ENHANCED LIVE FIRE MORTAR TRAINING USING THE M769 FULL RANGE PRACTICE CARTRIDGE

17 May 2005

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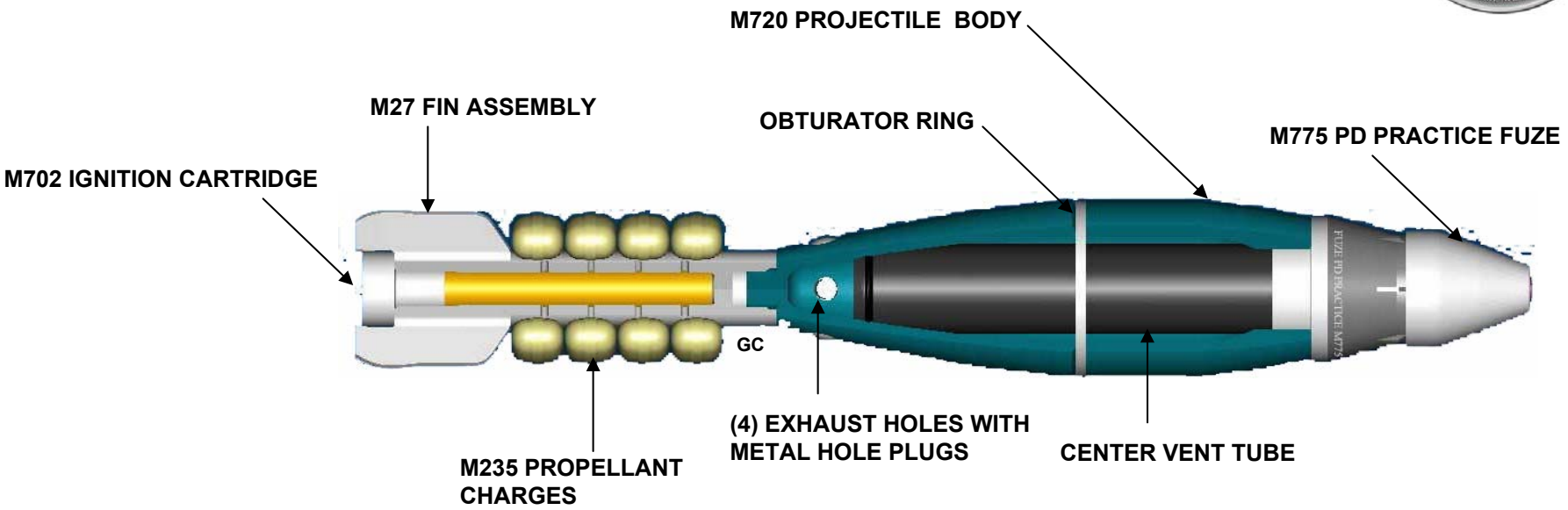
Briefing Agenda

System Description



M769 SUB-COMPONENTS LIST

(1) M702 Ignition Cartridge
(1) M27 Fin Assembly
(4) M235 Propellant Charges
(4) Metal Hole Plugs
(1) Obturator Ring
(1) M720 Projectile Body
(1) Center Vent Tube
(1) M775 PD Practice Fuze

System Characteristics

Weight:	**3.70 lbs**
Length:	**14.88 in**
Rapid Rate-of-Fire:	**30 rds/min**
Sustained Rate-of-Fire:	**15 rds/min**
Max Range (Charge 4):	**3,700 m**
Min. Range (Charge 0):	**70 m**
Max Velocity (Charge 4):	**250 m/s**
Min Velocity (Charge 0):	**65 m/s**
Max Piezo Pressure (Charge 4):	**7,000 psi**
Min Piezo Pressure (Charge 0):	**1,000 psi**

M769 Fast Facts

- ✓ M769 FRPC Program initiated by the U.S. Army after identifying a need for a low-cost 60mm Full Range Practice Cartridge (FRPC).
  - ✓ U.S. Army in the past trained with both the 60mm, M766, Short Range Practice Cartridges (SRPC) and 60mm High Explosive (HE) Cartridges.
  - ✓ Training with the M720 HE Cartridges is more expensive and reduces the U.S. Army's War-Time Ammunition Assets.
  - ✓ M769 allows safer training.
- ✓ Training with the M769 in lieu of HE cartridges is a major cost savings to the User.
  - ✓ Cost Savings of Approximately 60%.
- ✓ The M769 is ballistically similar to the M720 HE Cartridge. User trains as he would fight with the HE Cartridge.
- ✓ All Design & Development was performed by ARDEC Engineers at Picatinny Arsenal, NJ.
  - ✓ All Engineering Testing including EDT, PQT, & PVT was performed at Picatinny Arsenal & Dugway Proving Grounds in Dugway, Utah.
- ✓ Achieved Type Classification-Standard (TC-STD) on 02 October 2002 & Full Materiel Released (FMR) on 30 June 2004.
- ✓ The cartridge is currently fired from the M224, 60mm Lightweight Company Mortar System (LWCMS).

M224, 60mm Lightweight Company Mortar System (LWCMS)

Range: 70 m to 3,500 m
Max. Rate of Fire: 30 rds/min (4 min.)
Sustained Rate: 20 rds/min
System Weight:
- **Cannon: 14.4 lbs.**
- **Bipod: 15.2 lbs.**
- **Baseplate: 14.4 lbs.**
- **Aux. Baseplate: 3.6 lbs.**

Total Weight: 44.0 lbs.

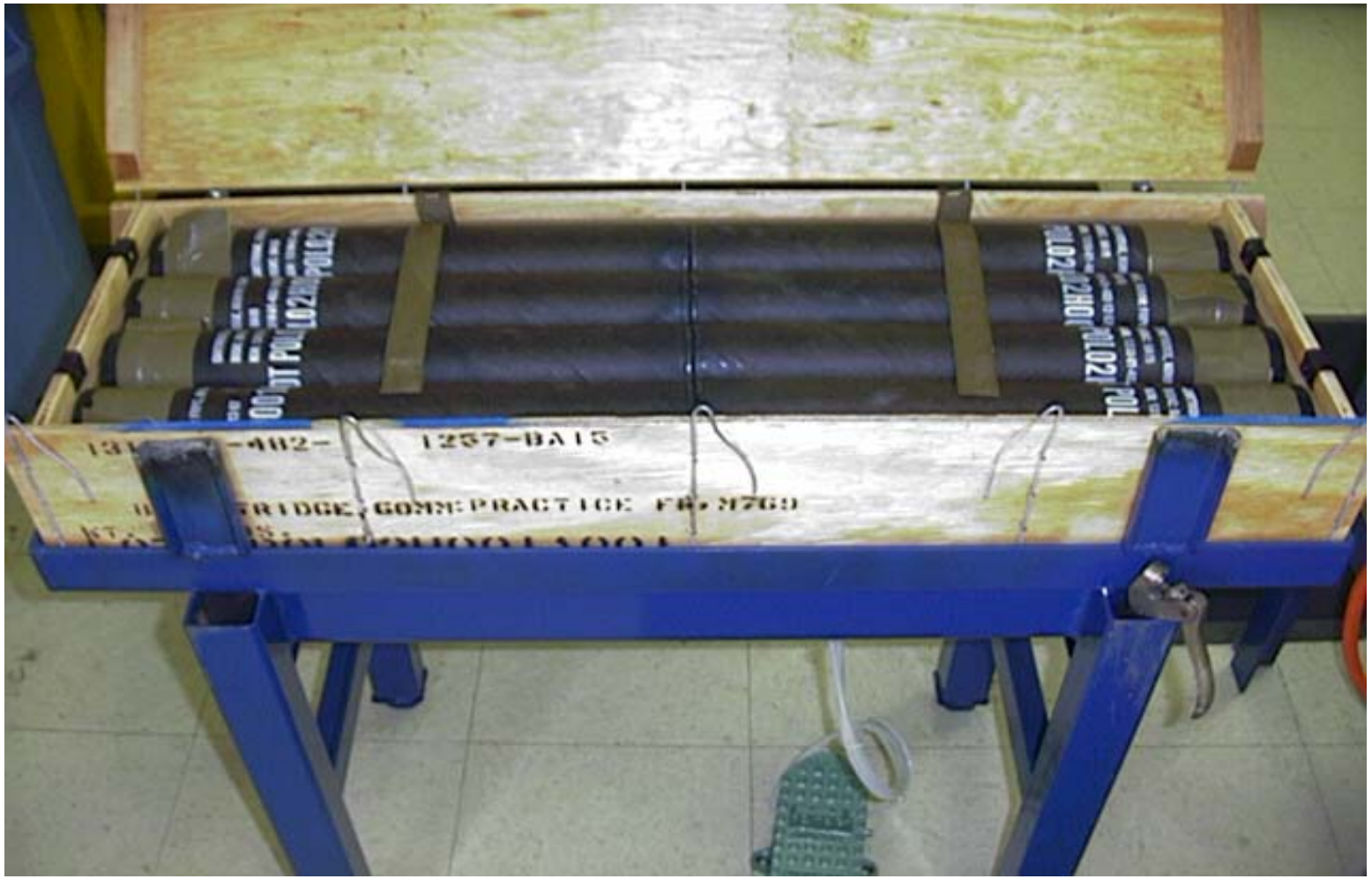
M769 Sub-Components

- ✓ **M775 Point Detonating (PD) Practice Fuze**
  - ✓ Upon impact, the Practice Fuze produces a signature of flash, bang, and smoke for the forward observer.
  - ✓ The Practice Fuze contains a 13 gram pyrotechnic, 20 gauge, primed plastic shotgun shell.
  - ✓ A snap-on plastic ogive simulates the contour and four function setting (Proximity, Near-Surface-Burst, Impact, & Delay)
- ✓ **M720 Projectile Body & Plugs**
  - ✓ Same HE Body as the 60mm, M720, HE Cartridge.
  - ✓ Only difference between the two cartridges is color (blue & green) and the four machined vent holes.
  - ✓ Vent hole plugs are designed to keep propellant gases from pressurizing the interior of the body and fuze during launching.
- ✓ **Center Vent Tube**
  - ✓ Center Vent Tube allows the fuze signature to be vented through the four vent holes near the aft of the body.
  - ✓ A center vent tube replaces the Comp B Fill which provides the same mass properties as the M720 HE Cartridge.

M769 Sub-Components (continued)

- ✓ **Obturator Ring**
  - ✓ Plastic Obturator Ring expands with the ignition and burning of propellant.
  - ✓ The expansion allows for a pressure build up that ultimately launches the cartridge from the mortar tube.
- ✓ **M27 Tail Fin**
  - ✓ The M27 Tail Fin is made of Aluminum Alloy.
  - ✓ The M769 uses the same tail fin configuration as used on HE, Illumination, & Smoke 60mm Mortar Cartridges.
- ✓ **M235 Propellant Charges**
  - ✓ Contains Four M235 Prop Charges.
  - ✓ Prop Charges contain M10/M38 Type Propellant.
  - ✓ Allows User to fire cartridge at desired charge.
- ✓ **M702 Ignition Cartridge**
  - ✓ Contains one Ignition Cartridge
  - ✓ Ignition Cartridge contains a M35 Primer, which ignites the M9 Propellant.
- ✓ **Packaging Configuration**
  - ✓ The M769 Cartridges are Packaged one to a Fiber Container.
  - ✓ Sixteen Fiber Containers to a wooden Wire Bound Box.
  - ✓ Twenty-Four Boxes to a wooden pallet.

M769 Packaging Pictures



M769 Packaging Pictures (continued)

M769 PVT Rate of Fire Test

- ✓ Rate of Fire Test was performed as part of the M769 Production Verification Test (PVT) on 12 November 2003.
- ✓ PVT was conducted by Dugway Proving Grounds in Dugway, Utah.
- ✓ Approximately 300 M769 FRPCs were fired during this test phase of the PVT.
- ✓ Quick Two Minute Video showing the Rate of Fire Capabilities of the M769 FRPC.

Briefing Conclusions

- ✓ The M769 is a low cost, 60mm, Full Range Practice Cartridge intended to provide realistic training to the User at a reduced cost.
- ✓ Approximately 74,000 cartridges have been produced and delivered to U.S. Army Depots for Training Usage.
- ✓ Approximately 27,000 cartridges have been issued for training tactics by the U.S. Army.
- ✓ Lapping of the M769 FRPC is currently being performed by Pocal Industries Inc. in Scranton, PA.
- ✓ The ARDEC POC on this program is Mr. Jason Surmanek, (973) 724-4757, surmanek@pica.army.mil
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