CONTEX M60A3 TANK CREW TRAINING SYSTEM

M60A3 Training System Overview

Driver Trainer

CONTEX's M60A3 Training System is a state-of-the-art, motion-based training system capable of providing effective and affordable M60A3 training not available until now. Each CONTEX M60A3 Crew Training System consists of three components: a Driver Trainer, a Turret Trainer and the Instructor Operation Station. The simulator provides complete training of the driver, gunner, tank commander and loader.

Instructor Operation Station

Either the Driver Trainer or the Turret Trainer can be exercised independently. They can also work together synchronously to provide multiple-crew training. All training activities are controlled and monitored from the Instructor Operation Station.

Turret Trainer

CONTEX's M60A3 Training System was developed using the latest simulation technologies to offer users maximum effectiveness with reasonable costs. Its hardware components were selected for their high performance and low maintenance. Its software subsystems were developed based on open architecture and high upgradeability. The result is an advanced training system that can be installed at customers existing facilities with minimum infrastructure improvement, requires minimum maintenance, and offers easy upgrade and re-configurable paths in the future.

6-DOF Motion System

CONTEX's M60A3 Training System is a full motion-based system. Both the Driver Trainer and the Turret Trainer are mounted on fully articulated, six degree-of-freedom (6-DOF) motion platforms. These motion platforms can generate motions of up to +/- 25cm of displacement and +/-16 degrees of angular tilt. The motion platforms add such realistic motion cues to users that realistic training can easily be conducted in a controlled simulated environment.
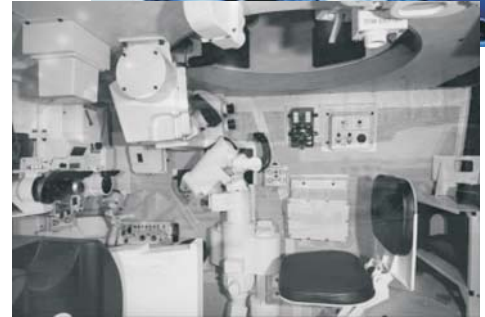

"I did not think motion was important in a tank simulator until I sat in this M60A3 trainer. There were times where the simulation was so real that I forgot I was in a simulator. "
...................U.S. Military Master Gunner.

Operational Systems in the M60A3 Trainer

CONTEX's M60A3 Trainers are exact replicas of the actual tank interiors. The Driver Trainer contains a complete set of working controls and simulated instruments. Not only do the throttle, brake, steering, shifter, primer work, they are mechanically configured to exhibit the actual forces and feel of the real vehicle. The Driver Trainer also is equipped with all functioning gauges and meters, including a working tactical radio and intercom.

CONTEX's M60A3 Turret Trainer is even more impressive. It has the fully functional M60A3 weapon system simulation built in, consisting of the 105mm main gun, 7.62mm machine gun, M239 Grenade Launcher and the M2 .50 caliber machine gun. The weapon system simulation includes a fully functional fire control system with working Tank Thermal Sight (TTS), Laser Range Finder (LRF), the M21 Computer System as well as the stabilization system. The gunner can select a spectrum of ammunition from HEP/WP, HEAT, APDS and FSDS.

Visual Systems

CONTEX's M60A3 Trainers are designed with a superb visual system to provide realistic, high fidelity training. This high resolution visual system allows full target identification at 1500m, partial target identification up to 3000m and target detections up to 4000m. There can be up to 50 mobile targets displayed simultaneously for training with 15 of them configured as automated targets.

To fully simulate different operating environments, the environmental scenarios can be varied from dawn to dusk to night with fog and smoke effects. Vehicular and personnel thermal images are provided for night training purposes. Weapon effects such as weapon firing, muzzle flash, ground shaking, ground track marks, vehicle trailing dusts, etc are all part of this detailed visual system.

The built-in visual database includes a wealth of friend and foe elements. Examples of vehicle models included are HMMWV, M113, 1/4-Ton, 2-1/2-Ton, T-59, T-62, T-63, T-69, T-79, T-80s, T-90s, and various personnel carriers. There are also built-in aircraft models including AH-1W, UH-1, OH-58, SH-70, Mi-7, Mi-8, Mi-17, etc.

CONTEX will customize the visual database specifically to customers' unique requirements and scenarios.

CONTEX M60A3 TANK CREW TRAINING SYSTEM
TRAINING TASK CAPABILITIES - FM 17-12-3
Training Capabilities

The CONTEX M60A3 Crew Training System permits the M60A3 crew to conduct realistic individual and collective training tasks required by **FM 17-12-3**, the authoritative reference for M60A3 tank training.

M60A3 tank system combat gunnery tables are designed to develop and test the proficiency of individual, crew, and platoon gunnery techniques at the basic, intermediate, and advanced levels.

1. Table I - Basic Gunnery Skills (Individual) for the Tank Commander and Gunner. These exercises include manipulation exercises, direct fire adjustment exercises and tracking boards. The CONTEX M60A3 Tank Crew Training System is delivered with eight day and three night engagements.

2. Table IV - Tank Crew Proficiency is a subcaliber exercise that is run similar to a Qualification table.

Using the timing and scoring standards from TT IV and a TT VIII scenario this table can be accomplished in the M60A3 trainer. There are five day graded tasks and five night graded tasks in both defensive and offensive postures.

3. Table V - Preliminary Machine Gun Training provides training for point and area machine gun engagement techniques. Targets and scenarios can be made to customer specifications. There are seven graded day and five graded night tasks in both defensive and offensive postures.

4. Table VI - Preliminary Main Gun Training consists of four graded day and three graded night tasks. These are all fired from a stationary position.

5. Tables VII and VIII - Intermediate Training Course and Intermediate Qualification Course. TT VII is the practice for TT VIII which is the crew qualification exercise. Tasks are fired both day and night and in offensive and defensive postures. There is an NBC engagement in both day and night.

6. Tactical Tables A, B and C which are all crew exercises can be performed in the M60A3 Trainer. With linked trainers, **Tables D, E** and F can be accomplished as these are for a section (2 Tanks), and **Tables G, H and I** can be accomplished for a platoon. All the tactical tables support various individual tasks.

FM 17-12-13
TANK COMBAT TABLES
M60A3

7. The following Tank Crew Gunnery Skills Test (TCGST) stations can be tested in the CONTEX M60A3 Tank Training System:
Station 1 - Identify threat and friendly vehicles and helicopter
Station 6 - Boresight the 105mm gun
Station 10 - Prepare the gunner's station
Station 11 - Acquire targets through the TTS
Station 12 - Engage targets from the gunner's station
Station 14 - Issue initial and subsequent fire commands
Station 15 - Prepare the tank for three man operations and fire the main gun from the Commander's position
Station 16 - Lay the main gun from the commander's position.

The CONTEX M60A3 Crew Trainers are HLA compatible. Multiple trainers can be networked for group maneuver and training exercises.

Derivative System & Engineering Services

CONTEX, with its engineering and system expertise, will modify the M60A3 Crew Training System to meet or exceed particular customer requirements to reflect unique vehicle configurations. The same technologies employed by the M60A3 Crew Training System can also be applied to create high-fidelity trainers of virtually any wheeled or tracked vehicles according to customer specifications.

> **"I found the motion platform extremely accurate in all movements, especially regarding the feel of the terrain."**
>
> **...................U.S. Military Master Gunner.**

KEY SPECIFICATIONS

- A complete CONTEX M60A3 Training System includes the following:
  - One 6-DOF motion-platform Driver Trainer
  - One 6-DOF motion-platform Turret Trainer
  - One Instructor Operation Station

Training

- Ability to provide independent driver or turret training.
- Ability to provide whole crew training via combination of the driver and the turret trainers.
- Ability to provide networked-platoon and company training via the HLA architecture.

Cabins

- Exact replica of the M60A3 interior
- Correct simulated operating procedures, responses and forces

Visual System

- Image generator system with 3-D processing and thermal image generations.
- Visual system database coverage of 1,500 square kilometers.
- Visual display system resolution of 6 Arc-minute/line pair

Motion System

- Electro-mechanical 6 DOF motion platform
- +/- 25cm movement, +/- 0.6g acceleration, +/-16 degree motion
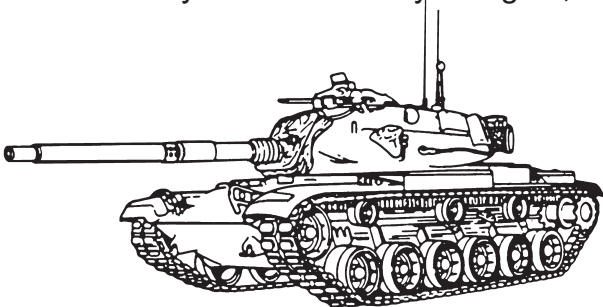- MIL-STD-1558 compliant

Audio System

- Simulated radio and intercom communications
- Simulated weapon loading, firing and unloading sounds
- Simulated vehicular motion sounds

Facilities

- Standard power supply compatible with customer requirements
- Minimum modifications to customer facility

FEATURED SUPPLIERS

- Audio subsystem: Advanced Simulation Technology, Inc. (ASTi), USA
- Motion subsystem: FCS Control Systems BV, Netherlands
- Visual subsystem: Primary Images, United Kingdom

CONTEX Engineering International, Inc.
1931 Old Middlefield Way, Unit X, Mountain View, CA 94043, USA
1-650-967-6300, Fax 1-650-967-6366
e-mail: M60A3@contexengineering.com