



**Integration of a Remotely Operated, Breech Loaded  
120 mm Mortar Platform**

**BRIEFING FOR THE GUNS & MISSILES SYMPOSIUM -  
26 APRIL 2007**

*Providing America Advanced Armaments for Peace and War*



**Thomas J. DeVoe**



# Remotely Operated 120 mm Mortar Technology INTRODUCTION



## US ARMY RDECOM-ARDEC Weapon Systems & Technology Directorate

---

Generate Technology Concepts  
Execute Life Cycle R&D  
Partner with OGA, Industry & Academia

### Indirect Fire Systems Division

Objective NLOS-M Technology ATO  
Laser Ignition for Cannon Artillery  
Artillery & Mortar Systems





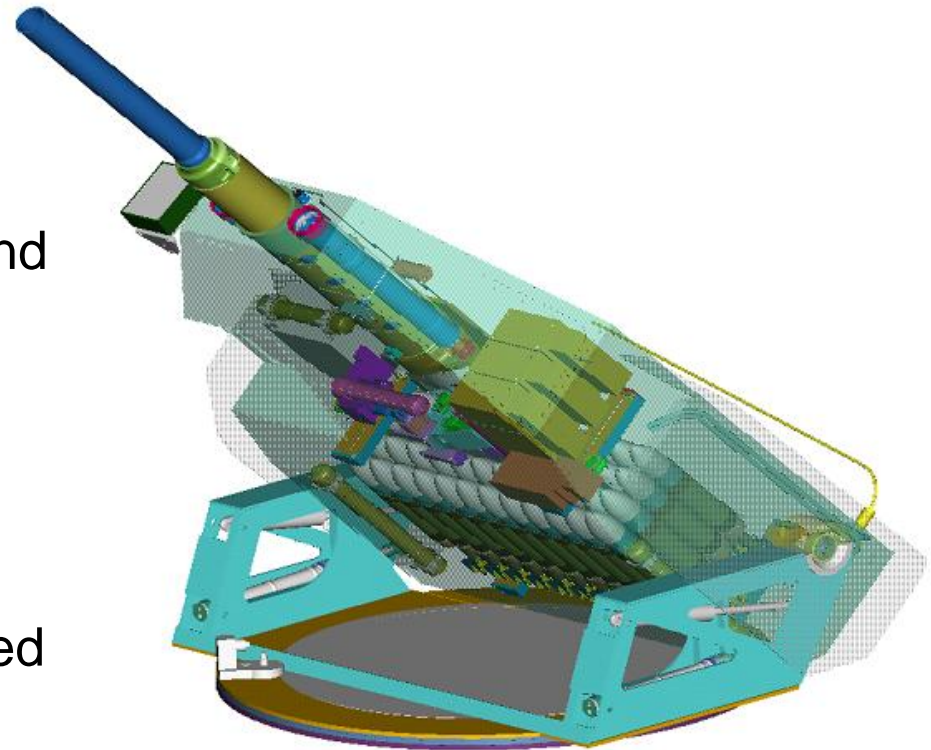
## Remotely Operated 120 mm Mortar Technology PROJECT OVERVIEW



- 120 mm Automated Mortar
- Breech Loaded
- In-line Autoloader/46 Round Magazine
- Integrated Titanium Turret and Cradle

14 rpm Maximum Rate of Fire

Live Fire Demonstrations from  
Hardstand and M113 Armored  
Personnel Carrier



**120 MM TURRETED MORTAR CAN BE MOUNTED ON A VARIETY OF FIXED OR MOBILE PLATFORMS**



# Remotely Operated 120 mm Mortar Technology BACKGROUND



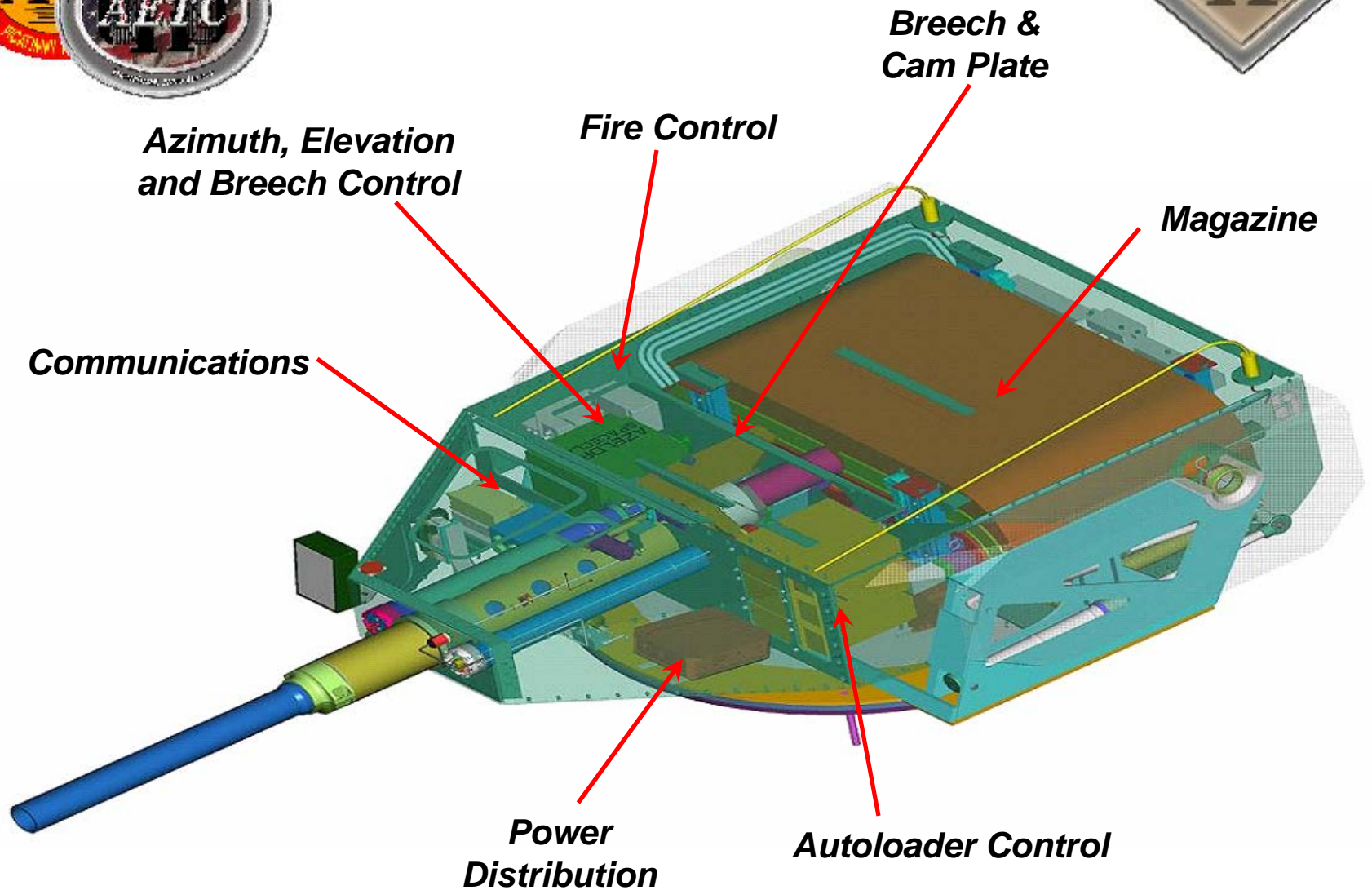
- **Trade-offs**
  - Elevating Turret vs. Elevating Gun
  - Smooth Bore vs. Rifled Bore
  
- **Design**
  - ARDEC: Cannon, Recoil Mechanism, Turret, Fire Control
  - Western Design: Ammunition Handling Design and Fabrication
  - General Atomics: Turret Structural Design
  
- **Fabrication**
  - ARDEC: Titanium Turret
  - Watervliet Arsenal: Cannon Tube and Breech
  - Rock Island Arsenal: Recoil Mechanism
  
- **Integration** - ARDEC







# Remotely Operated 120 mm Mortar Technology TURRET

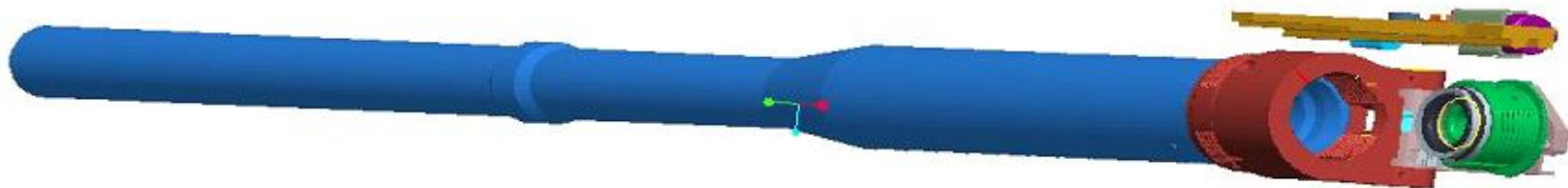




## Remotely Operated 120 mm Mortar Technology ARMAMENT



- Cannon Design Features (XM325)
  - Screw Block Breech
  - 3 Meter, Smooth Bore Mortar Tube
  - Round Positioning and Retention Features
  - Anti Fall-Back Latch
  - Solenoid Actuated Firing Mechanism
  - Breech Open Via Cam Plate
- Gun Mount
  - Independent Recoil and Recouperator Modules
  - Cradle Integral with Turret



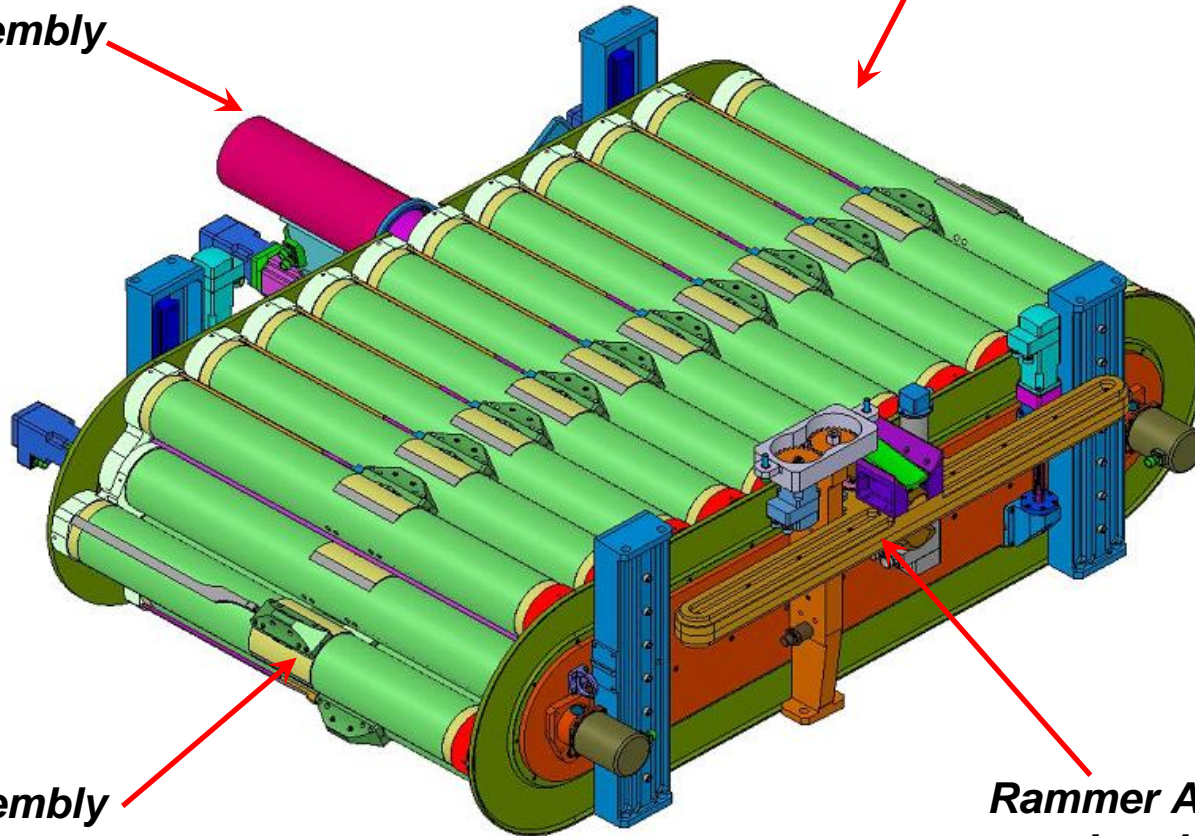


# Remotely Operated 120 mm Mortar Technology AMMUNITION HANDLING



**Bridge Assembly**

**46 Magazine  
Canisters**



**Clamp Assembly**

**Rammer Assembly/  
Load Tray**

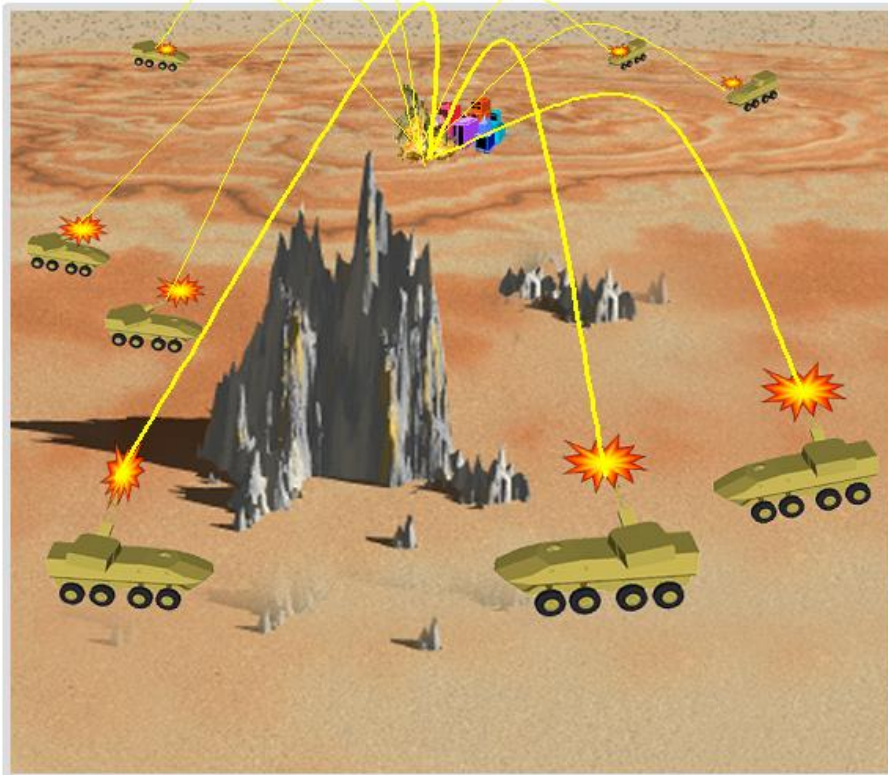




# Remotely Operated 120 mm Mortar Technology FIRE CONTROL



## Mortar Fire Control System (MFCS)



CROW – MS Windows based processor

- Gun as FDC*
- Network Fires*
- Remotes Fires*
- Autonomous Operations*

SINGARS

PLGR

TALIN INU





## Remotely Operated 120 mm Mortar Technology TESTING



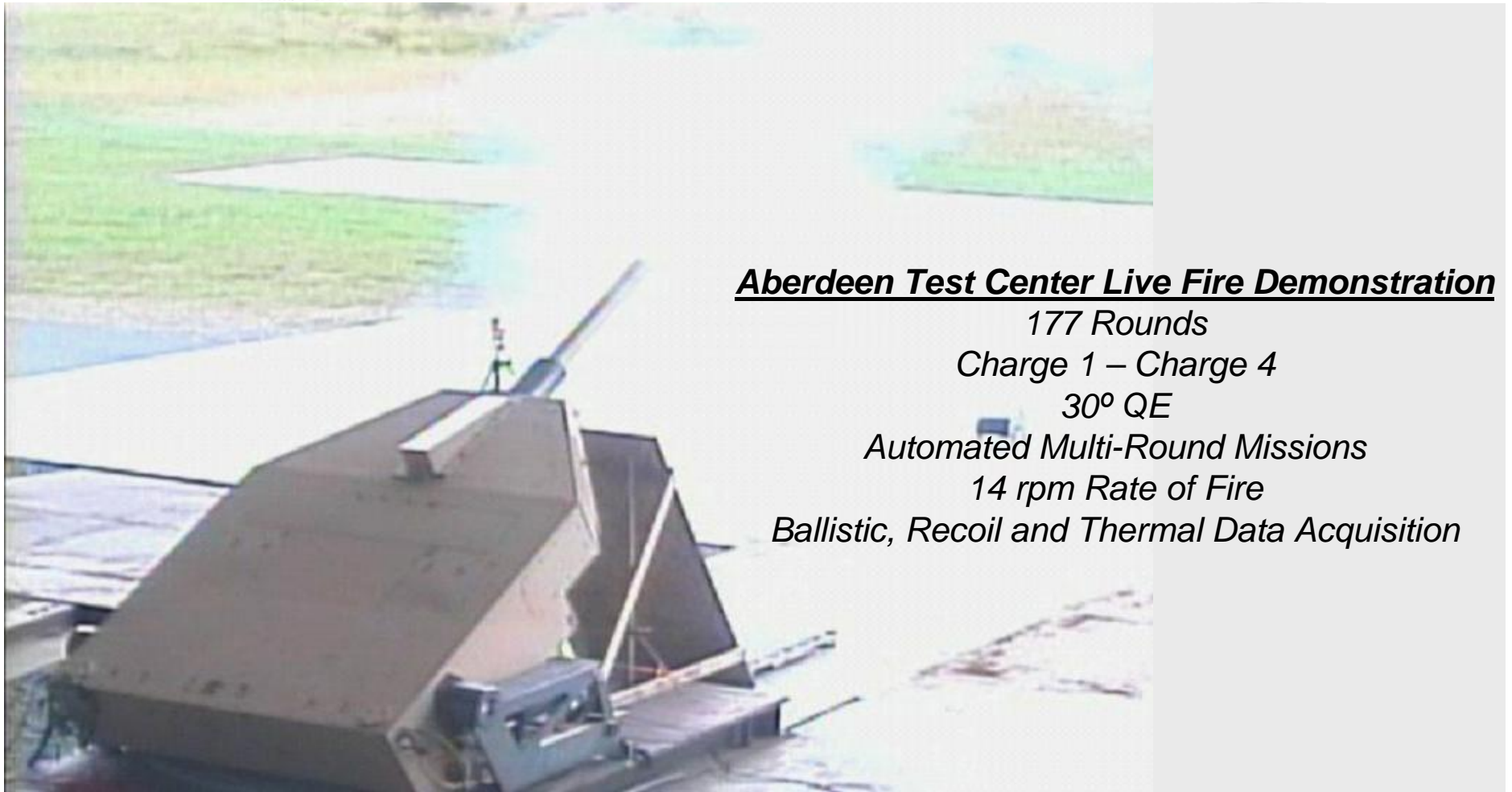
### Mount Checkout and Proof Test - Picatinny Gun Shed



15 Rounds Fired  
Charge 0 – Charge 4+  
Proofed Cannon  
19,700 psi



## Remotely Operated 120 mm Mortar Technology TESTING



### *Aberdeen Test Center Live Fire Demonstration*

*177 Rounds*

*Charge 1 – Charge 4*

*30° QE*

*Automated Multi-Round Missions*

*14 rpm Rate of Fire*

*Ballistic, Recoil and Thermal Data Acquisition*



## Remotely Operated 120 mm Mortar Technology ROWST Mortar



### Aberdeen Test Center Live Fire Demonstration

- 30 Rounds
- Charges 2 and 4
- 0° and 30° QE







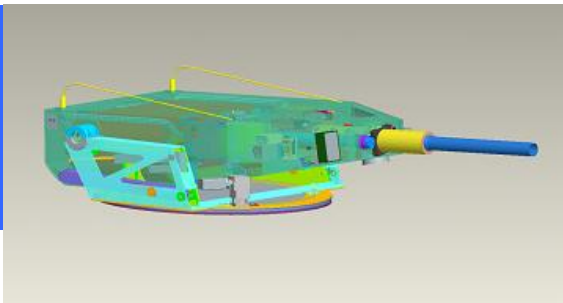
# Remotely Operated 120 mm Mortar Technology ROWST Mortar



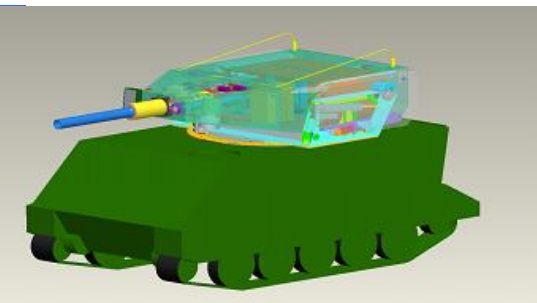
## Mortar Turret

## Turret on M113 A2

5 Tons  
191" x 98" x 36.5"  
Remotely Operable



17 Tons  
222" x 100" x 108"  
C130 Compatible



## Turret on LAV-25

## Turret on Stryker

15 Tons  
253" x 99" x 114"  
C130 Compatible with  
Modification



23 Tons  
275" x 105" x 116"  
C130 Compatible with  
Modification

