Product Manager for Mortar Systems

The Road To The Objective Force
"Armaments for the Army Transformation“

20 June 2001

LTC Larry Hollingsworth
PM Mortars
**Report Documentation Page**

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</table>

**Title and Subtitle**
Product Manager for Mortar Systems

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**Abstract**

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15
Demonstrate how *PM Mortar Systems* is *Nested* with *DSA, TACOM, and AMC* in support of *The Army Transformation*

Provide an orientation on how *PM Mortar Systems* will support the *Army Transformation*
Outline

Support to Army Transformation
Mortar Systems
Brigade Combat Team
Infrared Illumination
Precision Guided Mortar Munition
Mortar Fire Control System
Summary
PM Mortars Support to Army Transformation

LEGACY FORCE
- Battalion Mortar System (BMS)

OBJECTIVE FORCE
- 60/81/120mm Ammo Family Development & Production
- Mortar Fuze Development
- Precision Guided Mortar Munition
- Liaison w/ ARDEC for RAMM

INTERIM FORCE
- Mortar Fire Control Development & Production
- Technical Support to PM BCT for Mortar Carrier

PARTNERING
PM MORTARS and FIELDED FORCE
- Other Agencies and Services
  - Other Army
  - USMC
  - TACOM ARDEC
  - USAF
  - Many Others
- Industry
- Allies
  - PGMM
  - Swiss Munitions
- Academia

Sustain & Recapitalize
- Initial BCT
- Interim

Transform
- First Unit Equipped Objective
**Mortars: Organic Fire Support**

Your Father’s Mortar:
- Same Mission
- Influence the Red Zone
- Maneuver Commander’s Organic Fire Support

Not your Father’s Mortar:
- Digital Fire Control
- Improved Munitions
- Increased Lethality

"K Comp’ny artillery commander speakin’." (Bill Mauldin, *Up Front*, 1944)
U.S. Army Mortar Weapon Systems

- 60mm M224 Lightweight Mortar
  - Early 70's
  - 1,400 Systems
  - $11K

- 81mm M252 Improved Mortar
  - Late 80's
  - 1,300 Systems
  - $23K

- 120mm M120 Towed Mortar
  - Early 90's
  - 54 Systems
  - $21K

- 120mm M121 Carrier Mortar
  - Mid 90's
  - 1,100 Systems
  - $21K

Brigade Combat Team

- Early 70's
- 1,400 Systems
- $11K

- Late 80's
- 1,300 Systems
- $23K

- Early 90's
- 54 Systems
- $21K

- Mid 90's
- 1,100 Systems
- $21K
**U.S. Army Mortars Current Distribution**

<table>
<thead>
<tr>
<th></th>
<th>Per Company</th>
<th>Per Battalion (Mortar Platoon)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Brigades</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 X 120mm</td>
<td>4 X 120mm</td>
<td>1 FDC</td>
</tr>
<tr>
<td><strong>Light Brigades</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 X 81mm</td>
<td>2 X 60mm</td>
<td></td>
</tr>
<tr>
<td>18 X 60mm</td>
<td>4 X 81mm</td>
<td></td>
</tr>
<tr>
<td><strong>Ranger Regiment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 X 120mm</td>
<td>4 X 81mm</td>
<td>1 FDC</td>
</tr>
<tr>
<td>6 X 60mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*<em>Brigade Combat Team</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 X 120mm</td>
<td>12 X 81mm</td>
<td>1 FDC</td>
</tr>
<tr>
<td>18 X 60mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* Includes RSTA Sqdn which has 6 x 120mm</td>
<td></td>
<td></td>
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Arms Room Concept

- Mortar Arms Room: 4 X 120mm / 4 X 81mm / 6 X 60mm

Each Mortar Carrier can also transport:
- M224 60mm
- M252 81mm

36 120mm Mortars in the BCT

Slide 7
**Interim** Brigade Combat Team Mortars: Brigades 1 and 2

FUE Bn (-) is 1QFY03, FUE Bde 2QFY03

<table>
<thead>
<tr>
<th>Ammunition Storage</th>
<th>Mortar Carriers: 36 (+2 ORF)</th>
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<tr>
<td>120mm Only</td>
<td>60 rounds</td>
</tr>
<tr>
<td>Battalion (120/81mm)</td>
<td>45 / 25</td>
</tr>
<tr>
<td>Company (120/60mm)</td>
<td>45 / 75</td>
</tr>
</tbody>
</table>

**Each Battalion Mortar Platoon**

- One Platoon per Battalion
- 4 X 120mm Mortar Carrier
- Each Vehicle Stores & Transports:
  - M121 120mm System
  - (Dismount for Firing)
  - and
  - M252 81mm System
  - 1 FDC Vehicle with Two M23 MBCs

12 Mortar Carriers at Battalion Level

**Each Company Mortar Section**

- One Section per Company
- 2 X 120mm Mortar Carrier
- Each Vehicle Stores & Transports:
  - M121 120mm System
  - (Dismount for Firing)
  - and
  - M224 60mm System
  - Each Vehicle has a M23 MBC

18 Mortar Carriers at Company Level

**RSTA Squadron**

- One Squadron per Brigade
- 6 X 120mm Mortar Carrier
- Each Vehicle Stores & Transports:
  - M121 120mm System
  - (Dismount for Firing)
  - Each Vehicle has a M23 MBC

6 Mortar Carriers in RSTA Squadron

Plus 2 120mm MCs per Brigade (ORF)
**Interim Brigade Combat Team Mortars, Block Improvement:**
3rd through 6th Brigades (3rd Bde Fielding in FY04), 1st & 2nd BCTs retrofitted

### Ammunition Storage

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### Mortar Carriers: 36 (+2 ORF)

- **RSTA Squadron**
  - One Squadron per Brigade
  - 6 X 120mm Mortar Carrier
  - Each with Mounted 120mm and XM95 MFCS
  - Each Vehicle has a M23 MBC for Dismounted Ops.
  - Plus 2 120mm MCs per Brigade (ORF)

- **Each Company Mortar Section**
  - One Section per Company
  - 2 X 120mm Mortar Carrier
  - Each with Mounted 120mm Mortar and XM95 MFCS
  - Each vehicle also transports:
    - M224 60mm System
    - 1 FDC Vehicle with Two M23 MBCs for Dismounted Ops.

- **Each Battalion Mortar Platoon**
  - One Platoon per Battalion
  - 4 X 120mm Mortar Carrier
  - Each with Mounted 120mm Mortar and XM95 Mortar Fire Control System (MFCS)

- **Ammunition Storage**
  - 120mm Only
  - 60 rounds
  - Battalion (120/81mm) 45 / 25
  - Company (120/60mm) 45 / 75

- **Battalion (120/81mm) 45 / 25**
  - 12 Mortar Carriers at Battalion Level

- **Company (120/60mm) 45 / 75**
  - 18 Mortar Carriers at Company Level
World’s First Mortar Infrared Illumination

Organic “Own the Night” Capability

1x No Moon 680 m 3x Zoom

60mm M767
81mm XM816
120mm M983

Materiel Release (FY):
60mm M767 2Q01
120mm M983 4Q03
81mm XM816 1Q02

Enhancing Night Operations
IR Illum in Action
(Video Clips)
Precision Guided Mortar Munition (PGMM)

Overview

• Description
  – 120mm Laser Guided Extended Range Munition (ATD)
  – Current ATD Design will be Fired with SAL & Inertial Guidance; and Lab Tested with SAL/Inertial/GPS

• Weapon Platforms: 120mm Mortar Systems
  – BCT
  – Heavy Forces
  – Light Forces (ARC)

• Targets
  – Primary: Threats in Protective Cover (bunkers, buildings)
  – Secondary: Vehicles (Light Wheeled & Heavy Re-supply)

• Strategic Fit
  – Legacy: Combat Multiplier
  – Objective: Provides Enabling Technologies
  – Interim: Combat Multiplier

Prime Contractor:
• Lockheed Martin
Major Subs:
• Diehl (Germany)
• Draper Labs

Requirements:
– Destroy Hardened Point Targets
– Range: 12km (req’d)
  15km (des’d)
– Weight: < 40 pounds
– Length: < 40 inches

SAL=Semi Active Laser
Mortar Evolution:
Suppression and Precision

Today
- Area effects
- High volume fire
- Defeat targets in the open
- Suppress personnel under cover

Tomorrow
- Accuracy through extended ranges
- 1-2 rounds to hit
- Defeat personnel under cover
- Low collateral damage

PGMM gives Battalion Commanders Organic Precision Strike Capability
PGMM Warfighter Benefits

• **Immediate Response, Extended Range, Surgical Strike**
  – Organic capability for Battalion and Company Commanders
  – Force multiplier for Army in MOUT

• **No New Force Structure**
  – Conventionally fired mortar round
  – Fire Support, C⁴I, Weapon, Soldiers & Training assets in place

• **Single Round Kill; More Stowed Kills per Combat Load**
  – Decreases demands for sustainment by increasing killing effectiveness
  – Low collateral damage
  – Greatly reduces logistics footprint

• **Increases Both BCT and Legacy Force Lethality**
  – 120mm Mortars are BCT’s primary indirect fire asset
  – 120mm Mortars throughout Heavy Force
  – Ranger Regiment adopted Arms Room Concept
  – Light Divisions may also adopt Arms Room Concept (Unfunded)

**Combat Multiplier, Low Cost per Kill, Precision Strike Capability**
Mortar Fire Control System (MFCS)

- Gunner’s Display
  - Alerts Gunner when Call for Fire is Received
  - Displays mission information
  - Used to position tube to firing elevation & azimuth

- Digital & Voice Communications
  - Translates digital messages into user prompts
  - Calculates ballistics, records mission data
  - Monitors system components

- Commander’s Interface (CI)
  - Alerts Driver when Call for Fire is Received
  - Used to “Rough Lay” vehicle to firing azimuth (±20 mils)

- Driver’s Display
  - Measures vehicle location & tube orientation
  - Sends information to CI for ballistic calculations and vehicle location (for Situational Awareness)

- Navigation & Pointing Devices
  - Does for Mortars what AFATDS did for Artillery

Increased Mortar …

- **Accuracy:** 60m CEP (current is 230m)
- **Survivability:** No Dismount, Aiming Circle or Aiming Stakes; Dispersed emplacement (beyond line of sight)
- **Responsiveness:** First Round out < 1 minute (current is 8-12 min.)
- **Command & Control:** Digitally Linked to AFATDS

FDC Vehicle (M577) not shown