wing	Speed: 220 to 550 knots Altitude: 100 to 55,000 ft Flight time: 60 minutes Guidance: command	Formation flights are possible depending on range. Scoring available.
 **QUH-1 Huey**	Full Scale Rotary Wing Remotely Piloted	Speed: Hover/0 to 100 Altitude: 50 to 10,000 ft Flight time: 90 minutes	Infrared flare dispenser. ECM.

Table 7-1. Drone Targets (continued)

	Description	Characteristics	Augmentation
 **QH-50 DASH**	Remote control coaxial rotor helicopter.	Speed: Hover to 80 Altitude: 0 to 16,000 ft Flight time: 1.73 hours	Infrared flare dispenser. ECM.
(Droned Anti Submarine Helicopter)			

			SU-25	MI-24	
 **SU-25 Frogfoot**  **Hind Gyrocopter**	1/5th Scale SU-25 Frogfoot & MI-24 Hind-D emulators.	Speed:	100	80 mph	MILES/AGES hit/kill smoke signal. Infrared source. Scoring available.
		Wt:	41	40 lb.	
		Endur:	30	30 min	
		Range:	3	3 Km	
		Span:	126	70 in	

TOWED TARGETS

Table 7-2. Towed Targets

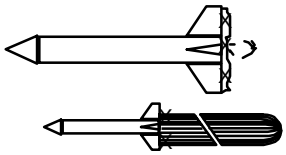
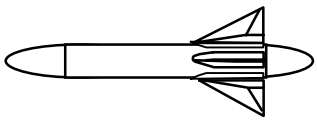
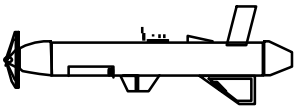
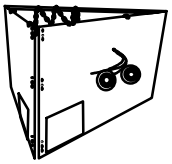
	Description	Characteristics	Augmentation
 **AGTT (Aerial Gunnery Towed Target)**	48in long, 7in diameter. Tow with a 2 ft by 12 ft multi streamered banner.	Towing provides 1 sq. meter RCS in I-band coverage	Bullet counter scoring. Towable by MQM-107 and BQM-34.
 **TRX-4A Radar Towbee**	99in long, 9in dia.	Towed from 8000 foot Towline. Provides an 8 sq. ft RCS in the X-band.	Towable by MQM-107 and BQM-34.

Table 7-2. Towed Targets (continued)

	Description	Characteristics	Augmentation
 **IRTT (Infrared Towed Target)**	85-in long by 9.5-in diameter. Propane burner provides IR. Lamp provides visual acquisition.	Towed with 600-foot towline.	Missile miss-distance scoring. Towable by MQM-107 and BQM-34.
 **Wedge**	3 ft by 4 ft wedge shape provides weapon system impact area. Stove eye burners provide IR source.	Towed from 370-foot steel cable. 2 each 110 watt stove eye burners provide IR source.	Bullet counter scoring and/or missile miss-distance scoring. Towable by QH-50.
 **Banner**	2 ft by 12 ft mesh banner.	Towed from 600-foot towline. Presents a 1 sq. meter RCS in 8 to 10 GHz range. Visual acquisition 3 Km out.	RF reflectors. Bullet counter scoring. Towable by MQM-107 and BQM-34.

BALLISTIC AND TROOP OPERATED TARGETS

Table 7-3. Ballistic and Troop Operated Targets

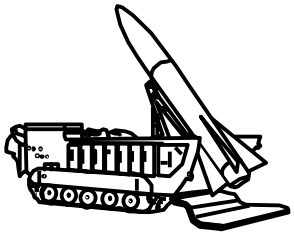
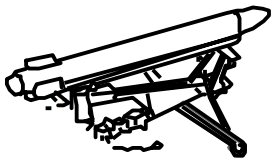
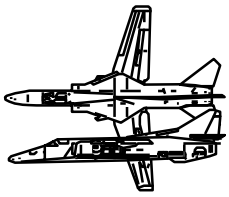
	Description	Characteristics	Augmentation
 **Lance Missile**	Targets Management Office (TMO) contractor operated only. Obsolete SS tactical missile. Emulates SCUD-B & C.	Speed: .88 to 3.6 mach Altitude: 7000 to 141400 ft Range: 130 Km Guidance: Inertial guidance and control Track Mounted or towed	Telemetry. Hit indicator.

Table 7-3. Ballistic and Troop Operated Targets (continued)

	Description	Characteristics	Augmentation
 **Ballistic Aerial Target System (BATS)**	Troop operated. Ballistic, roll stabilized, rail launched. Low to medium altitude. Emulates high performance aircraft flight profiles.	Speed: 297 to 510 knots Altitude: 1000 to 7000 ft Flight time: 47 seconds Guidance: roll and fin	IR flare scoring.
 **1/9th Scale Radio Controlled Miniature Aerial Target (RCMAT)**	Troop operated. Radio controlled, manually launched. Low altitude. Two versions emulate MIG-27 and F-16. Constructed of polypropylene foam.	Speed: 29 to 46 mph Flight time: 15 minutes Guidance: radio controlled Survivability: multiple hits from small arms	Scoring.