PM Mortar Systems

Advanced Precision Mortar Initiative

21 April 2010
Accelerated Precision Mortar Initiative (120mm APMI)

- **Origin/Definition:**
  - Operational Need Statement (ONS #09-7722) from CJTF 101 (validated 8 Jan 2009) for 120mm GPS guided 120mm mortar cartridge
  - Directed Requirement from G-3/5/7 (16 Oct 2009) for 120mm GPS guided 120mm mortar cartridge

- **ONS Requirements:**
  - Accuracy: 10m CEP (T); 5m (O)
  - Lethality: Similar kinetic effects of current munitions
  - Maximum Range: 6.5km or greater
  - Guidance: GPS Selective Availability Anti-Spoofing Module (SAASM, OSD policy on GPS)
  - Compatibility: US 120mm Mortar System
  - Capacity: Initial quantity of 15,000; capability to be produced at up to 2,500/month

- **Program Phases:**
  - Phase 1 development: Oct 09 – Feb 10
    - Design Maturation and Demonstration / TC-LP
  - Phase 2 development: Mar 10 – Jul 10
    - Prototype Evaluation; Complete Qualification to Urgent Material Release (UMR): Aug 10
  - FAR Limited Procurement award: Apr 10
  - Phase 3: TBD (if it becomes a program of Record)
    - Final Prototype Evaluation to Full Material Release (FMR)
Memorandum of Understanding

• Agreement between Project Manager Combat Ammunition Systems and Soldier Requirements Division (MCoE) to clarify user expectations (signed 12 Feb 2009)
  - Minimum range (T) 1000m; (O) 500m
  - Must include Software upgrades for Mortar Fire Control Systems (Mortar Fire Control System and Light-weight Hand-held Mortar Ballistic Computer)
  - 3 fuzing modes (proximity, point detonation, delay); will function Point Detonation if not set and fired

• Reliability
  - At Urgent Material Release (UMR): 0.9
  - At Full Material Release (FMR): (T) 92% (O) 97%
  - Guide to intended target within 30m

• Set time:
  - (T=O) 10 seconds
  - Mission Retention: (T) 5 minutes (O) 10 minutes; be able to be reset anytime in the next seven days (T)
APMI Timeline to Date

- 19 December 2008: ONS #09-7722 received from OEF
- 8 January 2009: G3/5/7 validates ONS #09-7722; approves $2M for demonstrations (covers government test costs)
- May 2009: Demos completed at Yuma Proving Ground
- 17 June 2009: AR2B (O6 level) reviews demo results, plan to complete qualification & fielding, recommends approval
- 18 Jun 2009: General Officer Steering Committee (GOSC) Approval of program, Army requests Congressional approval of $57.2M RDTE; $15M PAA; and $2.3M OPA in omnibus reprogramming package
- October 2009: OPM Mortars received $39.8M RDTE, $2.3M for fuze setters, and 15M for production
- October 2009: Phase 1 demonstration contracts awarded to Raytheon Missile Systems (RMS), Alliant TechSystems (ATK), and General Dynamics Ordnance & Tactical Systems (GD-OTS)
- February 2010: Phase 1 Live Cartridge Demos completed
- March 2010: Test & Evaluation Plan approved by all stakeholders including Development Test Command (DTC) and Army Evaluation Center (AEC)
- March 2010: Source Selection completed, winner announced
- 25 March 2010: General Officer Steering Committee (GOSC) Approval of program to enter Phase 2
Key APMI Tasks and Testing

• Phase 1:
  – Ballistic rounds fired at Hot, Cold, Ambient and all charges to generate data required for developing firing tables
  – All–up Round tests after environmental conditioning to evaluate performance
  – Updated Cost Model
  – Production Readiness Review (Manufacturing Readiness Assessment)
  – Source Selection to be completed 5 Mar
  – PM scheduled to update AR2B following announcement of winner

• Phase 2: Completes Requirements for Urgent Material Release
  – Verify the APMI is Safe, Reliable, and meets Performance Requirements for Urgent Material Release
    • Sequential Environmental Testing – Safety (SET-S)
    • User Evaluation/Limited User Test
APMI Fuze Setter SYSTEM

Platform Integration KIT with embedded GPS-SAASM (IPIK) in a case

Interior of case with iPIK and Power supply (MRC-188)

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHMBC</td>
<td>Present in Mortar Unit</td>
</tr>
<tr>
<td>ASIP Radio</td>
<td>Present in Mortar Unit</td>
</tr>
<tr>
<td>Setter Wand &amp; Cable</td>
<td>EPIAFS Inductive Wand &amp; Cable or Unique from APMI Cartridge producer</td>
</tr>
<tr>
<td>IPIK</td>
<td>New configuration of the EPIAFS Platform Integration KIT. (GPS-SAASM and new connectors added in a case)</td>
</tr>
<tr>
<td>MRC-188</td>
<td>Standard Army Component</td>
</tr>
<tr>
<td>GPS Antenna</td>
<td>Standard Army Component</td>
</tr>
<tr>
<td>Antenna Cable</td>
<td>Standard Army Component</td>
</tr>
<tr>
<td>LHMBC I/O Cable</td>
<td>Standard Army Component</td>
</tr>
</tbody>
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Mortar Interoperability

Joint Systems
- US Air Force
- US Marine Corps
- US Navy

Allied Systems
- ATLAS (FR)
- ADLER (FRG)
- BATES (UK)
- SIR (IT)

Communications Systems

Battle Command Systems

MFCS is a core system in Army Software Blocking

MFCS-H

LHMBC

iPIK

* AFATDS (Advanced Field Artillery Tactical Data System)

* MFCS-D

* Advanced Field Artillery Tactical Data System
Summary

• APMI will provide the Infantry a GPS Guided 120mm cartridge with 10M CEP
• Fielding will begin 1Q FY11 in Theater
• APMI will be integrated with current mortar fire control systems