XM395 Precision Guided Mortar Munition (120mm PGMM)

Responsive, Standoff Precision Lethality for Highly Deployable and Mobile Forces

International Infantry & Joint Services Small Arms Systems Annual Symposium
"Meeting the Needs of Our Joint Ground Forces in the Fight Against Terrorism and Developing the Tools for Future Combat"
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Presented By: Anthony Pezzano
OPEO Ammunition/OPM CAS/ OPM Mortars

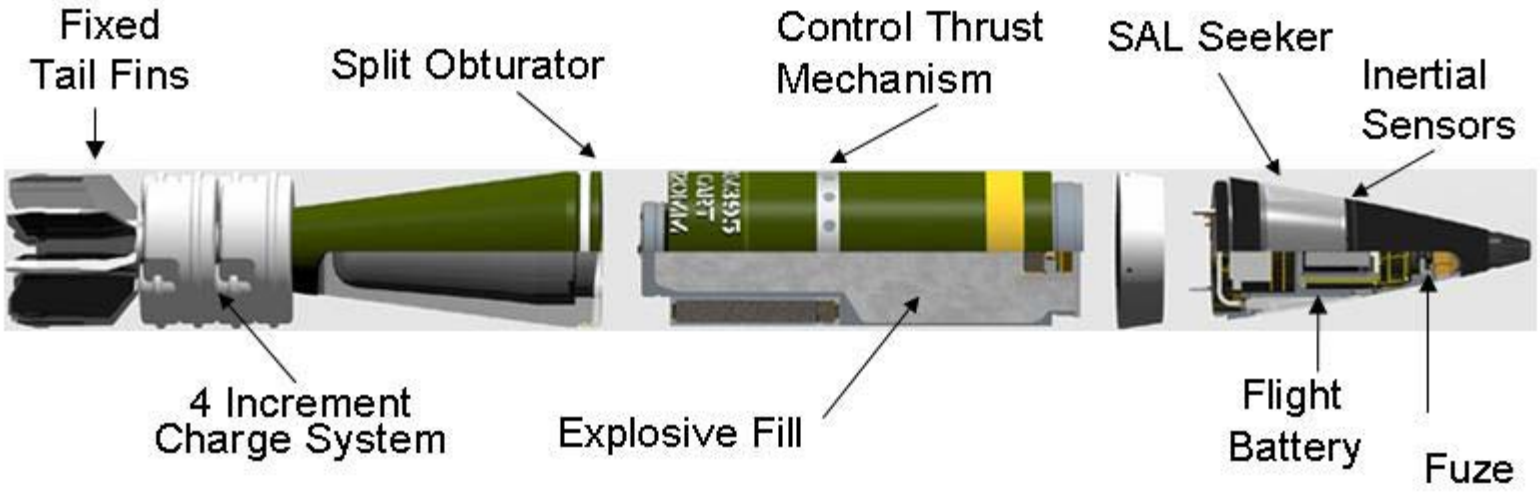
Task

Present a Summary of the Product Manager's Approach to PGMM Training

Purpose

Develop Systems Approach for PGMM Training Concept Utilizing Six Sigma Principles and Processes

PGMM Description



System Requirements (Key Performance Parameters):

Increment I

Lethality: Incapacitate protected personnel, in two rounds or less, within:

- Earth and timber bunkers
- Brick over block masonry structures
- Stationary lightly armored vehicles

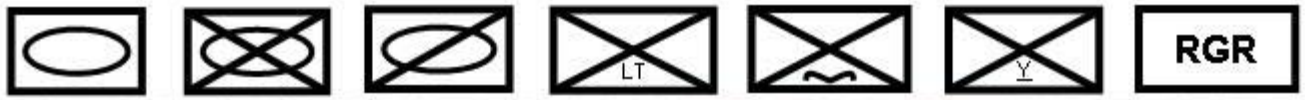
Maximum Range:

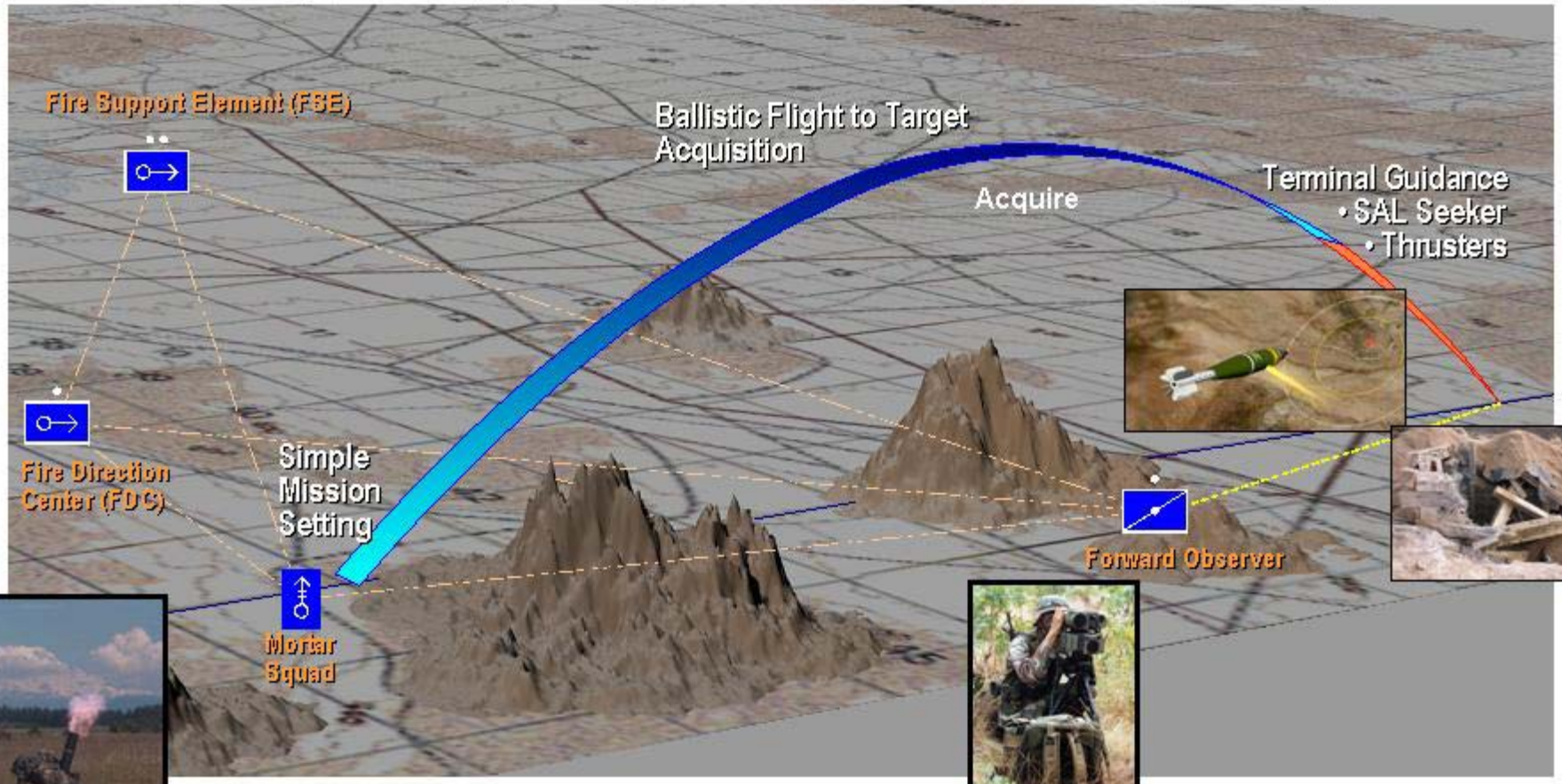
- Current Force: 7.2km (Threshold), 10km (Objective)
- Future Combat System (FCS) Mortar: 8km (T), 10km (O)

Compatibility:

- 120mm Battalion Mortar System
- Stryker - Mortar Carrier
- FCS Non-Line of Sight (NLOS) Mortar
- Current / Future Laser Designators & Fire Control Systems

PGMM Operations





Leverages Existing Fire Support Systems
Reduces Collateral Damage

Masonry Structures
Earth and Timber Bunkers
Light Armor Vehicles

Precision Munitions Increase Warfighter Effectiveness

Mortar Infrastructure In Place

Joint Service Forward Observers & Designators

Mortar Fire Control System

- 120mm Mortars in current infrastructure
  - 120mm Mortar Platforms: M121 (carrier-mounted), M120 (towed), Stryker - Mortar Carrier
  - 120mm Mortar Munitions: HE, Smoke, Illumination (Visible & Infrared)
- Light-weight Laser Designator Range Finder (LLDR)
- Fire Control / Command & Control Links
  - Mortar Fire Control System (MFCS)
  - Advanced Field Artillery Tactical Data System (AFATDS)

Towed 120mm (Ground Mounted)

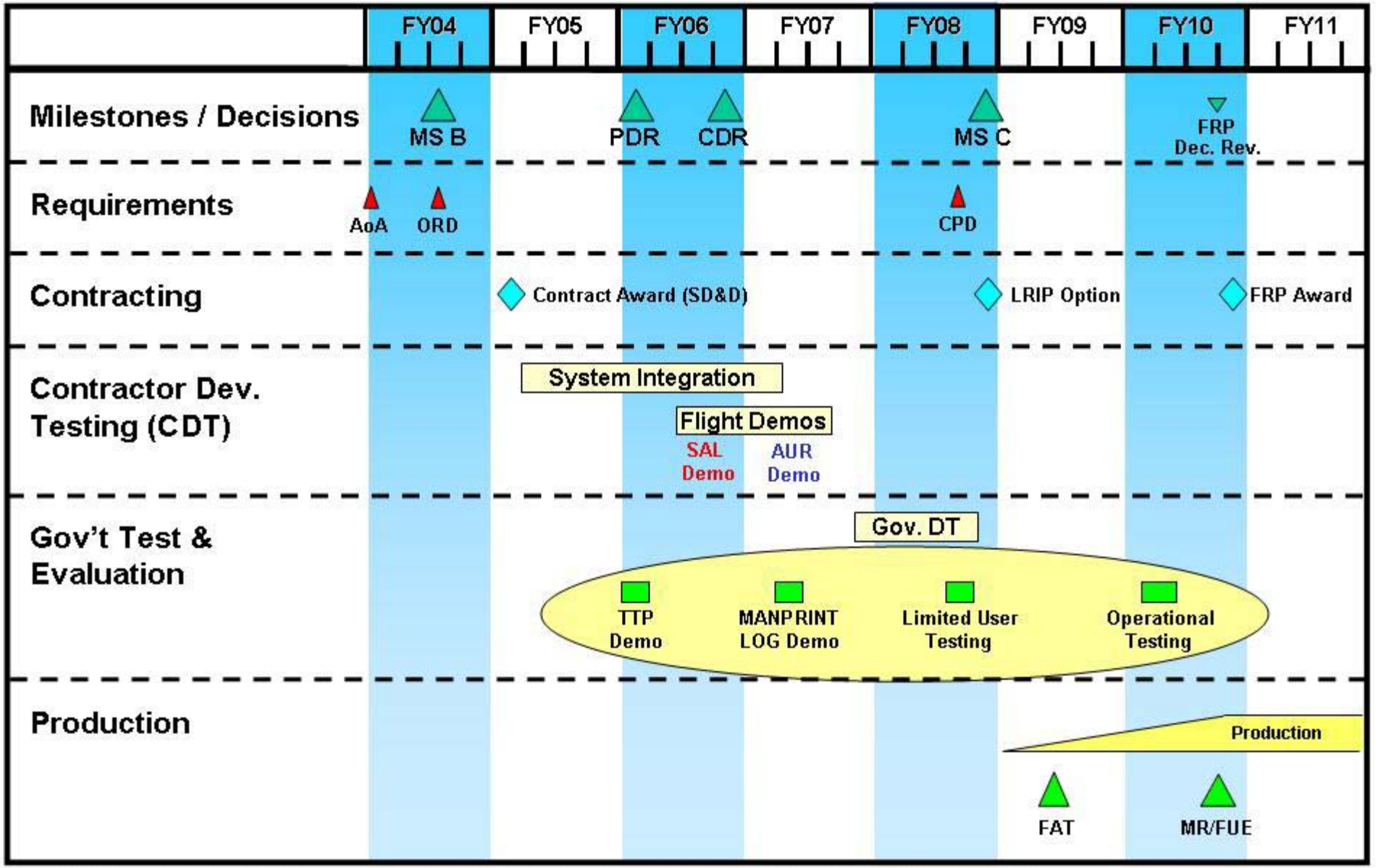
M1064

Vehicle Mounted 120mm Stryker MC

NLOS-Mortar (future)

PGMM
An Integral Part of Modern and Future Battalion Indirect Fire

Baseline PGMM (Increment I) Program Schedule



AoA: Analysis of Alternatives
FRP: Full Rate Production

TTP: Tactics Techniques Proc.
AUR: All Up Round

Gov. DT: Government Development Testing
FAT: First Article Test

MR: Material Release
FUE: First Unit Equipped

Problem Statement

- Reduced Combat Effectiveness without Adequate Training Program
- No Affordable or Practical PGMM Training System is Available
    - Current Options
        - Firing Tactical Laser Guided PGMM (Hundreds of Rounds/Year x $10K/Round)
        - No Training (Not an Option)
        - Manual Process @ Training Center (not representative of Tactical)

Project Goals

- Develop an integrated plan for PGMM Training Concepts that can:
  - Effectively Train the Mortar Crew
    - Preparation, drop firing, and misfiring procedures
  - Training of Forward Observer to Adequately Designate Targets within the PGMM Firing Mission Timelines
  - Communication Links between FO, Battalion FSE, FDC and Mortar Crew
  - Achieve a 50% minimum overall Cost Avoidance through Reduced Tactical PGMM Firing
    - Cost effective training concept alternatives.

NOTES: FSE: Fire Support Element FDC: Fire Direction Center FO: Forward Observer

PGMM Training Q$SR

Type		
		Engineering
		Production
		Business
	x	Management

Project Summary:

Develop an integrated plan for PGMM Training Concepts that can:

- **Effectively Train the Mortar Crew**
  - **Preparation, drop firing, and misfiring procedures**
- **Train Forward Observer to Adequately Designate Targets within the PGMM Firing Mission Timelines**
- **Identify Communication Links**
- **Achieve a 50% minimum overall Cost Avoidance through Reduced Tactical PGMM Firing.**

Quality or Customer Satisfaction	*Co$t*
Provide the Warfighter with a viable low cost training solution to achieve indirect fire precision strike capability.	**Potential savings $10.24M/year of Training (10 year product life cycle can save over $100M in training costs)**
Project Successfully laid out Approach, Methodology and Plan. (Follow-on Project recommended to Implement Training Concept into Program SDD)	**FMEA evidenced medium risk areas.** FO Trainer; Virtual Simulator **QFD identified Training Concept leverage points to maintain affordable approach.**
Schedule	*Risk*

PGMM Training Implementation

Implementing PGMM Training

- **New Equipment Training (NET)**
  - Update documents to include PGMM and operating Tactics, Techniques and Procedures.
  - Develop physical mock up of PGMM for handling, programming, and visual reference.
  - Text / Video Course instruction training material.

- **Institutional Training**
  - Develop classroom training.
  - Integrate CFFT / Mortars / MFCS / PGMM / Laser Designation for classroom training.

- **Virtual Training**
  - Understand / Develop Tactics, Techniques & Procedures (TTPs).
  - Integrate CFFT / Mortars / MFCS / PGMM / Laser Designation for virtual training.
  - Integrate PGMM Trainer with MFCS Gun & FDC training aids and devices.
  - Develop Models and Simulations as part of Virtual Training resources to support Live Training.
  - Virtually train Gunner, FDC, and Forward Observer in a closed loop system, for collective unit training.

- **Collective (Live and Combined Arms)**
  - Develop Embedded Training Instrumentation (MFCS).
  - Provide a PGMM training capability at the Combat Training Center (CTC) .

Who We Will Be Training

- Fire Direction Specialist (MOS 13F)
- Indirect Fire Infantryman (MOS 11C)
- Ammunition Specialist (MOS 55B)
- Fire Direction Center (FDC) Personnel
- EOD

Mortar Mission Training Requirements

- Operate in Centralized or Decentralized C3 Modes
- Centralized: Through Battalion Fire Support Element
- Decentralized: Sensor to FDC and/or Gun

PGMM Call for Fire

Forward Observer

Company FIST[1]

Battalion FSO[2]

Mortar FDC[3]

Mortar Squad

1 Target Identified

8 Shot Out

9 Lase Target

10 End of Mission, BDA[4]

Advanced Field Artillery Tactical Data System (AFATDS)

Mortar Fire Control System (MFCS)

2 Call For Fire

M95 MFCS

6 Shot Over

7 Lase Target

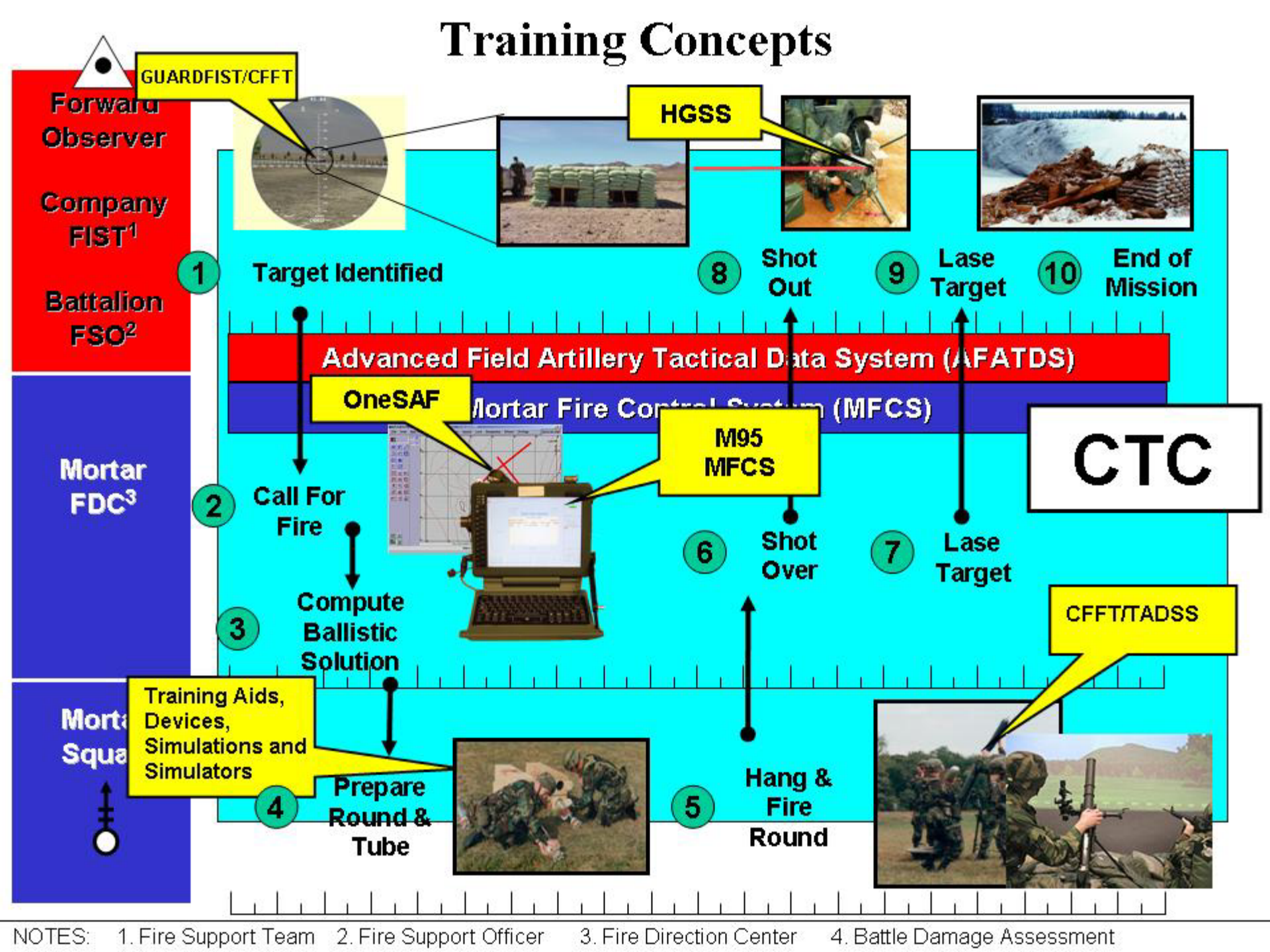
3 Compute Ballistic Solution

4 Prepare Round & Tube

5 Hang & Fire Round

NOTES: 1. Fire Support Team 2. Fire Support Officer 3. Fire Direction Center 4. Battle Damage Assessment

Training Concepts



NOTES: 1. Fire Support Team 2. Fire Support Officer 3. Fire Direction Center 4. Battle Damage Assessment

Summary

- US Army investing in Precision Munitions for Close Combat (Mortar Systems)
  - Requirements are Approved
  - Program is Fully Funded, PGMM SDD Awarded 01Dec04
- Result will be Leap Ahead Precision Effects Capabilities for the Maneuver Commander
- Training is key to PGMM Affordability and Performance
- Collective/Combined Arms Training Requirements are being defined

6th Annual Mortars Conference October 19-21, 2005
Headquarters Plaza Hotel, Morristown NJ

www.NDIA.org **w4.pica.army.mil/pmmortars**