PEO Ammo Has Life Cycle Responsibility for Ammunition Across Entire Spectrum of Army Transformation

- Buy, Store & Supply **ALL** Ammunition to the US Army
- Buy, Store & Supply **ALL** SMCA Conventional Ammo to DoD
- Develop Leap Ahead Munitions to Warfighter
- Manage Organic Industrial Base

IM is Embedded in Our PM's Business Processes
PEO Ammo Vision
Deliver Conventional and Leap-Ahead Munitions Combat Power to Warfighters

PEO Ammo IM Goals

PEO Ammo Insensitive Munitions Goals
To develop and acquire munitions which enhance survivability of logistical and tactical systems, reduce risk of injury to personnel, and are potentially more cost effective and efficient to transport, store and handle.
IM Increases Safety

July 11, 1991 - Camp Doha Kuwait City

49 Injuries
Depleted Uranium contamination
102 vehicles damaged/destroyed
>24 buildings damaged
$15M destroyed ammunition

Why is IM Important?

IM Increases Logistics Survivability

Ports and Transportation Nodes are Lucrative Targets

IM Reduces System Vulnerability and Saves Lives

Al Jubayl Harbor, 16 Feb 1991

Recovered Scud Warhead

2003?
Recent PEO Ammo IM Successes
M720E1 60mm High Explosive Mortar Cartridge

**Problem:**
- Reacts violently to IM stimuli, particularly in fast cookoff environments
- Creates severe hazards to mortar resupply and transport and logistics systems.

**Solution:**
- New melt-cast explosive, PAX-21, with reduced shock sensitivity
- New HF-1 steel shell body to maintain effectiveness / lethality
- Plastic fuze adapter to prevent detonation of the HE during thermal cookoff
- New PBXN-5 fuze booster pellet.

**Benefits/Results:**
- Cartridge now passes fast cookoff.
- HF-1 steel body resulted in improved lethality.

Passes Fast Cookoff-
A Most Important Thrust Area
Recent PEO Ammo IM Successes
M829A3 120mm APFSDS-T Tank Cartridge

Problem:
- Predicted to fail fast cookoff, fragment impact, and shaped charge jet impact tests.
- Significant hazards to resupply personnel, and transport and logistics systems.
- Requirement for maximum cartridge performance makes solutions very difficult to achieve.

Solutions: Interim Container-
- PA116 container modified to vent reaction gases.
- Two meltable window panes made of fiberglass reinforced polyethylene ionomer oriented in a downward-facing position.

(M829A2 APFSDS-T)

SCO FCO BI FI SD SCJI

Interim Container

SCO FCO BI FI SD SCJI

Developing Container-
- Machine stamped channel (0.007-0.001 in depth) to create venting area.

Benefits/Results:
- Superior survivability over the M829A2 predecessor.
- Vented packaging design passes all IM tests except fragment impact.
- Scored container predicted to pass all IM tests.
- Higher velocity, greater lethality.
- Reduced hazard arcs.

88% Reduction in hazard zone. Better logistics and safety,
Reduced vulnerability of Abrams MBT.

Solution applies to all tank cartridges w/o HE warheads.
Scored container predicted to pass all IM tests. Qualification FY04.

88% Reduction in hazard zone. Better logistics and safety,
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Solution applies to all tank cartridges w/o HE warheads.
Scored container predicted to pass all IM tests. Qualification FY04.
**Problem:**
- Older artillery bag charges vulnerable to cookoff and impact threats
- Severe explosion hazards to battery personnel and equipment, and transport and logistics systems.

**Recent PEO Ammo IM Successes**

**Modular Artillery Charge System (MACS) M231/M232**

<table>
<thead>
<tr>
<th>Solution</th>
<th>Interim MACS</th>
<th>Benefits/Results</th>
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</thead>
<tbody>
<tr>
<td>Interim MACS XM231</td>
<td>• Propellant grain dimensions below critical detonation diameter</td>
<td>Least sensitive artillery charge to date, provides improved survivability for battery personnel, equipment, and transport and logistics systems, Less shock sensitive than predecessors.</td>
</tr>
<tr>
<td>Interim MACS XM232</td>
<td>• Less sensitive center igniter core</td>
<td>• Survives rough handling, improves logistics</td>
</tr>
<tr>
<td>Developing Container-</td>
<td></td>
<td>• Extends range</td>
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<table>
<thead>
<tr>
<th></th>
<th>SCO</th>
<th>FCO</th>
<th>IM TESTS</th>
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<tbody>
<tr>
<td>M3A1 (Green Bag)</td>
<td>EXP</td>
<td>DEF</td>
<td>EXP</td>
</tr>
<tr>
<td>M4A2 (White Bag)</td>
<td>B</td>
<td>DEF</td>
<td>DEF</td>
</tr>
<tr>
<td>M119A2 (Red Bag)</td>
<td>B</td>
<td>B</td>
<td>EXP</td>
</tr>
<tr>
<td>M203A1</td>
<td>DEF</td>
<td>DEF</td>
<td>EXP</td>
</tr>
</tbody>
</table>

**Benefits/Results:**
- Least sensitive artillery charge to date, provides improved survivability for battery personnel, equipment, and transport and logistics systems, Less shock sensitive than predecessors.
- Survives rough handling, improves logistics
- Extends range
- Eliminates burning residual charges
- Reduces volatile organic compounds and eliminates lead
- Permits high rates of fire
- Less costly than current
- Current MACS- 20% O&S cost savings
- Scored container 20% cheaper than current
- Scored container program predicted to pass all IM tests.
Recent PEO Ammo IM Successes
M782 Multi-Option Fuze Artillery (MOFA)

**Problem:**
- Originally developed with Composition A5 Lead and Booster
- Reacted poorly to IM stimuli, throwing hazardous debris in cookoff, sympathetic detonation, bullet impact tests.
- Creates hazards to artillery resupply and transport and logistics systems.

XM782 Multi-Option Fuze Artillery with Comp A5

**Solution:**
- Replaced Composition A5 Lead and Booster with less sensitive PBXN5

XM782 Multi-Option Fuze Artillery with PBXN-5

**Benefits/Results:**
- Passes all IM tests
- Reduces logistics burden
- Faster setting, fewer setting errors
- Increased reliability because of robust design and improved producibility
- Reduces number of fuzes in U.S. inventory from 11 to 4
- Innovative electronics packaging and flex circuitry
- Reduced parts and interconnects
- Survivable against all known ECM threats
- Improved height-of-burst accuracy
- Improved time accuracy
- Improved battery performance

**Changed Comp A5 Lead and Booster to PBXN5**

**Passes All IM Tests**
PEO Ammo IM Strategic Plan
The Path Ahead

• Develop IM Strategic Plan
• Identify mature IM technology
• Identify IM windows of opportunity
• Prioritize IM programs
• Execute programs

- Implementation Memo
- Executive summary
- Listing of PEO-managed development and procurement programs
  - IM status of PEO programs (Net Assessment)
  - Summary of mature IM technologies (Tech Assessment)
- Metrics for prioritizing IM efforts
- Prioritization of PEO IM program efforts with supporting rationale
- IM efforts overlayed onto development/procurement schedule

- Individual IM Program summaries
  - Current and planned IM efforts
  - IM funding schedule
  - IM performance for baseline and goal by threat category
  - Development and production schedule with IM insertion

- Individual IM Program details
  - Problem
  - Accomplishments
  - Solution
  - Program Schedule
  - Benefits