PGMM:
A New Application for an Existing Fuze

Precision Guided Mortar Munition
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Agenda

• Program Background
• System Overview
• Typical Mission Video
• PGMM Fuze and ETFM commonality
• Fuzing System Design
• Electronics Design
• Summary
XM395 - PGMM

Precision Guided Mortar Munition

Designed to provide point target accuracy against threat targets in urban theater where minimal collateral damage is desired
Precision Guided Mortar Munition (PGMM)

- Lethality – shall have the ability to defeat or incapacitate personnel protected within specified point targets.
- Range – shall be able to engage targets at ranges from 1000m to 7200m.
- Compatibility – shall be compatible with all 120mm firing platforms and munition handling systems without adding personnel or equipment to the organization (except for any PGMM-MFCS interface device).
- Reliability – shall have a functional reliability of 90% over a 10-year timeframe.
Mission Set Data

- Time of Flight
- Laser Code
- Mode (Delay based on target type)
- QE
- Zone Charge
- Cross Winds
- Downrange Winds
PGMM Fuze Mission Timeline

- Fuze Battery Activated
- Mission Set
- PGMM Fired
- MORTAR SQUAD
- FIRE DIRECTION CENTER (FDC)
- FIRE SUPPORT ELEMENT (FSE)
- PGMM Flies Ballistically To Target Acquisition Basket
- Main Flight Battery Initiated
- Launch Validated
- ISEU, CTM, SAL Status Checked
- 5-Second Time Transfer to ISEU
- CTM Enabled
- Forward Observer Paints Target (laser on)
- PGMM Acquires Target
- Guidance Starts
- Detonation Delay Time Provided to WIM
- Warhead Armed
- Target Destroyed
- PGMM Guides to Target
- Fuze Battery Mission Set
- Main Flight Battery Fired
Typical Mission

Click to start video.
PGMM Key Milestones

- Contract Award – complete January ‘05
- System Readiness Review – complete March ‘05
- Initial Safety Review Board Briefing – complete May ‘05
- Preliminary Design Review – complete December ‘05
- Tactics, Techniques, & Procedures Demo – complete February ‘06
- First Guided Flight – complete May ‘06
  - Critical Design Review – August ‘06
  - Fuze Vertical Recovery Test – October ‘06
  - Tactical Guided Flight Test – November ‘06
PGMM Target Set

Earth & Timber Bunkers

Masonry Structures

Lightly Armored Vehicles
Fuze Commonality

Fuze Assembly

- Dual-Processor Safety Architecture
- Fuze Battery & Activation Mechanism
- Muzzle-Exit Sensor (2nd Safety Environment)
- Manual Set Capability (LCD, Switch, Button)
- EOD Function
- S&A Arming
- Internal Housings
  - Inductive Set Capability
  - Main Flight Battery Initiation
  - ISEU Data Communication Interface
  - Control Thrust Mechanism Safety Enable

Warhead Initiation Module (WIM)

- S&A – Set-Back Lock Mechanism (1st Safety Environment)
  - Det-Delay Electronics
  - Explosive Train

- Indicates Commonality with ETFM

PGMM Fuze Leverages ETFM Design
Designed to Meet MIL-STD-1316E Safety Requirements
Based on ETFM electrical design with additional features
PGMM Mechanical S&A

Based on ETFM mechanical S&A design
ATK Patent Number 5,693,906
• The PGMM system is in great demand by the soldiers on the ground in Iraq
  – Maneuver Force: “It definitely builds our confidence. I mean, as an Infantry guy, mortars are one of the things you’re most scared of. If you can put it within a meter, that’s a reasonable window. This thing will be great.”  

_TTP Demo, Fort Benning, GA, 17 Feb 06_
• PGMM is a unique munition needed by the soldier in today’s complex battlefield.
• Utilizing existing design concepts and parts has greatly reduced design time and cost.
• Utilizing common parts will continue to keep the production costs down for both PGMM and ETFM.
• This modular concept will allow for continued growth as increments are pursued to increase future capabilities.

PGMM:
Truly a New Application for an Existing Fuze