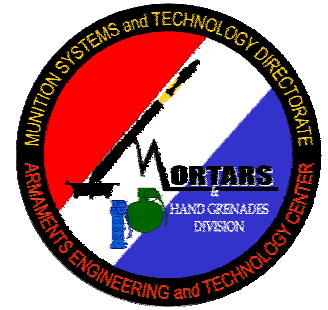




Mortar Systems Program Review



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

Mortar Weapon Sustainment Effort

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

Mortar Weapon Sustainment Effort

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

Mortar Weapon Sustainment Effort

Systems under this Effort – Cont'd

120mm Battalion Mortar System

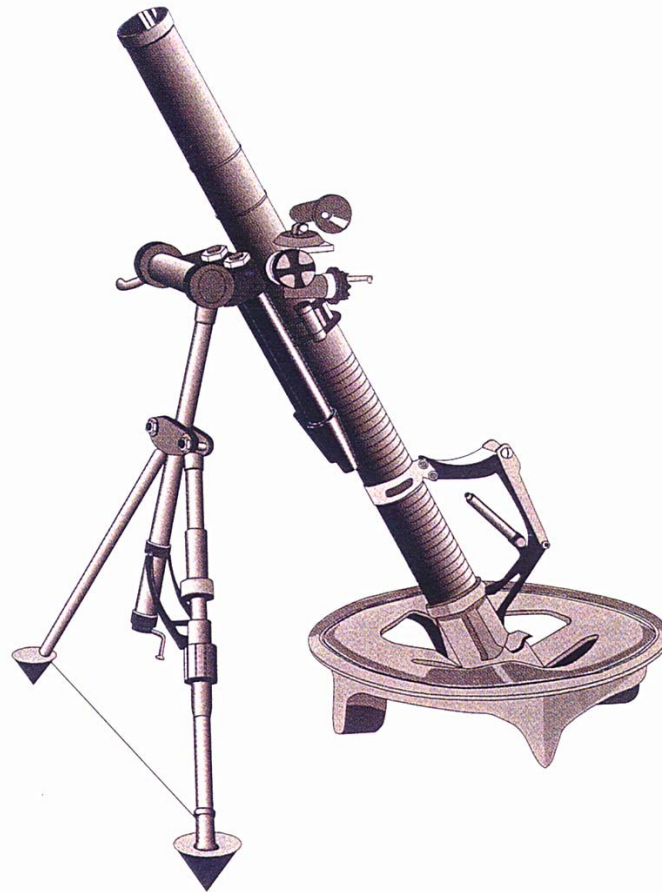
- **Close in & Continuous Fire Support**
- **Increased Range, Lethality, Illum & Smoke Screening**
- **Transported by trailer (M120) or carrier (M121)**

Consists Of:

- **M298 Tube Cannon**
- **M190 Mount/M1100 Trailer**
- **M67 Sight Unit**
- **M9 Base plate**
- **M191 Bipod Carrier**
- **Adaption Kit**

Mortar Weapon Sustainment Effort

60mm M224 Mortar Illustration



Mortar Weapon Sustainment Effort

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

Mortar Weapon Sustainment Effort

Common Telescopic Cleaning Staff

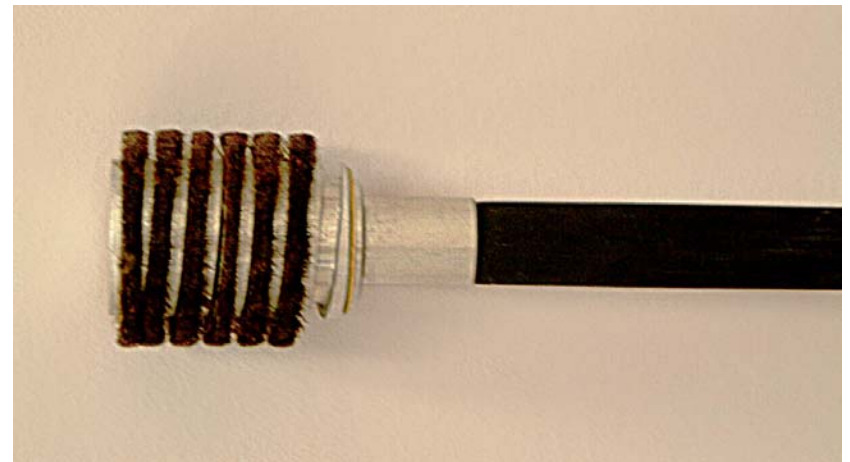
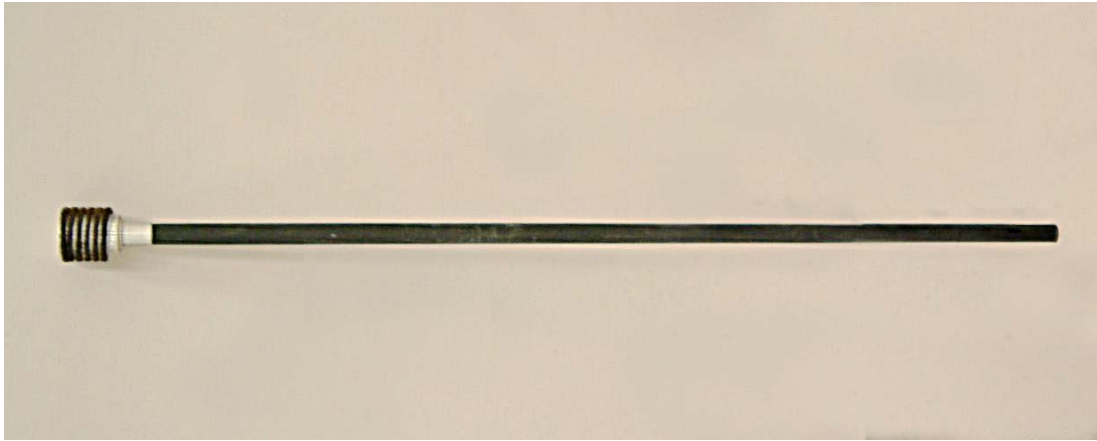


Provide a common cleaning tool for the 60mm and 81mm Mortar Systems

- **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**

Mortar Weapon Sustainment Effort

Current 60mm Cleaning Staff Illustration



Mortar Weapon Sustainment Effort

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**

Mortar Weapon Sustainment Effort

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**

Mortar Weapon Sustainment Effort

M16/M19 PLOTTING BOARD

■ **Considerations**

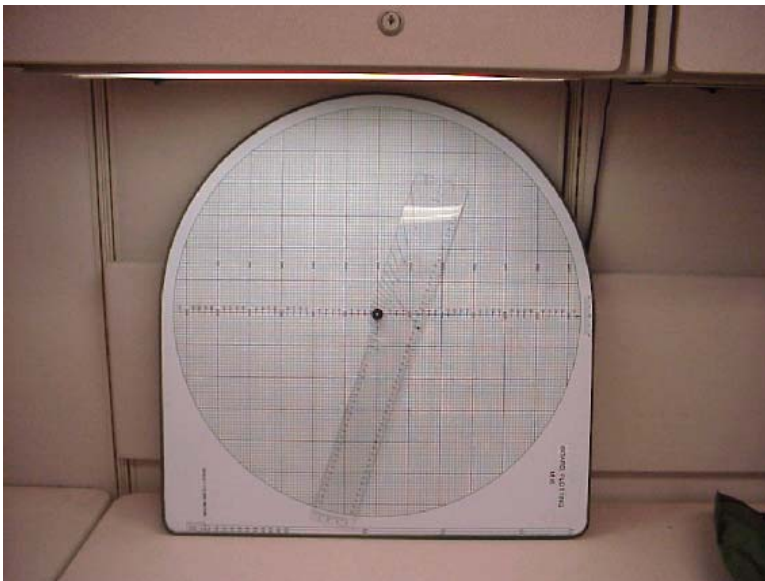
- **Three Components: Azimuth Disk, Range Arm and Grid Panel**
 - **Desire to Separate Three Components for Cleaning**
 - **Redesign Carry-Bag to Separately Hold Three Pieces**
- **Current Boards Break under Use**
 - **Rotating Disk Assembly Cracks**
 - **White Board Peels over Time**
 - **Separation 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**

Mortar Weapon Sustainment Effort

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**