Mortar Systems Program Review

Mortar Weapon Sustainment Effort

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Mortar Weapon Sustainment Effort

Outline

Systems under Sustainment Effort
- 60mm M224 Lightweight Company Mortar System
- Improved M252 81mm Mortar System
- 120mm Battalion Mortar System

Objectives
- Common Telescopic Cleaning Staff
- Mortar Tube External Coating
- M16/M19 Plotting Board

Summary
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Systems under this Effort

- 60mm M224 Lightweight Company Mortar System
  - Light weight - highly mobile
  - Easily maintained
  - Self illuminated fire control

- Consists of:
  - M225 Cannon
  - M7 Base plate
  - M170 Bipod Assembly
  - M64/M64A1 Sight Unit
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Systems under this Effort – Cont’d

- Improved M252 81mm Mortar System
  - Long-range
  - Rapid Indirect Fire Support
  - HE, Smoke, Illum & IR
  - Smoothbore Muzzle Loaded

- Consists of:
  - M253 Cannon
  - M3A1 Base Plate
  - M177 Mortar Mount
  - M64A1 Sight Unit
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Systems under this Effort – Cont’d

120mm Battalion Mortar System

- Close in & Continuous Fire Support
- Increased Range, Lethality, Illum & Smoke Screening
- Transported by trailer (M120) or carrier (M121)

Consists Of:

- M298 Tube Cannon
- M190 Mount/M1100 Trailer
- M67 Sight Unit
- M9 Base plate
- M191 Bipod Carrier
- Adaptation Kit
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60mm M224 Mortar Illustration
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Objectives

Increased Effectiveness for Our Infantry Forces

- Pinpoint Areas for Improvement
  - User Suggestions
  - Analysis of Field Deficiency Reports
- Sustainment Cost Reduction
- Resolution of Issues
  - Discuss with users
  - Analyze representative samples
  - Brainstorm potential solutions; select the best
  - Design, produce prototypes, Test, Qualify
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Common Telescopic Cleaning Staff

Provide a common cleaning tool for the 60mm and 81mm Mortar Systems

- Recommendations by Ft. Benning, Ft. Bragg, and Troops returning from Afghanistan & Iraq
  - Two Mortar Systems Compatibility
    - Avoids logistic costs and complications of two separate systems
    - Troops carry one common staff vs. two
  - Lighter Weight
  - Collapsible, Ergonomic Design
  - Possible Composite Material Incorporation
- 120mm Staff is not a candidate for this effort
  - Resulting Staff would be impractically large and heavy
  - More costly 120 Staff design required for heavy duty use
- Status
  - Completed Pro-E Design at Picatinny
  - Fabricating Prototypes at Picatinny for T&E
  - Providing updated Requirements Package to Potential Contractors
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Current 60mm Cleaning Staff Illustration
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Mortar Tube External Coating

- Provide a more Durable Field Coating
  - Considerations
    - Both 60mm & 81mm Mortar Tubes have Phosphate Tube Coatings
      - Wear during service exposes shiny steel surfaces
        - Subject to Corrosion
        - Reflective - Visible to Enemy Forces
    - Requires More Durable Coating
    - Considering Color-Impregnation of Steel Tube at Production
  - Currently Utilize Spray-On Dry Film Lube For Repair
    - Wears off – Need Improved Methodology
  - Needs to Pass Testing Requirements for Wear, Salt Spray, Chemical Exposure, Sand & Dust

- Status
  - Investigating Alternative Coatings for New Tube Production
    - Researching other Military Coating Applications
  - Researching Refurbishment /Color – Impregnation for New Tube Production
  - Arranging for Fabrication of Prototypes for T&E
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M16/M19 PLOTTING BOARD - Function

- Portable Mechanical Calculator used to compute the deflection, range and azimuth for indirect firing of the Mortar
  - M16 Plotting Board – For 81mm & 120mm Systems
  - M19 Plotting Board – For 60mm Systems
    - This smaller sized board may not require upgrading

- Used as back-up for the Mortar Fire Control and Mortar Ballistic Computer

- Out of Production – Requires Field Sustainment Support
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M16/M19 PLOTTING BOARD

Considerations

- Three Components: Azimuth Disk, Range Arm and Grid Panel
  - Desire to Separate Three Components for Cleaning
  - Redesign Carry-Bag to Separately Hold Three Pieces
- Current Boards Break under Use
  - Rotating Disk Assembly Cracks
  - White Board Peels over Time
  - Separation of Baseboard Metal Backing during Field Use
- Difficult to Clean
  - Plastic Wheel Brakes and Cracks at Rivet
- Long Turn-Around Time for Replacement Boards

Status

- SLA Model Currently under Evaluation at Ft. Benning
  - Picatinny Engineers meeting at Ft. Benning for Evaluation
- Reviewing Pro- E Drawings prior to Metal Parts Model
- Preparing Test Plan
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M16 PLOTTING BOARD Photo
Mortar Weapon Sustainment Effort Summary

Sustainment Effort Projects covered in this Presentation:

- **Common Telescoping Staff**
  - Applicable 60mm & 81mm Systems
  - Joint effort between Mortars at Picatinny & Benet Labs
  - Considering both Picatinny In-House and Contractor Designs

- **Mortar Tube External Coating**
  - Applicable to 60mm & 81mm Systems
  - Joint effort between Picatinny & Benet Labs
  - Researching Coating Applications Knowledge Base

- **M16/M19 Plotting Board**
  - Considering whether to limit to M16 Board - 81mm & 120mm Systems
  - Conducted by Mortar Fire Control at Picatinny
  - Researching Nature of Problems and Alternative Designs