



TACOM
Lethality, Survivability, Mobility and
Sustainment for America's Army



Product Manager for Mortar Systems

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

20 June 2001

LTC Larry Hollingsworth
PM Mortars

Tank-automotive & Armaments COMmand

Report Documentation Page

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Abstract		
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Purpose

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

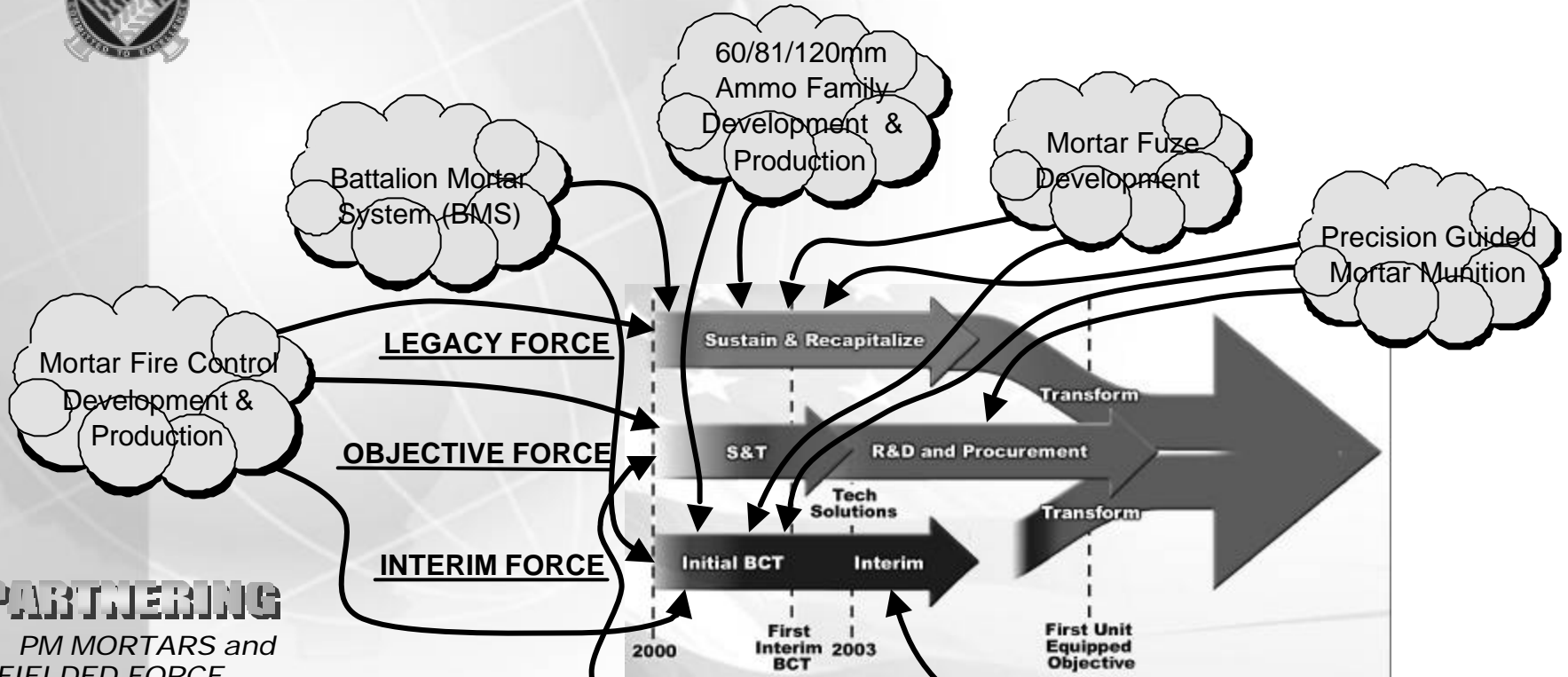
*Provide an orientation on How
PM Mortar Systems will
Support The Army Transformation*

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



PARTNERING

PM MORTARS and FIELDIED FORCE

- ◆ Other Agencies and Services
 - Other Army
 - USMC
 - TACOM ARDEC
 - USAF
 - Many Others
- ◆ Industry
- ◆ Allies
 - PGMM
 - Swiss Munitions
- ◆ Academia

Liaison w/ ARDEC
for RAMM

Technical Support to
PM BCT for Mortar
Carrier

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



Brigade Combat Team



81mm M252 Improved Mortar



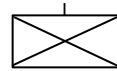
120mm M120 Towed Mortar

- Early 90's
- 54 Systems
- \$21K
- Mid 90's
- 1,100 Systems
- \$21K

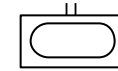
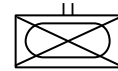


120mm M121 Carrier Mortar

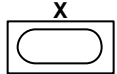
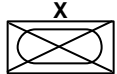
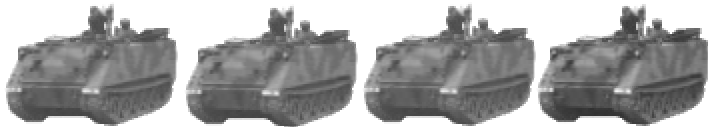

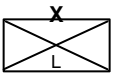
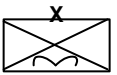
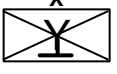




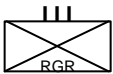



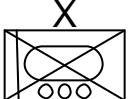





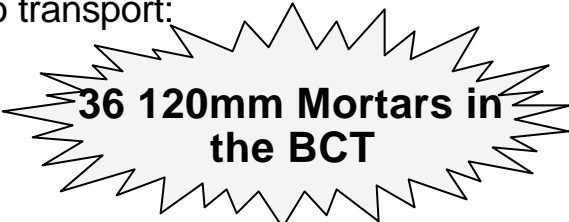
U.S. Army Mortars Current Distribution



Per Company



Per Battalion (Mortar Platoon)

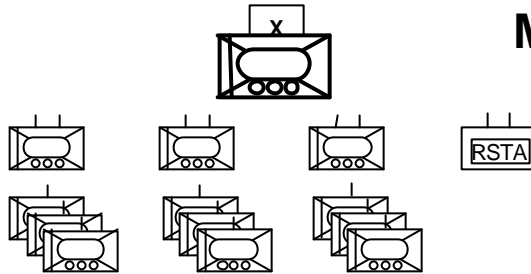
<p>(4 Per Bn X 3 Bn)</p>   <p>Heavy Brigades 12 X 120mm</p>		<p>4 X 120mm</p> 	<p>1 FDC</p> 
    <p>Light Brigades 12 X 81mm 18 X 60mm</p>	<p>(2 Per Co X 9 Co)</p>  <p>2 X 60mm</p>	 <p>4 X 81mm (4 Per Bn X 3 Bn)</p>	<p>1 FDC</p> 
 <p>Ranger Regiment 4 X 120mm 4 X 81mm 6 X 60mm</p>	 <p>Arms Room Concept</p>	 <p>Mortar Arms Room 4 X 120mm / 4 X 81mm / 6 X 60mm</p>	<p>1 FDC</p> 
 <p>Brigade Combat Team* 36 X 120mm 12 X 81mm 18 X 60mm</p> <p>* Includes RSTA Sqdn which has 6 x 120mm</p>	<p>2 X 120mm</p>  <p>Each Mortar Carrier can also transport:</p>  <p>M224 60mm</p>	<p>4 X 120mm</p>  <p>Each Mortar Carrier can also transport:</p>  <p>M252 81mm</p>	<p>1 FDC</p>   <p>36 120mm Mortars in the BCT</p>

Interim Brigade Combat Team Mortars: Brigades 1 and 2

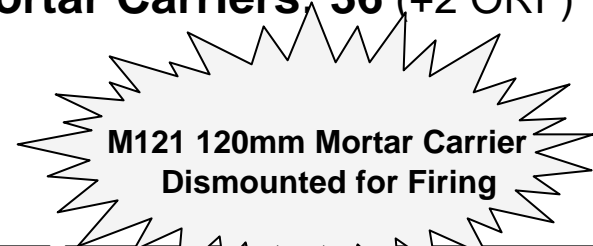
FUE Bn (-) is 1QFY03, FUE Bde 2QFY03

Ammunition Storage

120mm Only	60 rounds
Battalion (120/81mm)	45 / 25
Company (120/60mm)	45 / 75



Mortar Carriers: 36 (+2 ORF)



4 per Bn HHC x 3 Bn

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

4 per Bn HHC x 3 Bn

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

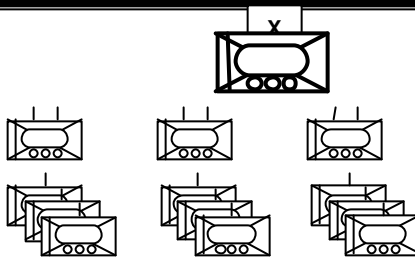
6 Mortar Carriers in RSTA Squadron

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

120mm Only 60 rounds
 Battalion (120/81mm) 45 / 25
 Company (120/60mm) 45 / 75



Mortar Carriers: 36 (+2 ORF)

Block Improvement:
 Mounted 120mm
 and
 XM95 MFCS



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)

Each vehicle also transports:

M252 81mm System



1 FDC Vehicle with
 Two M23 MBCs for
 Dismounted Ops.

**12 Mortar Carriers
 at Battalion Level**

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

Each Vehicle has a
 M23 MBC for
 Dismounted Ops.



**18 Mortar Carriers
 at Company Level**

RSTA Squadron

One Squadron per Brigade



6 X 120mm Mortar Carrier

Each with Mounted 120mm
 and XM95 MFCS

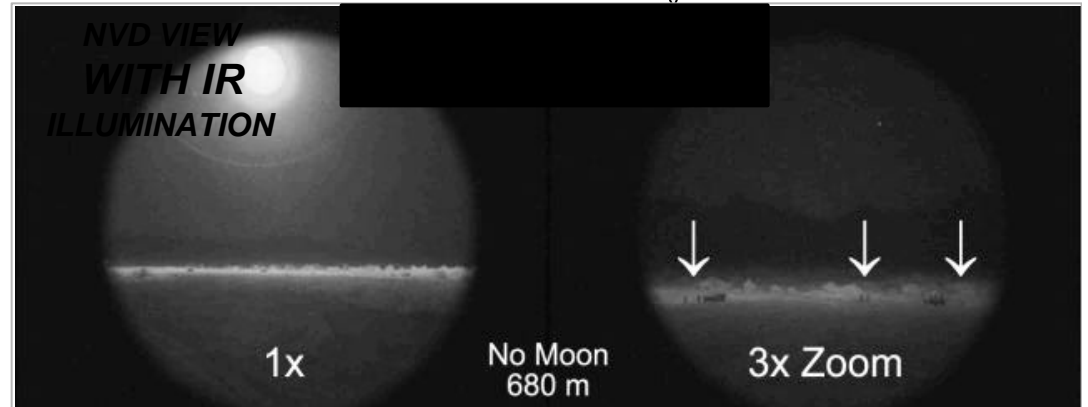


Each Vehicle has a
 M23 MBC for
 Dismounted Ops.

**6 Mortar Carriers
 in RSTA Squadron**

**Plus 2 120mm MCs
 per Brigade (ORF)**

World's First Mortar Infrared Illumination

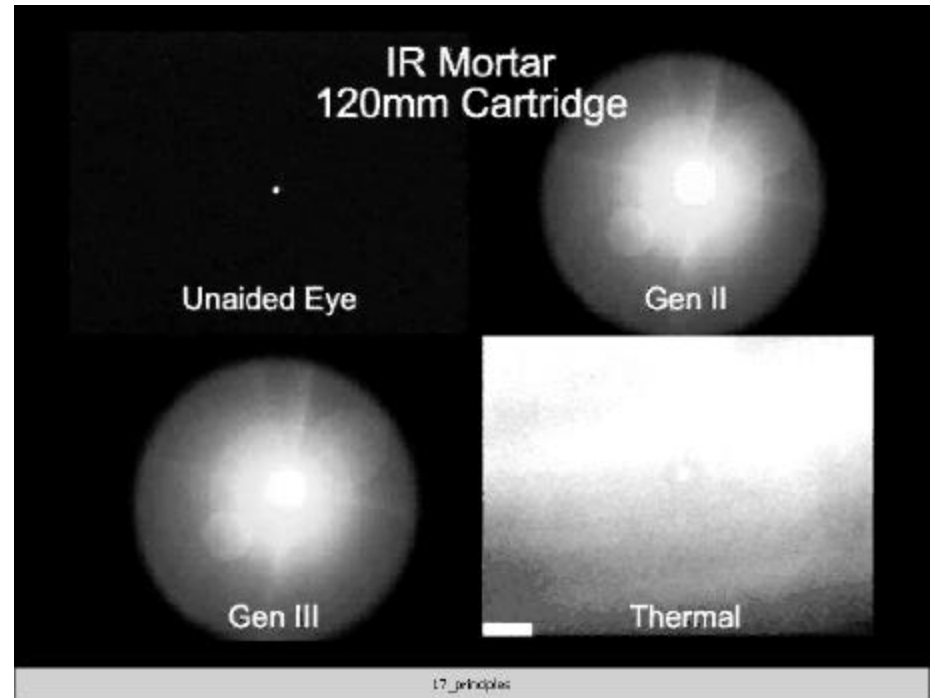


Materiel Release (FY):
60mm M767 2Q01
120mm M983 4Q03
81mm XM816 1Q02

**Enhancing Night
Operations**

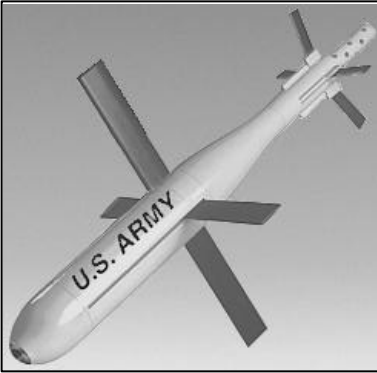


IR Illum in Action (Video Clips)



Precision Guided Mortar Munition (PGMM)

Overview



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

• 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

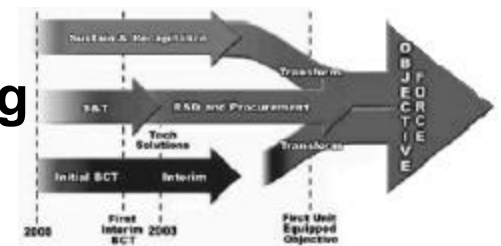
- BCT
- Heavy Forces
- Light Forces (ARC)

• 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**



Mortar Evolution: Suppression and Precision

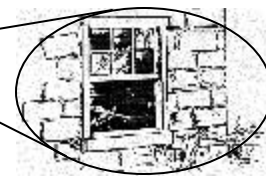
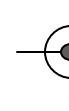
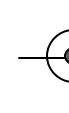
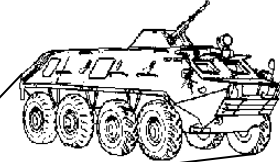
Today



High Explosive

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

Tomorrow



Complimentary

Precision Guided

- 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



Commander's Interface (CI)



Translates digital messages into user prompts
Calculates ballistics, records mission data
Monitors system components

Navigation & Pointing Devices

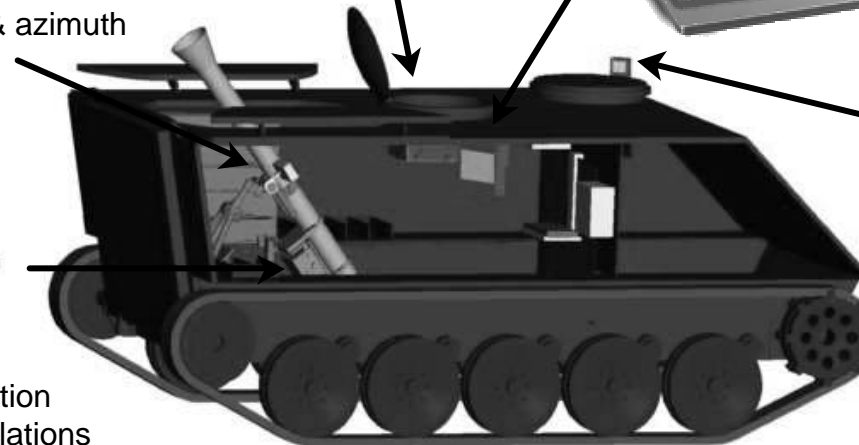


Measures vehicle location & tube orientation
Sends information to CI for ballistic calculations and vehicle location (for Situational Awareness)

Driver's Display



Alerts Driver when Call for Fire is Received
Used to "Rough Lay" vehicle to firing azimuth (± 20 mils)



FUE 3QFY02

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

Does for Mortars what AFATDS did for Artillery.