



JPEO AA

REBUILDING THE ARSENAL OF DEMOCRACY

The Joint Program Executive Office Armaments & Ammunition (JPEO A&A), formerly known as the Program Executive Office Ammunition (PEO Ammo), is committed to providing superior armaments and ammunition to the Soldier. The JPEO is responsible for life-cycle acquisition management of all conventional ammunition, which includes integrating budgets, acquisition strategies, research and development (R&D) and life-cycle management across all ammunition families.



Mission: Develop, procure, and field lethal armaments and ammunition providing Joint Warfighters and Allied Partners with overmatch capability.

Vision: Innovative and empowered Teams rapidly fielding dominating capabilities.

DoDI 5000.85: Major Capability Acquisition

- ACQUISITION CATEGORY (ACAT)
- Categories established to facilitate decentralized decision making and execution and compliance with statutorily imposed requirements.
 - The categories determine the level of review, decision authority, and applicable procedures.
 - ACAT categories include: ACAT I, ACAT II, ACAT III, and ACAT IV (Navy and USMC only), and Abbreviated Acquisition Program (Navy and USMC only).



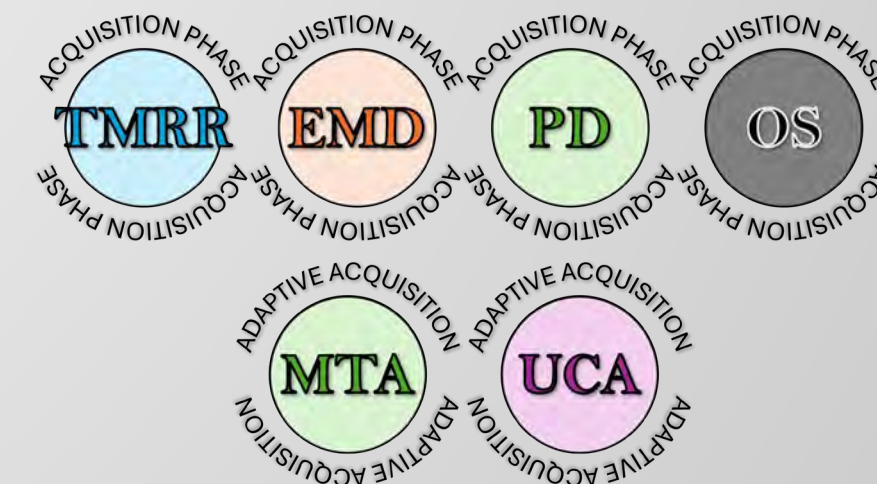
- ACQUISITION PHASE

- An acquisition program is a directed, funded effort that provides a new, improved, or continuing materiel, weapon, information system, or service capability in response to an approved need.
- The acquisition lifecycle is the relationship between acquisition phases and work efforts, and key program events such as decision points and reviews. It employs acquisition processes that match the characteristics of the capability being acquired.



- ADAPTIVE ACQUISITION FRAMEWORK, DoDD 5000.01/ DoDI 5000.02

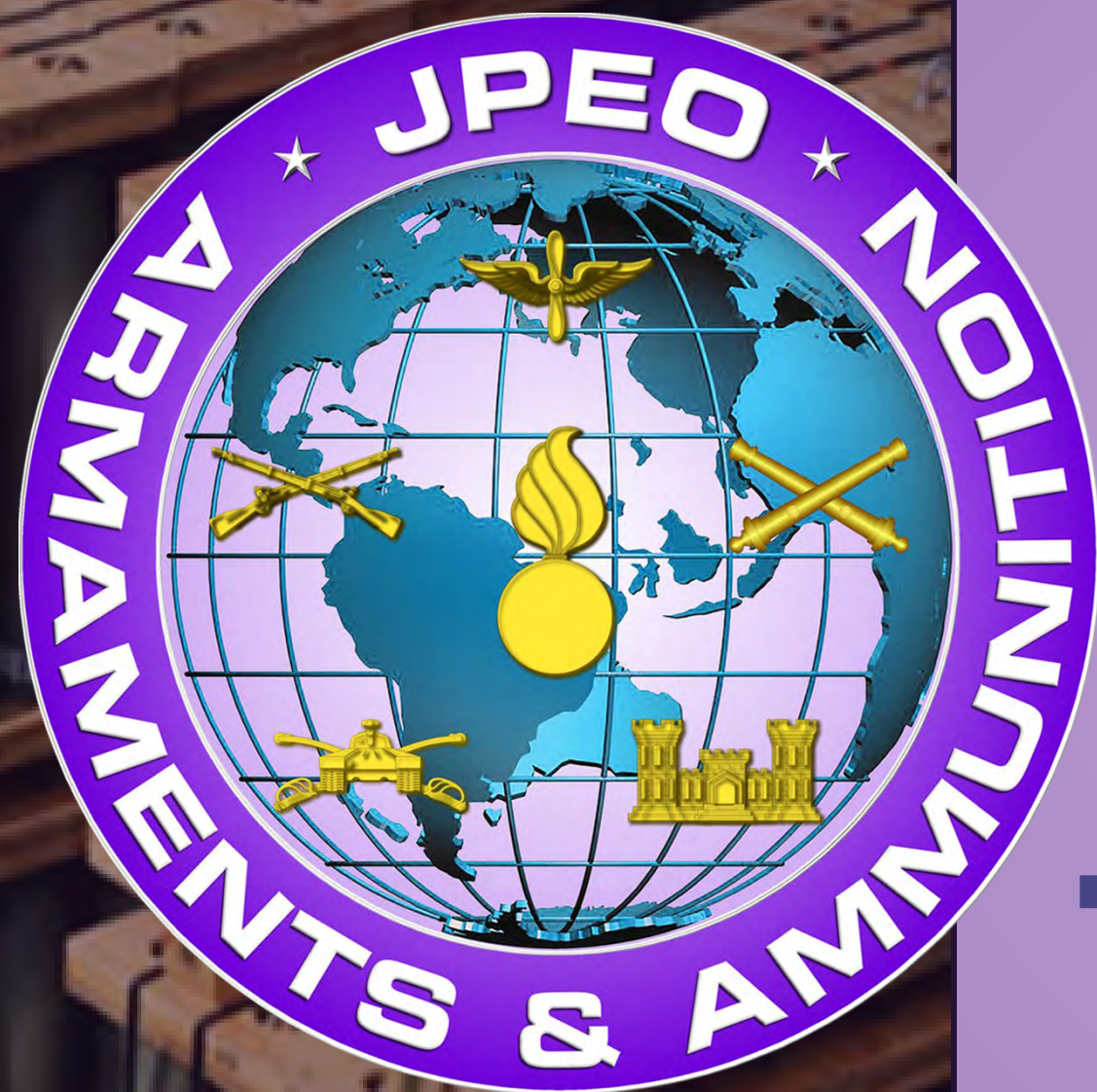
- DoDI 5000.81: Urgent Capability Acquisition (UCA)
- DoDI 5000.80: Middle Tier of Acquisition (MTA)
- DoDI 5000.85: Major Capability Acquisition (MCA)



Suitability & Interchangeability

- Conventional Ammunition Suitability/ Interchangeability List, published annually by the U.S. Army Joint Munitions Command (JMC)
- DESIGNATED USE:
 - War Reserve: Indicates that the item has a war reserve requirement
 - Training Standard: Indicates that the item is used for both war reserve and training purposes
 - Training Unique: Indicates that the item is used only for training
 - Other: Indicates that the item has some other application not directly related to war reserves and/ or training.
- SUITABLE SUBSTITUTION:
 - **P**: Preferred or Prime item
 - **S**: Suitable substitute to preferred item
 - **D**: Developmental items, not currently available for fielding





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Project Lead Joint Services enables the acquisition and manufacturing of munitions for all US military branches. PL JS integrates the Single Manager for Conventional Ammunition (SMCA) mission, providing the warfighter with conventional ammunition required to train and go to war.

PL JS is responsible for: coordinating and integrating SMCA activities, functions, processes, and operations on behalf of JPEO A&A; executing SMCA industrial base functions, including Army Ammunition Plant Modernization; providing technology solutions to improve ammunition manufacturing safety, effectiveness, quality, and cost; and managing US Army ammunition logistics research and development efforts.

Mission: Enable the acquisition and manufacturing of munitions for the Joint Services.

Vision: Acquisition and Management Excellence.





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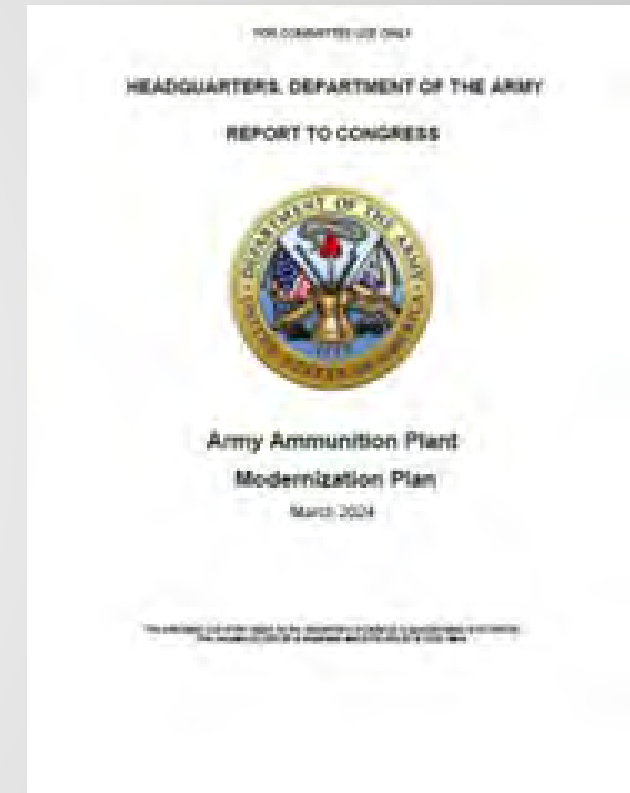
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The purpose of the AAP Modernization Plan is to provide a strategy to modernize facility infrastructure and production capabilities by capitalizing on state-of-the-art manufacturing equipment and technologies while maintaining production continuity.

Executing this AAP Modernization Plan will result in improved safety, resiliency, compliance, and operational effectiveness. The AAP Modernization Plan addresses increasing automation to minimize human exposure to hazardous environments and the application of digital manufacturing methods.

The AAP Modernization Plan provides an investment strategy focused on achieving the following end state:

1. Increase manufacturing safety and readiness to meet current and future requirements
2. Isolate energetic mass from people
3. Ensure graceful degradation and resilient operations
4. Improve flexibility, maintainability, and sustainability
5. Reduce cost of operations
6. Secure supply chains





The Armament Retooling and Manufacturing Support (ARMS) program was Congressionally established in 1993 (ARMS Act of 1992) and Codified in 2000 (10 U.S.C. 4551-4555) to encourage use of underutilized AAP facilities by commercial firms. The program lets businesses take advantage of Government incentives to use land and diverse industrial facilities that include infrastructure, utilities, buildings and equipment at very flexible and reasonable terms.

- **Capabilities & Characteristics**

- Sustains Army manufacturing capability for Armed Services national security requirements
- Reduces facility ownership, operations, and maintenance costs
- Accelerates private sector economic growth, employment, and investment





In this initiative, conventional ammunition acquisitions are reviewed to determine if they are consistent with retaining National Technology and Industrial Base (NTIB) capabilities in accordance with 10 U.S.C. 2304(c)(3) and Section 806 of Public Law (PL) 105-261.

Section 806 of PL 105-261 provides the SMCA the authority to restrict procurement of conventional ammunition to sources within the NTIB to maintain NTIB capabilities.

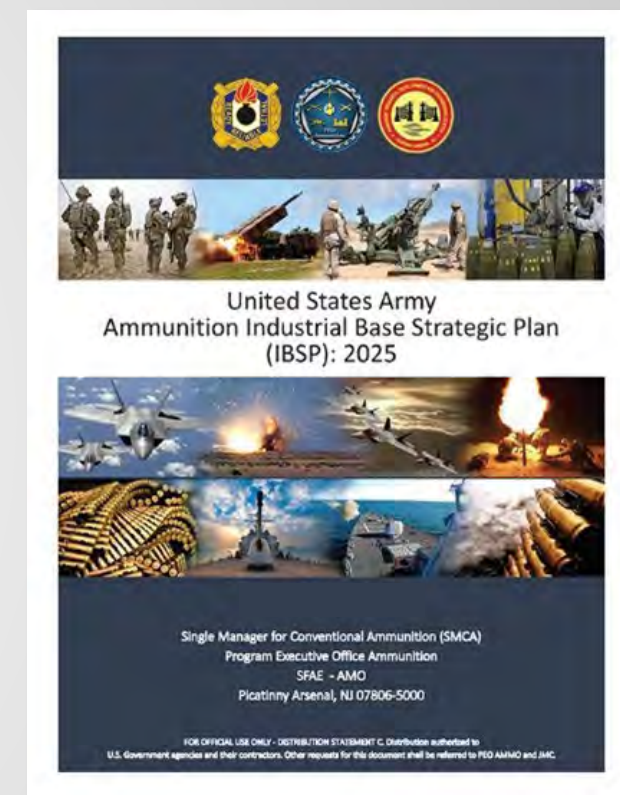
- **Capabilities & Characteristics**

- Determines if limitations of specific ammunition procurements are necessary to maintain a facility, producer, manufacturer or other supplier available for furnishing an essential item of ammunition or ammunition component for national emergency or industrial mobilization.

The purpose of the SMCA IB Strategic Plan (IBSP), as required by DoD Instruction (DoDI) 5160.68, is to lead development and publication of an overarching conventional ammunition IBSP that supports Service and U.S. Special Operations Command (USSOCOM) conventional ammunition requirements and outlines strategic objectives for the ammunition IB.

The SMCA IBSP sets the tone for the DoD's ammunition IB, for both government and commercial producers, for the next 10-15 years and is updated every five years. The plan provides strategic guidance and establishes a management framework, to posture ammunition development, production, and the logistics supply chain to effectively and efficiently respond to conventional ammunition requirements.

- **Program Partners**
 - Military Services
 - USSOCOM
- **Production Status**
 - Last updated in 2018





The Single Point Failure (SPF) Program identifies and maintains an SPF list for ammunition components and end items procured by JPEO A&A. Risk assessments are conducted using multiple measures to determine the risk of each SPF item.

An SPF has only one (or no) “qualified” source or producer for an ammunition end item, component, or raw material. A qualified producer is one that is identified through Technical Data Package (TDP) source control or qualified product list designation; or that has delivered acceptable products per U.S. technology research sources within the last five years and has maintained that capability.

- **Capabilities & Characteristics**
 - Supply chain risk reduction
 - Munitions assurance

An SPF program works in conjunction with the Assured Munitions Integrated Product Team (IPT) to prioritize the SPFs requiring action.



Plant Mission: Manufacture 155mm artillery projectile metal parts

PL JS Mission: Manage all modernization efforts and facility use contract processes and awards

Site Characteristics:

- Size: 38.29 acres, 3 buildings
- Facility Use Contract: Scranton AAP (SCAAP) contract through July 2029 with one five-year option
- Supply Contract: Not yet awarded

Core Capabilities:

- Large caliber metal parts high volume production
- Long stroke, high tonnage forging
- Diverse caliber production (60-155mm) with minimal changeover

Plant Operating Contractor:

- GD-OTS



Plant Mission: Manufacture RDX-, HMX-, and IMX-based explosives

PL JS Mission: Manage all Holston AAP (HSAAP) modernization efforts and facility use contract processes and awards

Site Characteristics:

- Size: 6,024 acres, 325 buildings, 130 igloos
- Combined Facility Use and Supply Contract: 10-year with two 5-year unpriced options effective 1 January 2024

Core Capabilities:

- Insensitive Munition (IM) explosives production and development
- High explosive (HE) synthesis and manufacture
- Melt-cast, cast-cured, pressed, and extruded explosives formulation
- Explosives performance testing
- Full-spectrum explosives R&D capability



Modernization Focus Areas:

- Explosives (RDX) Capacity Expansion
- Explosives (IMX) Capacity Expansion

Plant Operating Contractor:

- BAE Ordnance Systems, Inc.

Plant Mission: Load, assemble, and pack (LAP) medium and large caliber ammunition items

PL JS Mission: Manage all Iowa AAP (IAAAP) modernization efforts and facility use contract processes and awards

Core Capabilities:

- LAP for full range of munitions
- Tank ammunition (105mm, 120mm)
- HE artillery (rocket-assisted)
- Mortars and components (60mm, 81mm)
- Medium caliber ammunition (40mm)
- Composition C4 block/ Mine Clearing Line Charge (MICLIC)
- Pressed (missile) cast warheads
- Detonators

Plant Operating Contractor:

- American Ordnance, LLC



Plant Mission: Provider of DoD small caliber ammunition

PL JS Mission: Manage all Lake City AAP (LCAAP) modernization efforts

Site Characteristics:

- Size: 3,945 acres, 176 buildings, 69 structures with over 2,887,954 square feet
- Facility Use/ Supply Contract: 5-year contract plus 2-year option (7 years) awarded September 2019; additional 3-year award term option

Core Capabilities:

- 5.56 mm, 7.62 mm, .50 Caliber LAP
- Linking and links
- Small caliber tracer/ incendiary bullet manufacture

Plant Operating Contractor:

- Olin Winchester, LLC



Plant Mission: Large volume propellant manufacturing

PL JS Mission: Manage all Radford AAP (RFAAP) modernization projects and facility use contract processes and awards

Site Characteristics:

- Size: 6,901 acres, 2,540 buildings, 214 igloos, 657,003 square foot storage capacity
- Facility Use Contract: 15-year contract through December 2026 with two 5-year options remaining
- Supply Contract: 5-year contract through December 2026

Core Capabilities:

- Nitrocellulose (NC)
- Solvent Single Base (Slvt SB) Propellant
- Solvent Multi-Base (Slvt MB) Propellant
- Solventless Double Base (Slvtls DB) Propellant
- MK 90 Rocket Grain extrusion and finishing



Plant Operating Contractor:

BAE Ordnance Systems, Inc.

Plant Mission: 155mm artillery
projectile metal parts manufacturing

PL JS Mission: Manage all SCAAP
modernization projects and facility use
contract processes and awards

Site Characteristics:

- Size: 15.3 acres, 7 buildings
- Facility Use Contract: 10-year contract through July 2029 with one 5-year option
- Supply Contract: 5-year contract through July 2024 with one 5-year option through July 2029

Core Capabilities:

- Large caliber metal parts high volume manufacturing
- Long stroke, high tonnage forging

Plant Operating Contractor:

- GD-OTS





The Life Cycle Pilot Process (LCPP) project is a research, development, technology, and engineering (RDT&E) Program of Record (PoR) under Program Element (PE) 0605805A: Munitions Standardization, Effectiveness, and Safety.

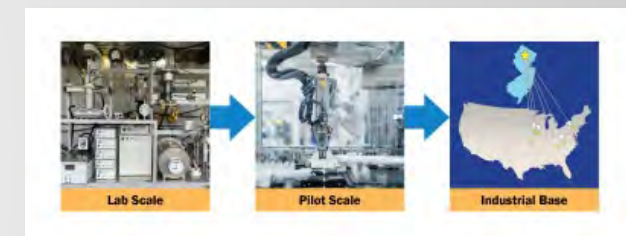
The LCPP's primary mission is to actively seek and transition technologies to improve production, mitigate supply chain risk, and refine product and manufacturing costs for JPEO A&A products.

LCPP Thrust Areas:

- Life Cycle Cost Refinement: assess alternative materials/ components, identify lean manufacturing methods/ technologies, and/ or investigate IB waste mitigation and energy-resilient methods to refine end item costs
- SPFs: mitigate single- or no-source of supply end item or end item components
- Manufacturing Technology for IB Transformation: mature manufacturing technologies and transition to the IB

Program Partners:

- Ammunition plants
- Industry





JPEO AA

REBUILDING THE ARSENAL OF DEMOCRACY

Project Manager Combat Ammunition Systems (PM CAS) develops, produces, and equips Soldiers and Marines with conventional artillery and mortar ammunition, precision ammunition, mortar weapons, and mortar fire control systems. Under the Single Manager for Conventional Ammunition (SMCA) responsibilities, PM CAS also procures ammunition for US Marine Corps, US Air Force, US Special Operations Command, and our allies.



Mission: Perform Life-Cycle Management of Tube-Launched Indirect Fire Munitions, Mortar Weapons, and Mortar Fire-Control Systems.

Vision: Deliver Conventional and Leap-Ahead Munitions Combat Power to Warfighters, Giving them the Materiel Edge over Real and Potential Adversaries.



Project Manager Combat Ammunition Systems

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The M337A2 consists of a brass or aluminum cartridge case containing loosely packed black powder and a press-fitted percussion primer. A fiberglass wad is inserted over the black powder and a polystyrene closing cup is cemented in place with a polyester resin adhesive. When the firing pin of the weapon strikes the primer, a flash is generated which ignites the black powder charge producing flash, smoke and a loud report to simulate weapon firing.

Capabilities & Characteristics:

- Non-tactical rounds, used in ceremonies
- Weight: 3.25 pounds
- Body Type: Brass or Aluminum
- Payload: 1 pound of Black Powder explosive
- Primer: M1B1A2

System Integration:

- 75mm M1A1 Howitzer

Configurations:

- C025

Materiel Release: November 1984

Production Partners:

- System Integration: PM CAS





The M915 Dual Purpose Improved Conventional Munition (DPICM) cartridge was designed specifically for use in the M119A1 Towed Howitzer. The M915 provides greater range and lethal area coverage versus the 105mm M444 HE cartridge and is most effective against light armor and enemy troop concentrations.

Capabilities & Characteristics:

- DPICM grenades detonate on impact, producing a hyper velocity armor piercing jet and incapacitating metal fragments
- M234 Electronic Self-Destruct Fuze (e-SDF) capability ensures grenade function or fuze sterilization
- Weight: 42.7 pounds
- Length: 36.67 inches
- Cartridge Body: High Alloy Steel
- Cartridge Color: Olive drab with yellow markings
- Grenade Explosive: PAX-2A, Type II (17.2 grams per grenade)
- Propelling Charge: M200
- Range: 14 kilometers (maximum)

System Integration:

- 105mm M119A1 Towed Howitzer

Configurations:

- CA11

Materiel Release: April 2019





The M1 is a semi-fixed 105mm HE cartridge consisting of the M14B Cartridge Case, M28B2 Percussion Primer, M67 Propelling Charge, a nose plug, and a projectile containing TNT (2, 4, 6-Trinitrotoluene explosive) or Composition B explosive filler. The M1 Cartridge is compatible with the M557 Point Detonating (PD), M739 PD, M732 Variable Time (VT), M767 Electronic Time, Super Quick (ETSQ), and the M782 Multi-Option Fuze for Artillery (MOFA) fuzes.

The IM version (DODIC CA59) is loaded with IMX-101 explosive, however it is no longer in production. New M1 production will use TNT or Composition B. New production contract award pending: estimated for late 2024.

Capabilities & Characteristics:

- Used for fragmentation, blast, and mining in support of ground troops and armored columns
- IM variant passes Shaped Charge Jet Sympathetic Reaction requirements
- Weight: 39.92 pounds
- Body Type: High-fragmentation forged steel
- Propelling Charge: M67
- Range: 11.5 kilometers (maximum)

System Integration:

- 105mm M102 series Howitzers
- 105mm M119 series Howitzers

Configurations:

- **CA59** – IMX-101 explosive fill
- Suitable Substitutes:
 - C445 – Composition B or TNT explosive fill

Materiel Release: April 1986

Program Partners

- Recap:
 - Blue Grass Army Depot (BGAD)
 - McAlester AAP (MCAAP)
- LAP: TBD – pending contract award
- Composition B Explosive Production: BAE-HSAAP (Kingsport, TN)





The M760 is a semi-fixed cartridge which includes the M14B4 Cartridge Case, M28 Percussion Primer, the M200 Propelling Charge, a fuze, and an M1 projectile body. Operationally, the M760 is a single zone cartridge designed to deliver an HE warhead to maximum range.

Capabilities & Characteristics:

- Weight: 39.96 pounds (with fuze)
- Length: 31.1 inches (with fuze)
- Range: 14,000 meters (maximum); 9,600 meters (minimum)

System Integration:

- 105mm M119 series Howitzers

Configurations:

- **C473**

Matériel Release: 1989



The 105mm M84A1 Hexachloroethane (HC) Smoke Projectile is comprised of a semi-fixed M14 Cartridge Case, M28 Percussion Primer, M67 Propellant Charge, time fuze and a projectile body that contains a pinned base plug, a black powder expelling charge and three HC smoke canisters. Each metal canister contains a core igniter flash tube, a first fire mix and the HC smoke composition, which when ignited, produces a caustic white smoke.

The M84A1 is loaded and fired in a conventional manner. As the round approaches the target area, the fuze functions and ignites the black powder expelling charge, which simultaneously ignites and expels the three HC canisters from the base of the carrier. The smoking canisters fall to the ground producing billowing clouds of smoke which last from 40 to 90 seconds.

Capabilities & Characteristics:

- Range: Projectile shall meet 11.4 kilometers with M67 Propelling Charge
- Smoke Signature:
 - Smoke used to provide signal, screening, or target spotting
 - White smoke signature produced by three HC smoke canisters
 - Each M1 canister, after ejection, shall ignite and emit white smoke for 40-95 seconds
- Fuze: M762 series

System Integration:

- 105mm M119 series Howitzers

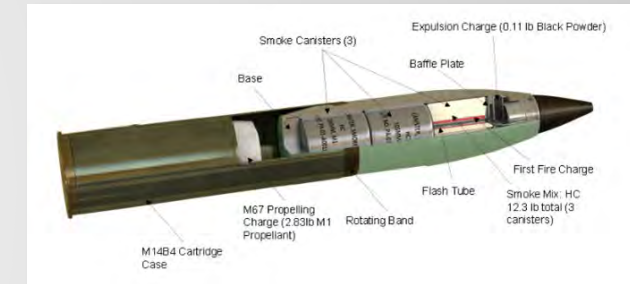
Configurations:

- C479

Materiel Release: 1970

Production Partners:

- System Integration: PM CAS
- Projectile Metal Parts, Smoke Canister, and all other interior components: CAAA (Crane, IN)
- WP Canister Fill, LAP: PBA (Pine Bluff, AR)





The M314A3 is a visible light (VL), semi-fixed illuminating cartridge intended for signaling or for illuminating the battlefield. The cartridge consists of an M14 Cartridge Case, M28 Percussion Primer, M67 Propelling Charge, and a projectile which contains a pinned base plug, a black powder expelling charge, an illuminating canister with anti-rotational vanes, and a parachute assembly that is connected to the closed end of the canister. The canister contains an illuminating filler covered by a thin layer of first fire composition.

Capabilities & Characteristics:

- Weight: 46.4 pounds
- Body Type: Forged Steel
- Payload: 1.67 pounds of illuminant
- Propelling Charge: M67
- Range: 9.1 kilometers (maximum)
- Illumination: 525,000 candlepower
- Burn Time: 55 seconds (minimum)

System Integration:

- 105mm M119 series Howitzers

Configurations:

- **C541**
- Suitable Substitutes:
 - C449: 105mm M314 Illuminating Cartridge with fuze
 - C542: 105mm M314 Illuminating Cartridge without fuze





The M913 HE Rocket-Assisted (HERA) cartridge is a semi-fixed cartridge that includes the M14B4 Cartridge Case, M28 Percussion Primer, M229 Propelling Charge, a fuze, and a rocket-assisted projectile. Operationally, the M913 is a single zone cartridge designed to deliver an HE warhead to maximum range. The M913 can be fired rocket-on or rocket-off.

Capabilities & Characteristics:

- Weight: 38.5 pounds (with fuze)
- Length: 32.3 inches (with fuze)
- Range: 19,500 meters (maximum);
10,500 meters (minimum)

System Integration:

- 105mm M119 series Howitzers

Configurations:

- C546

Matériel Release: 1990





The M1130 Pre-formed Fragments (PFF) HE Base Bleed (BB) Cartridge is a semi-fixed cartridge composed of the M14B4 Cartridge Case, M28B2 Percussion Primer, M67 Propelling Charge, and a BB gas generator unit. The projectile warhead is composed of natural fragmenting steel with an inner liner of tungsten spheres with an insensitive explosive filler. The M1130 cartridge is compatible with the M782 MOFA and the M767 series ETSQ fuzes.

Capabilities & Characteristics:

- Increased lethality against personnel and soft targets
- Weight: 36 pounds
- Length with fuze: 21.7 inches
- Body Type: 9260 High Fragmentation Steel
- Payload: PBX-4 explosive with tungsten spheres
- Propelling Charge: M67
- Range: 13.5 kilometers (maximum)

System Integration:

- 105mm M102 series Howitzers
- 105mm M119 series Howitzers

Configurations:

- **CA52**
- Suitable Substitutes:
 - C463: 105mm M548 HERA
 - C544: 105mm M927 HERA

Materiel Release: April 2012

Production Partners:

- System Integration: PM CAS
- Assemble and Pack: GDMS (Canada)
- Metal Parts: RDM (South Africa)





The M1064 is an infrared (IR) Illuminating Cartridge compatible with the M762 series Electronic Time (ET) fuzes and M67 Propelling Charge and is package in the PA117 Shipping Container. The M1064 consists of a 40-gram expelling charge that simultaneously ignites the illuminate while ejecting it from the projectile.

Once dispensed, fins on the canister assist in reducing the spin rate while the parachute provides a descent rate of 12 meters per second. The IR composition reduces the possibility of exposing forward friendly troop positions while also allowing covert adjustment of fire at greater observation distances through use of passive Night Vision Devices (NVD). This cartridge illuminates to the full range of the M1 HE cartridge.

Capabilities & Characteristics:

- Provides IR illumination area 2.75 times larger in diameter than the M314A3 Visible Light (VL) Illumination cartridge, improving Soldier ability to observe the enemy at night
- Range: 4 kilometers (minimum); 9.1 kilometers (maximum)
- Weight: 46.4 pounds
- Length: 32.17 inches
- Reliability: 92% at 80% confidence level
- Payload: 0.65 pounds of IR illuminating composition
- Ballistically comparable to the M314A3
- Illumination: 50 watts per steradian
- Candlepower: 500 candlepower of VL emitted (maximum)

System Integration:

- 105mm M119 series Howitzers

Configurations:

- CA53

Materiel Release: December 2010





The M97 is a semi-fixed cartridge composed of the M14B4 Cartridge Case, M28B2 Percussion Primer, M67 Propelling Charge, a nose plug, and a rocket-assisted projectile. The projectile warhead contains an explosive filler, an aluminum liner, and a supplementary charge. The base of the warhead is threaded in tandem to a rocket motor which contains a rocket propellant grain and an ignition delay.

Projectile functioning is dependent upon the fuze used and may function on impact (instantaneous or delay), function above ground either at a predetermined height based on time of flight or function in proximity with the target area.

Capabilities & Characteristics:

- Extended range rocket-assisted projectile used for fragmentation, blast, and mining support of ground troops and armored columns
- Weight: 37.2 pounds
- Body Type: High Fragmentation Steel
- Payload: 5.8 pounds of TNT explosive
- Propelling Charge: M67
- Range: 14.3 kilometers (maximum)

System Integration:

- 105mm M102 series Howitzers
- 105mm M119 series Howitzers

Configurations:

- C544

Materiel Release: July 2007





The 105mm M395 blank cartridges are assembled with a loose, 770-gram black powder charge retained by a glass fiber closing wad and polystyrene closing cup, glued in place by an epoxy resin. The base of the case is fitted with an M61 percussion element and an M1A2 or M1B1A2 primer. Detonation of the case contents creates sound, flash, and smoke.

Capabilities & Characteristics:

- Non-tactical round
- Used for ceremonies
- Weight: 6.24 pounds
- Body Type: Brass or Aluminum
- Payload: 770 grams of Black Powder
- Primer: M1B1A2

System Integration:

- 105mm M102 series Howitzers
- 105mm M119 series Howitzers

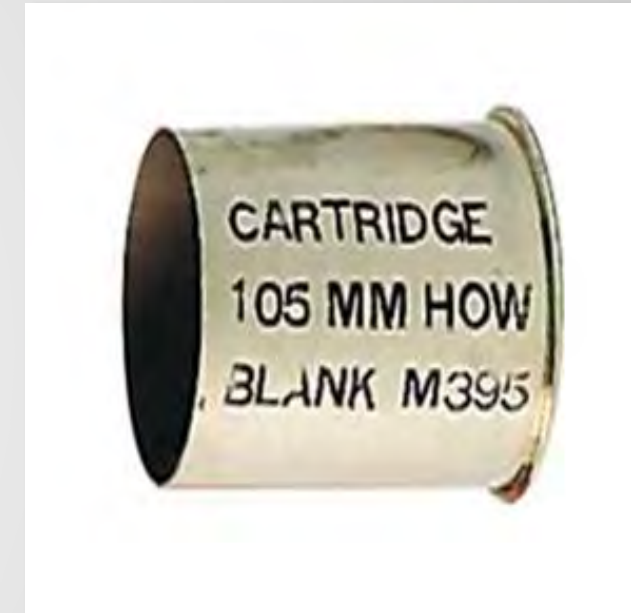
Configurations:

- **C440**

Matériel Release: November 1984

Production Partners:

- System Integration: PM CAS



The Projectile Gun Unit (PGU) 44/B is a fixed round with the projectile crimped to the cartridge case to mitigate safety and handling concerns. The PGU-43 and -44/B use the Army M1 warhead and CYU-1B brass cartridge case, the M28A2 primer, and the M67 propelling charge.

The PGU-43/B is the inert target practice version which utilizes the less expensive M739A2 Point Detonating/Delay (PD/D) fuze (DODIC N340). The PGU-44/B, the tactical projectile, is filled with 4.6 pounds of Composition B explosive and uses the FMU-153A/B PD/D concrete-penetrating fuze (DODIC NA01). The PGU-45/B cartridge uses high fragmentation steel, is filled with 4.6 pounds of Composition B explosive, and uses the FMU-160A/B proximity fuze (DODIC NA18).

These 105mm PGU cartridges are purchased by the USAF

Capabilities & Characteristics:

- Used in the USAFE Special Operations Command AC-130 Gunship 105mm Cannon
- Weight: 40 pounds
- Body Type: Forged Steel
- Payload: 4.8 pounds of TNT explosive; 5.0 pounds of Composition B explosive
- Propelling Charge: M67
- Range: 11.5 kilometers (maximum)

System Integration:

- USAF AC-130 Gunship with 105mm M137 Cannon

Configurations:

- **CA34**: PGU-44/B HE
- **CA22**: PGU-43/B Practice
- **CA33**: PGU-45/B HE, Fragmenting





The 155mm Area Denial Artillery Munition (ADAM) projectiles are mine munitions containing 36 anti-personnel mines. The projectile is comparable in physical dimensions to the M483A1 projectile and is also fired with the M762 ET fuzes. Upon function, the mines are ejected over the target area and armed after ground impact. The mines will self destruct after the designated lifetime.

Capabilities & Characteristics:

- Range: 18,500 meters (maximum); 2,200 meters (minimum)
- Mines: 36 anti-personnel (AP) mines

System Integration:

- 155mm M777 Towed Howitzer
- 155mm M109 series Howitzers

Configurations:

- **D501**: M731 ADAM-S
- **D502**: M692 ADAM-L

Materiel Release: 1976





The M718A1 Remote Anti-Armor Mine System (RAAMS) projectiles are used to deliver anti-tank mines in front of enemy armored forces. The RAAMS projectiles are based on the M483A1 carrier and carry nine anti-tank mines that are ejected upon function of an M762 series ET fuze. The mines are armed after ground impact and are initiated by tanks or other heavy armor targets. The mines will self destruct after the designed timeline.

Capabilities & Characteristics:

- Range: 18,500 meters (maximum); 2,200 meters (minimum)
- Mines: 9 anti-tank mines

System Integration:

- 155mm M109 Towed Howitzer
- 155mm M777 Towed Howitzer

Configurations:

- **D514**: M741A1 RAAMS-S
- **D515**: M718A1 RAAMS-L



The M864 is a DPICM containing a total of 88 dual-purpose grenades, each capable of penetrating a minimum of 2.5 inches of rolled homogeneous armor and producing fragments for incapacitating personnel. The M42 grenade is embossed on the inside wall surface to provide controlled fragmentation effects. The M46 grenade has a stronger un-embossed body to withstand the greater load seen at the rear of the shell due to setback upon firing. The M577A1 Mechanical Time Fuze (MTF) or the M762A1 ET Fuze are used with the projectile.

At a pre-determined time in flight, the fuze functions, initiating an expulsion charge which ejects the entire grenade load from the rear of the projectile. The M42 and M46 grenades are ground burst submunitions that explode on impact. The M864 projectile has a BB gas generator unit that extends the maximum range to 28.8 kilometers.

Capabilities & Characteristics:

- Range:
 - D864: 28.8 kilometers (maximum) from the M198 Towed Howitzer
 - D563: 17.7 kilometers
- Lethality: 80% effectiveness of the M483 (due to the reduced number of grenades)
- Weight:
 - D864: 103 pounds
 - D563: 102.6 pounds
- Body Type: Forged Steel
- Payload: M42/ M46 grenade submunitions
- Propelling Charge: M203A1, M119A2, MACS (M231, M232, M232A1), M3A1, and/ or M4A2

System Integration:

- 155mm M109A6 Paladin
- 155mm M777 Lightweight Towed Howitzer
- 155mm M198 series Howitzers

Configurations:

- **D563**: M483A1 (64 M42 grenades, 24 M46 grenades)
- **D864**: M864 (72 M42 grenades, 15 M46 grenades)





The Bonus MK 2 is an interim solution until the Cannon-Delivered Area Effects Munition (C-DAEM) PoR addresses the full capability gap.

The Army directive is to pursue purchase of Bonus. The Bonus MK 2 projectile is an artillery launched, fire-and-forget, spin-stabilized artillery shell designed to target and destroy stationary and mobile armored vehicles out to ranges of 29 kilometers (39 caliber solution).

- Each projectile contains two sensor-fuzed munitions (SFM) packaged within the projectile that are ejected out from the base of the projectile by a fuze-initiated expulsion charge located in the forward end of the projectile.
- Each submunition has a target detector with laser/ IR and a warhead consisting of a shaped charge type Explosively Formed Penetrator (EFP)
- Bonus MK 2 acquires its target by multi-spectral IR signature. The radar system generates a target shape, giving the submunition improved aiming capability. By combining spectral and target profiles, the Bonus MK 2 can distinguish combat worthy targets from damaged or burning targets.
- Ballistically comparable to the M864 DPICM 155mm projectile (NATO standard)
- Bonus ballistics included in NATO Ballistic Kernel (NABK)
- Full capability gap is DPICM replacement

Capabilities & Characteristics:

- Tactical rounds used against heavy armor
- Weight: 98.3 pounds
- Range: 27 kilometers (39 caliber with BB)
- Body Type: Steel
- Payload: 14.33 pounds from 2 submunitions
- Fuze: M762A1

System Integration:

- 155mm Self-propelled and Towed howitzers (M109A6/ A7 and M777A2)
- MACS M232 series is the only authorized propelling charge for zones 3H-5H

Configurations:

- DA69

Materiel Release: Urgent Materiel Release (UMR), 2020

Production Partners:

- System Integration and LAP: BAE Bofors (Karlskoga, Sweden)
- Business Partnership (responsible to provide 50% of the subcomponents): KNDS (La Chapelle-Saint-Ursin, France)





The Excalibur M982E1 Increment 1b Excalibur Shaped Trajectory (EST) is a 155mm precision-guided, extended range (ER) artillery projectile that is designed to engage targets with minimal collateral damage. Increment 1b provides extended range, improved reliability and improved countermeasure capability at a reduced cost.

Excalibur is a fin-stabilized and canard-controlled precision-strike projectile with a unitary fragmenting warhead and an inertial navigation/ Global Positioning System (GPS) guidance system. The projectile is comprised of a base section, payload section, and a guidance navigation and control section. Fuze options are height of burst (HoB) and PD/D.

EST adds the capability for User-defined angle of fall and angle of attack. EST also adds enhanced anti-jam capability in a GPS-degraded environment.

Capabilities & Characteristics:

- Precision guided, ER, Unitary, HE, 155mm Cannon Ammunition
- All weather, Day/ Night, Fire and Forget, Urban/ Complex terrain
- Length: 39 inches

System Integration:

- 155mm M109A6 Paladin
- 155mm M777A2 Lightweight Towed Howitzer
- 155mm Archer Self-Propelled Howitzer (Sweden)

Configurations:

- **DA71:** M982A1 Increment 1b EST
 - Weight: 102 pounds
 - Range: 39.2 kilometers (maximum)
 - Precision: 10 meters circular error probable (CEP)
 - Reliability: 90%
- Suitable Substitutes:
 - DA58: Increment 1b
 - Weight: 106 pounds
 - Range: 35 kilometers (maximum)
 - Precision: 10 meters CEP
 - Reliability: 90%
 - DA45: Increment 1a-2
 - Weight: 106 pounds
 - Range: 30 kilometers
 - Precision: 20 meters CEP
 - Reliability: 86.1% (in Theater)
 - DA39: Increment 1a-1
 - Weight: 106 pounds
 - Range: 24 kilometers
 - Precision: 20 meters CEP
 - Reliability: 86.1% (in Theater)



Production Partners:

- Raytheon Missile Systems (Tucson, AZ)

Materiel Release: 2018





The M1128 Extended Range (ER) HE projectile is the replacement for the M795. HF-1 body filled with 20 pounds of IMX-104 Insensitive Explosive, and a gilded metal rotating band. BB reduces drag to improve range. Compatible with M109 series/ M777 howitzer, maximum range of 30 kilometers. Compatible with conventional fuzes and Precision Guidance Kit (PGK) M1156, M1156A1, and M1156E5. War reserve projectile.

Capabilities & Characteristics:

- Range: 30 kilometers (39 caliber weapons)
- PGK reduces range by 10%

Configurations:

- DA70

Production Partners:

- General Dynamics
- American Ordnance
- BAE-HSAAP
- Nammo





The XM1180 Cannon-Delivered Area Effects Munition (C-DAEM) Armor (Hit-to-Kill (HTK)) is a 155mm projectile that destroys moving and stationary Tanks, Self-Propelled Howitzers and Infantry Fighting Vehicles. The projectile possesses an autonomous seeker with a large search area to identify a potential target and then self guides to impact the target.

Capabilities & Characteristics:

- 155mm Precision Target-Seeking Artillery Projectile
- Primary Target Sets:
 - Self-propelled howitzers
 - Infantry fighting vehicles
 - Main battle tanks
- Sympathetic Aperture Radar (SAR) seeker enables prosecution of poorly-located moving or stationary targets
- Shaped Charge Jet (SCJ) warhead enables defeat of heavily armored targets
- Range: >35 kilometers (maximum) out of 39 caliber cannons
- Length: 1.05 meters
- Weight: 106 pounds

System Integration:

- NATO standard 155mm 39/ 52 caliber howitzers

Configurations:

- DA73

Materiel Release: Fiscal Year 2031
(projected)



Production Partners:

- Raytheon Technologies (Tucson, AZ)



The XM1208 (Israeli M999) is a 155mm 39-caliber area effects cargo carrying projectile containing nine (M99) Advanced Submunitions (ASM), fired from an M109A6/7 or M777A2 howitzer at a maximum range of approximately 22.4 kilometers.

The ASMs are expelled at a predetermined time in flight using M762/A1 fuze. They are armed while falling, oriented via a ribbon stabilizer, and deliver ~1,200 preformed tungsten fragments approximately 1.5 meters above the target area. There are four fuze back-up modes if the proximity mode fails to initiate:

1. PD
2. Pyrotechnic
3. Electronic-1
4. Electronic-2

The projectile delivers nine M99 ASMs to defeat personnel and light armor targets.

155mm XM1208 C-DAEM HE Advanced Submunition



Capabilities & Characteristics:

- Cannon-delivered Area Effects Munition (C-DAEM), DPICM Replacement will provide U.S. ground forces with an effective capability to engage area targets well prior to direct fire engagement by the maneuver force.
- C-DAEM DPICM Replacement enables multi-domain operations (MDO) in the Penetration, Disintegration, and Exploitation phases by providing the combatant commander an additional munition option for field artillery fires against light vehicles and personnel targets.
- This munition will provide one of the two munition capabilities to replace the current 155mm cluster munition stockpile.

System Integration:

- 155mm M109A6 Paladin
- 155mm M777 Lightweight Towed Howitzer

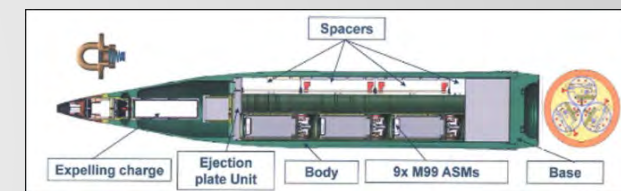
Configurations:

- DA78

Material Release: Fiscal Year 2028, 2nd Quarter (projected)

Production Partners:

- Elbit System, Ltd, Land Division (Israel)



The M116A1 is a 155mm HC Smoke projectile used for screening, spotting, and signaling. The M116A1 projectile contains three M1 canister assemblies and one M2 canister assembly. Each canister contains a core igniter flash tube, a first fire mix and HC smoke composition. Once the fuze ignites the black powder expelling charge, it also ignites and expels the four canisters from the base of the carrier. These ignited canisters fall to the ground and begin to burn HC composition producing a caustic white smoke.

Capabilities & Characteristics:

- Range: Projectile shall meet 18-kilometer range with M232A1 (Modular Artillery Charge System (MACS) 4H)
- M1 Canister: Each M1 canister, after ejection, shall ignite and emit white smoke without explosion or disintegration for no less than 57 seconds to 170 seconds
- M2 Canister: Each M2 canister, after ejection, shall ignite and emit white smoke without explosion or disintegration for no less than 27 seconds to 140 seconds

System Integration:

- 155mm M777A2 Lightweight Towed Howitzer
- 155mm M109A6 Paladin
- 155mm M109A7 Paladin
- Up to MACS Zone 5

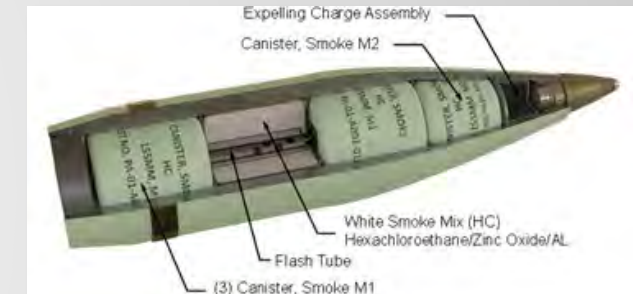
Configurations:

- **D506**

Materiel Release: April 2021

Production Partners:

- System Integration: PM CAS
- Projectile Metal Parts, Smoke Canister, and all other interior components: CAAA (Crane, IN)
- HC Canister Fill, LAP: PBA (Pine Bluff, AR)





The M825A1 is a 155mm smoke screening projectile used to obscure friendly troop and vehicle movement or deliver blinding smoke to an enemy location. When projectile reaches target area, the fuze functions an expulsion charge which ejects the payload canister with 116 White Phosphorous (WP)-impregnated felt wedges. The expulsion charge initiates the fuze delay element which provides time for the canister to clear the projectile body before functioning a 'safe and arm' element which is armed by the set-back and spin of the canister. The safe and arm output ignites a burster which runs down the center of the canister and, upon detonating, shatters the canister causing the WP-soaked felt wedges to fall to the ground. Each felt wedge acts as a burning point source for smoke production and after a short period of time a significant smoke screen is built.

Capabilities & Characteristics:

- Range: 22.5 kilometers
- Weight: 102.6 pounds
- Reliability: 98.5% at 80% confidence level
- Fill: 12.75 pounds WP
- Payload: Base ejection canister carrying 116 each WP-impregnated felt wedges
- Ballistically 125- to 250-meter-wide M483A1 projectile
- Provides 10 meter high, 125-250-meter-wide smoke screen lasting 5-10 minutes, depending on weather conditions

System Integration:

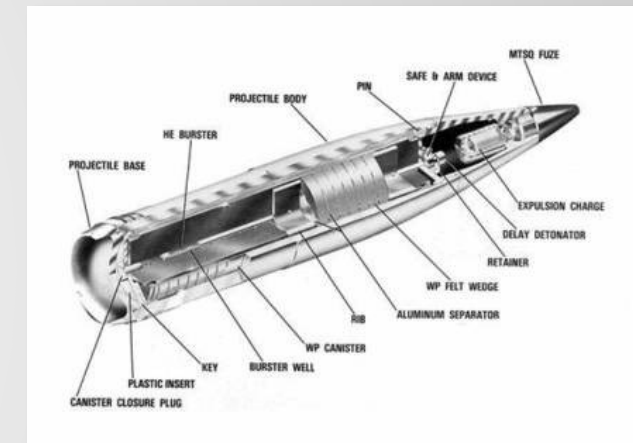
- 155mm M777 series Lightweight Towed Howitzers
- 155mm M109A6 Paladin
- 155mm M198 series Howitzers

Configurations:

- **D528**

Production Partners:

- LAP: PBA (Pine Bluff, AR)
- Metal Parts: IMT (Ingersoll, ON)





The M549A1 HE projectile has two distinctive pre-assembled components the warhead and the rocket motor. The warhead is fabricated from high fragmentation steel for increased effectiveness and contains TNT. The motor body has a hollow boattail base and a recessed nozzle on its central spin axis.

The rocket motor is made from a high strength steel alloy and contains 6.5 pounds of solid rocket propellant, providing extended range upon functioning. For all current 155mm artillery systems, the M549A1 can be fired either "Rocket-On" or "Rocket-Off." For the "Rocket-On" mode, a cap is removed prior to chambering the projectile. This exposes the pyrotechnic delay to propelling charge gases within the gun tube. The delay is ignited and burns for several seconds before igniting the rocket motor for its short in-flight burn of about three seconds.

Capabilities & Characteristics:

- The Rocket-assisted Projectile (RAP) was designed to extend the range and improve effectiveness of the 155mm Howitzer. It is used for fragmentation and blast effects against personnel and materiel.
- Type: HE-RAP
- Weight: 96 pounds
- Body Material: High fragmentation steel
- Payload: 15 pounds of TNT explosive
- Propelling Charge: M203A1, M119A2, MACS (M232 and M232A1), and/ or M4A2
- Range: 30 kilometers (maximum)

Configurations:

- **D579**



The M795 is an HE Projectile that is employed against personnel, trucks, electronic surveillance and target acquisition devices, supply points, command, control, and communications (C3) installations, and mechanized and armored forces. The projectile consists of a High Fragmentation steel (HF-1) body projectile filled with 23.8 pounds of TNT conventional explosive or 23.8 pounds of IMX-101 insensitive explosive, and a gilded metal rotating band for compatibility with all current and future 155mm howitzers. DODIC DA54, IMX-101 explosive fill, is no longer in production. Qualifying Composition B explosive for the M795 is underway.

155mm M795 HE Projectile

Capabilities & Characteristics:

- Most capable 155mm IM HE projectile
- Passes SCJ sympathetic reaction requirements
- Weight: 103 pounds
- Length: 33.2 inches
- Projectile Body: HF-1
- Explosive: 23.8 pounds of IMX-101 or TNT explosive
- Propelling Charge: M231, M232, and M232A1 MACS
- Range: 22.5 kilometers (maximum)

System Integration:

- 155mm M109A6 Paladin
- 155mm M777 series Lightweight Towed Howitzers
- 155mm M198 series Howitzers

Configurations:

- **DA54:** IMX-101 explosive
- **D529:** TNT explosive

Materiel Release: May 1999

Production Partners:

- System Integration: PM CAS
- LAP: IAAAP (Middletown, IA)
- Metal Parts: GD-OTS SCAAP (Scranton, PA)
- Composition B explosive: BAE-HSAAP (Kingsport, TN)



The M1123 ER IR Illuminating Cartridge is compatible with the M762 series fuzes and can be fired using the M119 series, M203A1, and M231, M232, and M232A1 MACS propelling charges. The IR composition reduces the possibility of exposing forward friendly troop positions while also allowing covert adjustment of fire at greater observation distances through use of passive NVDs. This projectile can provide a 2,400-meter diameter of effective IR illumination for a minimum of 120 seconds out to ranges of the current M795 HE projectile.

Capabilities & Characteristics:

- Weight: 103.3 pounds
- Length: 35.35 inches
- Propelling Charge: M119 series; M203A1; M231, M232, and M232A1 MACS
- Range: 22.5 kilometers (maximum)
- Illumination: 75 watts per steradian
- Candlepower: Emits a maximum of 650 candlepower of VL
- Burn Time: 120 seconds (minimum)

155mm M1123 ER IR Illuminating Cartridge



System Integration:

- 155mm M109A6 Paladin
- 155mm M777 Towed Howitzer
- 155mm M198 series Howitzers

Configurations:

- DA56
- Suitable Substitutes:
 - DA49: 105mm M1066 IR Illuminating

Production Partners:

- System Integration: PM CAS
- IR Candle: CAAA (Crane, IN)
- LAP: PBA (Pine Bluff, AR)

Materiel Release: June 2014





The M1124 VL Illumination is used to illuminate the battlefield at night or during conditions of reduced visibility. The cartridge is compatible with the M762 Series fuzes and can be fired using the M119 Series, M203A1, and M231, M232 and M232A1 MACS propelling charges. This projectile can provide effective VL Illumination out to the ranges of the current M795 HE Projectile. The M1124 can be fired from the M109A6 Paladin, M777 Series Joint Lightweight Towed, and M198 Series howitzers.

Capabilities & Characteristics:

- Weight: 103.3 pounds
- Length: 35.35 inches
- Propelling Charge: M119 series; M203A1; M231, M232, and M232A1 MACS
- Range: 22.5 kilometers
- Illumination: 1,000,000 candlepower
- Burn Time: 100 seconds (minimum)

System Integration:

- 155mm M109A6 Paladin
- 155mm M777 Towed Howitzer
- 155mm M198 series Howitzers

Configurations:

- **DA57**
- Suitable Substitutes:
 - D505: 155mm M485 Illuminating

Production Partners:

- System Integration: PM CAS
- VL Candle: CAAA (Crane, IN)
- LAP: PBA (Pine Bluff, AR)

Materiel Release: June 2014





The M1121 Smoke Projectile is used for marking purposes and can be used to provide screening of mechanized or infantry maneuver. This round is a integrate bulk-filled WP canister into demilitarize M483A1 projectile bodies to replace the M110A2 to address safety, producibility and reliability concerns. The ogive contains a booster case which when the fuze functions penetrates the canister body causing smoke to expel.

Capabilities & Characteristics:

- Range:
 - Projectile shall meet 18-kilometer range
 - Demonstrated range to exceed 18 kilometers (22.9 kilometers)
- Smoke Signature:
 - Visible smoke signature from 4,000 meters (unaided eye)
 - Signature equivalent to the M110A2
 - Demonstrated visible smoke signature throughout qualification testing. Completed qualitative assessment comparing performance of M1121 to M110A2.
- Reliability:
 - 94% Threshold; 97% Objective
 - M1121 demonstrated reliability of 97% at 80% confidence throughout qualification testing

System Integration:

- M119A1
- Up to MACS Zone 4

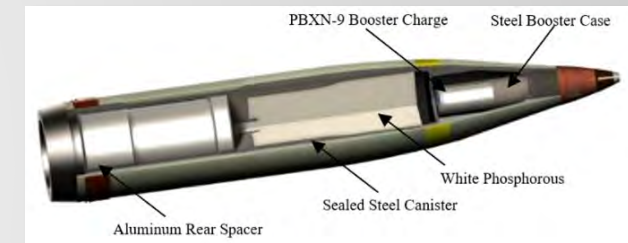
Configurations:

- DA66
- Suitable Substitutes:
 - D550: 155mm M110 WP Smoke

Materiel Release: March 2020

Production Partners:

- System Integration: PM CAS
- Projectile Metal Parts, Smoke Canister, and all other interior components: CAAA (Crane, IN)
- WP Canister Fill, LAP: PBA (Pine Bluff, AR)





The XM1113 HE RAP supports the Next Generation Rocket-Assisted Projectile (NGRAP) development. It replaces the obsolete M549A1 in 39 caliber weapon systems.

Capabilities & Characteristics:

- 37-kilometer range with PGK (39 caliber weapon systems)
- 40-kilometer range unguided (39 caliber weapon systems)
- 52-kilometer range (52 caliber weapon systems)

System Integration:

- 155mm M777 series Howitzers
- 155mm M109 series Howitzers

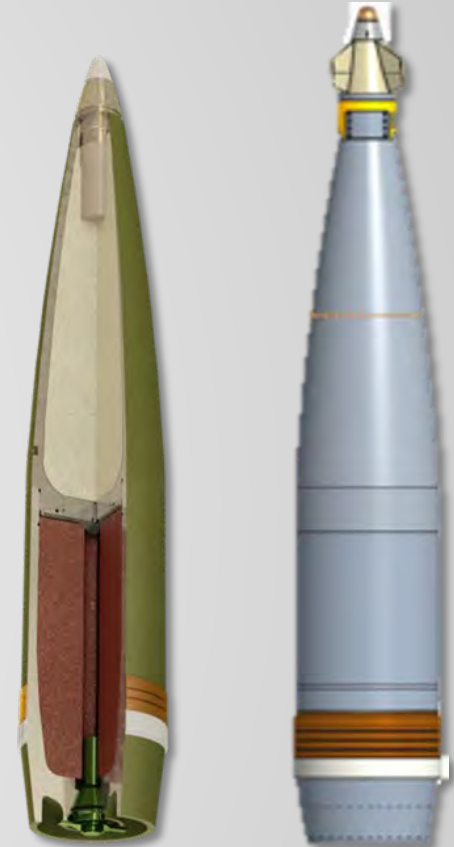
Configurations:

- **DA72**
- Suitable Substitutes:
 - D579: 155mm M549 RAP

Materiel Release: Pending

Production Partners:

- GD-OTS





The M107 is a hollow steel shell filled with TNT or Composition B explosive. A deep fuze cavity intrusion variant permits use of the M782 MOFA. When all other fuzes are employed with the deep cavity variant, a supplementary charge of pressed TNT is used to ensure continuation of the fuze initiation through to the explosive charge. The shallow (normal) cavity variant employs all fuzes except the deep intrusion proximity fuzes.

Capabilities & Characteristics:

- Used for blast effect, fragmentation, and mining in support of ground troops and armored columns
- Weight: 95 pounds
- Body Type: Forged Steel
- Payload: 14.6 pounds of TNT explosive; 15.4 pounds of Composition B explosive
- Propelling Charge: M119A2
- Range: 18.1 kilometers (maximum)

System Integration:

- 155mm M198 Towed Howitzer
- 155mm M777 Towed Howitzer

Configurations:

- D571: Normal fuze cavity
- D544: Deep fuze cavity





The M110A2 projectile is a steel shell filled with 15.6 pounds of WP. The round contains an M54A1 Burster extending through the center and an adapter in the nose of the projectile is threaded to receive the fuze. The M54A1 Burster is made from steel and is filled with Composition B5 explosive. The fuze functions on impact and detonates the burster. The burster ruptures the projectile case and disperses the WP fill. The WP ignites spontaneously upon contact with the air and produces a dense white smoke that is used for spotting and marking.

Capabilities & Characteristics:

- Used as an obscurant and for spotting or marking
- Weight: 98.5 pounds
- Body Type: Steel
- Payload: 15.6 pounds of WP
- Propelling Charge: M119A2
- Range: 18.1 kilometers

System Integration:

- 155mm M109A6 Paladin
- 155mm M777 Towed Howitzer

Configurations:

- D550
- Suitable Substitutes:
 - **DA66**: 155mm M1121 WP Smoke

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- Metal Parts: SCAAP (Scranton, PA)
- M54 Burster:
 - EXPAL (Spain)
 - Mecar (Belgium)
 - CAAA (Crane, IN)





The M1066 IR Illuminating Cartridge consists of a canister, drogue parachute, and primary expelling charge. A candle assembly, main parachute, delay, and secondary expelling charge are loaded in the canister. A dual stage ejection system is used to limit forces on the Illuminating Candle.

First ejection is initiated by fuze function, which expels the canister and ignites the delay. After a delay of 7-9 seconds, secondary functioning ejects and ignites the candle. Additionally, the main parachute is deployed, providing a descent rate of 15 feet per second. With an optimal height of burst at 600 meters and use of NVDs, a 2,400-meter diameter of illumination is provided for a minimum of 120 seconds.

The IR composition reduces the possibility of exposing forward friendly troop positions while also allowing covert adjustment of fire at greater observation distances through use of passive NVDs. The M1066 illuminates to the full range of the M107.

Capabilities & Characteristics:

- Provides stealth capability during nighttime operations
- Range: 2.8 kilometers (minimum); 17.5 kilometers (maximum)
- Weight: 90 pounds
- Length: 27.55 inches
- Reliability: 94% at 80% confidence level
- Payload: 2.25 pounds of IR illumination composition
- Ballistically similar to the 155mm M485A2 VL Illuminating Cartridge

System Integration:

- 155mm M109A6 Paladin
- 155mm M777 Lightweight Towed Howitzer
- 155mm M198 Howitzer

Configurations:

- DA49
- Suitable Substitutes:
 - **DA56:** 155mm M1123 IR Illuminating

Materiel Release: October 2010

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- IR Candle: CAAA (Crane, IN)



The Excalibur training aid models look and feel like tactical XM982, M982, or M982A1 (DODICs DA58 and DA71) Excalibur projectiles. Excalibur training aids are marked as inert.

The DA46 is a lightweight model, with a representative base with orifice, tactical obturator, payload inert fill with vent holes, canard covers represented to look and feel like a canard cover, moving parts comparable to the tactical projectile, tactical paint and markings, Unique Identification (UID) tagging, tactical container with markings, bar coding, tags, and labels. Excalibur training aids are shipped in ammunition containers.

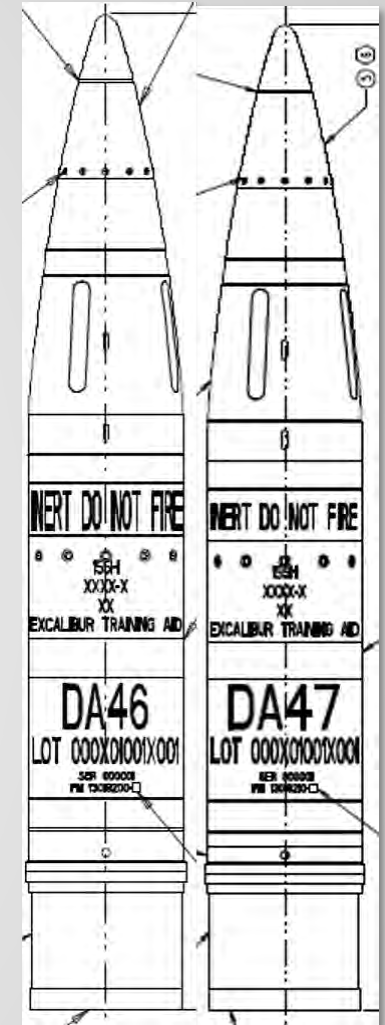
The DA47 is a full weight model with the same features as the DA46.

Capabilities & Characteristics:

- Weight:
 - DA46: 85 pounds (38.5 kilograms) in metal container
 - DA47: 159 pounds (72.1 kilograms) in metal container
- Color: Olive drab with yellow markings and bronze band

Configurations:

- **DA46**: Lightweight
- **DA47**: Full weight





The M1122 Training Cartridge provides a lower cost HE training round that combines more realistic performance and survivability when compared to standard 155mm training rounds. The M1122 will replace the M804A1 Practice Projectile and be used as an alternative to the M107 HE Projectile for training.

The M1122 utilizes M483A1 demilitarization effort, is filled with high density concrete to simulate the weight of the M795 HE Projectile, and incorporates several IM technologies (IMX-101, Filler-E, or TNT explosive fill; PBXN-9 Supplementary Charge; Meltable Fuze Well Liner; and Meltable Fuze Plug) to increase survivability and safety.

Capabilities & Characteristics:

- Improved acoustic and visual signature when compared to the M804A1 Practice Projectile
- Weight: 102 pounds
- Length: 35.35 inches
- Range: 22.5 kilometers (maximum)
- Propelling Charge: M231, M232, and M232A1 Modular Artillery Charge System (MACS)

System Integration:

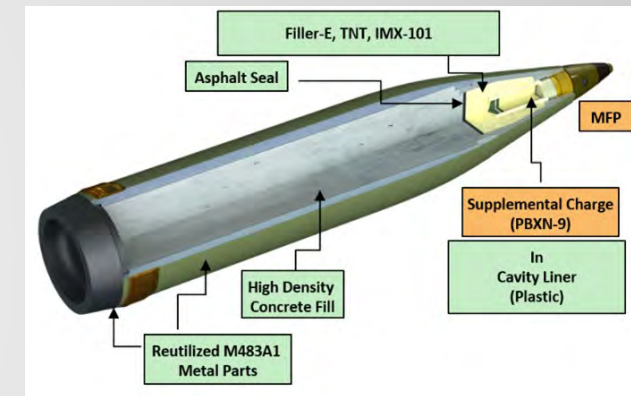
- 155mm M109A6 Paladin
- 155mm M777 Towed Howitzer
- 155mm M198 Howitzer

Configurations:

- DA51
- Suitable Substitutes:
 - **D529**: 155mm M795 ER
 - **DA54**: 155mm M795 ER with IMX-101

Production Partners:

- System Integration: PM CAS
- LAP:
 - MCAAP (McAlester, OK)
 - CAAA (Crane, IN)



Materiel Release: June 2012





Copperhead is a terminally guided system launched from conventional Howitzers into a ballistic trajectory. During flight, the target is illuminated by a forward observer with a laser designator. On board signal processing continuously refines the terminal trajectory and provides guidance to the control surfaces, causing the round to home in on the target.

Capabilities & Characteristics:

- Type: High Explosive Anti-Tank (HEAT)
- Weight: 138.4 pounds
- Body Material: Forged steel
- Color: Black with yellow markings
- Explosive: Composition B explosive, shaped charge
- Propelling Compatibility: M119A2 Zone 7 (maximum)
- Range: 16.1 kilometers (maximum)

System Integration:

- 155mm M198 Howitzer

Configurations:

- **D510**: War Reserve Projectile (Training Standard)
- **D511**: Training Projectile (Training Unique)





MACS consists of two propelling charge module types, the M231 and the M232/ M232A2, and their associated packaging. The system is compatible with all current and planned 155mm field artillery weapons. MACS uses a "build-a-charge" concept in which increments are identical to all others in the same lot designation, eliminating the need to dispose of unused increments. Unused increments are retained for future use. The M231 is fired either singly (charge 1) or in pairs (charge 2) to engage targets from 3 to 11 kilometers.

The M231 replaces the M3A1 Propelling Charge (Green Bag) and charges 3 to 6 of the M4A2 Propelling Charge (White Bag). Its use, along with use of the M232/ M232A1 to support training worldwide, will result in approximately a \$54 per round savings when compared to bag charges. The M231 contains Picatinny Arsenal™ Propellant (PAP) 7993, the Army's first environmentally "green" propellant.

Capabilities & Characteristics:

- Increased operational flexibility
- Efficient Use: No "excess" powder to dispose; unused MACS increments can be used for future missions
- Remnant increments from use of legacy green/ white bag charges require disposal
- Compatible with M82 (U.S.) and DM191 (NATO) Primers
- Weight: 4.25 pounds
- Length: 6.05 inches
- Diameter: 6.10 inches
- Body: Molded combustible case with flat ends
- Propellant: 3.5 pounds of PAP7993
- Igniter: Bi-directional (ignites at either end)

Capabilities & Characteristics (continued):

- Range: 3-11 kilometers from fielded 155mm artillery systems
- Accuracy: 2 meters per second
- Training Device: M241 Dummy Charge
- Compliant with Joint Ballistic Memorandum of Understanding (JBMOU) between U.S., France, Germany, Italy, and the United Kingdom

System Integration:

- 155mm M109A5, M109A6, and M109A7 Self-propelled Howitzers
- 155mm M198 Towed Howitzer
- 155mm M777A2 Lightweight Towed Howitzer

Configurations:

- **DA12**
- Suitable Substitutes:
 - D540: 155mm M3 Series Propelling Charge
 - D541: 155mm M4 Series Propelling Charge

Materiel Release: April 2003

Production Partners:

- System Integration: PM CAS
- Combustible Case: Esterline Defense Products (Coachella, CA)
- Propellant: BAE-RFAAP (Radford, VA)
- Ball Powder: GD (St. Marks, FL)
- Black Powder: ESTES (Minden, LA)
- Metal Container: CONCO, Inc. (Louisville, KY/ Scottsburg, IN)
- LAP: GD (Camden, AR)





MACS consists of two propelling charge module types, the M231 and the M232/ M232A1/ M232A2, and their associated packaging. The system is compatible with all current and planned 155mm field artillery weapons. MACS uses a "build-a-charge" concept in which increments are identical to all others in the same lot designation, eliminating the need to dispose of unused increments. Unused increments are retained for future use.

The M232A2, similar to the M232/ M232A1, is fired in groups of 3 or more increments from charge 3 (three M232A2s) to charge 5 (five M232A2s) to engage targets from 7 to 30 kilometers. Besides adding significant operational flexibility of only two types of charges vs. the four current types of bag charges, based on combat scenarios the use of MACS results in a savings of \$45 per round when fired from self-propelled howitzers and \$109 per round when fired from towed howitzers. The M232A2 is a Product Improvement/39-caliber Optimization Program. It increases cannon tube life, decrease residue/ cannon deposits, reduce flash/blast-overpressure, maintain maximum range while achieving greater accuracy, and improve the IM properties.

Capabilities & Characteristics:

- Increased operational flexibility
- Efficient Use: No "excess" powder to dispose; unused MACS increments can be used for future missions
- Remnant increments from use of legacy green/ white bag charges require disposal
- Compatible with M82/ M82A1 (U.S.) and DM191 (NATO) Primers
- Weight: 5.85 pounds
- Length: 6.14 inches
- Diameter: 6.00 inches
- Body: Molded combustible case with bumps on both ends

Capabilities & Characteristics (continued):

- Propellant: 4.9 pounds of M31A2 with de-coppering agent
- Igniter: Bi-directional (ignites at either end)
- Range: 7-30 kilometers from fielded 155mm artillery systems
- Accuracy: 2 meters per second
- Training Device: M242 Dummy Charge
- Compliant with Joint Ballistic Memorandum of Understanding (JBMOU) between U.S., France, Germany, Italy, and the United Kingdom

System Integration:

- 155mm M109A5, M109A6, and M109A7 Self-propelled Howitzers
- 155mm M198 Towed Howitzer
- 155mm M777A2 Lightweight Towed Howitzer

Configurations:

- **DA67:** M232A2
- Suitable Substitutes:
 - DA13: M232/ M232A1

Materiel Release: M232 – March 2004, M232A1 – November 2006

Production Partners:

- System Integration: PM CAS
- Combustible Case: Esterline Defense Products (Coachella, CA)
- Propellant: BAE-RFAAP (Radford, VA)
- Ball Powder: GD (St. Marks, FL)
- Black Powder: ESTES (Minden, LA)
- Metal Container: CONCO, Inc. (Louisville, KY/ Scottsburg, IN)
- LAP: GD (Camden, AR)



The M119A2 “Red Bag” Propelling Charge, was the Legacy Zone 4 charge that was replaced by the MACS (M232/M232A1/M232A2) family. PM CAS is restarting production, after over 30 years, due to the 155mm propulsion production capacity ramp up requirement.

Capabilities & Characteristics:

- Range: 10-18 kilometers
- MV: 686 meters per second
- Pressure: 26 kilopounds per square inch
- Weight: 20.9 pounds
- Specification based on firing M107 (95 pounds)
- Adjustments to MV and pressure are required in order to fire the M795 (104 pounds)

155mm M119A2 Propelling Charge

System Integration:

- 155mm M198 series Howitzers
- 155mm M777 series Howitzers
- 155mm M199 Cannons

Configurations:

- D533
- Suitable Substitutes:
 - **DA13**: M232/ A1 MACS

Production Partners:

- Fabric Bags: Yoland Corp (Paterson, NJ)
- M6 Propellant: BAE-OSI RFAAP (Radford, VA)
- Plastic Container: CBI Scepter (Ontario, Canada)
- LAP:
 - GD (Marion, IL)
 - Nammo (Perry, FL)



The M241 is a fully inert training device designed to simulate the M231 Propelling Charge. It is packed four modules inside PA161 metal container with a gold band to signify a non-expendable training device.

Capabilities & Characteristics:

- Inert training device for simulating the M231 propelling charge for classroom familiarization training and dry fire exercises
- Each module is approximately 6.05 inches long by 6.10 inches in diameter and weighs 4.25 pounds

155mm M241 Dummy Propelling Charge

System Integration:

- All 155mm Howitzers

Configurations:

- DA23

Materiel Release: April 2003

Production Partners:

- Indiana Ordnance Works



The M242 is a fully inert training device designed to simulate the M232-series propelling charges. It is packed five modules inside PA103A2 metal container with a gold band to signify a non-expendable training device.

Capabilities & Characteristics:

- Inert training device for simulating the M232-series propelling charges for classroom familiarization training and dry fire exercises
- Each module is approximately 6.14 inches long by 6.00 inches in diameter and weighs 5.85 pounds

155mm M242 Dummy Propelling Charge

System Integration:

- All 155mm Howitzers

Configurations:

- DA24

Materiel Release: March 2003

Production Partners:

- Indiana Ordnance Works



The Mk399 MOD 1 Point Detonating (PD)/D Fuze is a hard penetrator to be used by artillery weapons against urban area targets. It can be set to function PD or Delay. In the Delay mode, the fuze is designed to penetrate urban structures, then function the projectile inside the structure. In the PD mode, the fuze functions as a standard PD fuze, and can be employed in that manner.

Capabilities & Characteristics:

- For use on 105mm and 155mm HE projectiles

System Integration:

- 105mm M102 series Howitzers
- 105mm M119 series Howitzers
- 155mm M109A6 Paladin
- 155mm M777 Lightweight Towed Howitzer
- 155mm M198 Series Howitzers

Configurations:

- **N659**

Materiel Release: Conditional

Materiel Release – 2003; Full Materiel Release - 2012

Production Partners:

- Bulova Technologies (Lancaster, PA)





The XM1171/XM1172 Long Range Precision Guidance Kit (LR-PGK) is a course-correcting fuze with an enhanced GPS anti-jam capability for 155mm artillery projectiles. LR-PGK is being designed to operate in the next generation 155mm extended range weapon systems with new extended range artillery projectiles now in development for the Long-Range Precision Fires (LRPF) Cross-Functional Team (CFT) and in fielded 155mm cannon systems.

Capabilities & Characteristics:

- Accuracy: <30 meters CEP (threshold); <10 meters CEP (objective)
- Range: 70 kilometers with XM1210, XM1113, XM1128, M795 projectiles
- GPS Capability: Peer threat environment

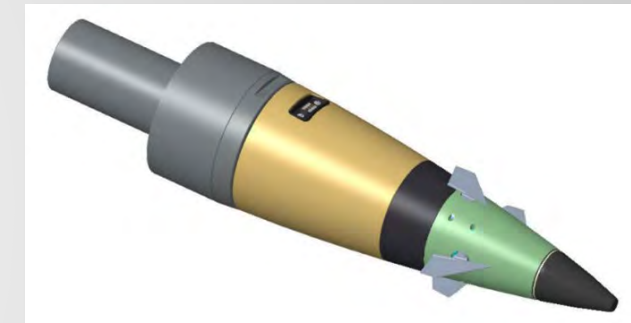
System Integration:

- 155mm M109A6/ A7 Paladin (XM1171)
- 155mm M777A2 Lightweight Towed Howitzer (XM1171)
- Next Generation Howitzer (XM1172)

Configurations:

- **NZ04**

Materiel Release: Full Materiel Release in Fiscal Year 2030 (projected)



Production Partners:

- Prime:
 - BAE Systems (Hudson, NH)
 - GD-OTS (Bothel, WA)
- GPS Anti-Jam: L3 Harris (Anaheim, CA)



The M2 Flash Reducer is used with M4 series “White Bag” propelling charges, ordinarily on an optional basis, but required when firing from the 155mm M777A2 Lightweight Towed Howitzer. The primary purpose is muzzle flash reduction to make accurate weapon location more difficult for the enemy. The secondary effect is reduction in blast overpressure on the gun crew.

Capabilities & Characteristics:

- The M2 Flash Reducer consists of 1.5 ounces of black powder and potassium salt (either nitrate or sulfate) in a 4-inch square bag of red cloth
- Cloth edges are sewn together to prevent chemical mixture leakage

System Integration:

- All 155mm Howitzers

Configurations:

- **D552**

Matériel Release: 1940s

Production Partners:

- Indiana AAP



The M739A1 Artillery Point PD/D Fuze is the Army's preferred, primary fuze for 105mm and 155mm projectiles to address point detonating/delay artillery functions. The M739A1 fuze contains an Impact Delay Module (IDM) assembly. The IDM provides fuze initiation delay based upon the completion of mechanical actions caused by projectile deceleration and will function immediately after passing through the target.

Capabilities & Characteristics:

- Handset capability
- Initiates bursting fragmentation projectiles
- Fuze is compatible with all current 105mm and 155mm bursting projectiles
- Function Settings:
 - PD (Super Quick (SQ))
 - Delay

System Integration:

- 105mm M102 series Howitzers
- 105mm M119 series Howitzers
- 155mm M109A6 Paladin
- 155mm M777 Lightweight Towed Howitzer
- 155mm M198 Series Howitzers

Configurations:

- **N340**

Materiel Release: January 1985

Production Partners:

- Action Manufacturing (Bristol, PA)
- AMTEC Corporation (Janesville, WI)





The M782 Multi-Option Fuze, Artillery (MOFA) is compatible with all current bulk filled bursting projectiles fired in the 105mm (M102 and M119 cannon systems) and 155mm cannon systems (Paladin and the M198 howitzer). The MOFA provides proximity, precision time, delay, and impact functions in a single fuze, and the inductive fuze set feature optimizes MOFA for use with automated ammunition handling equipment.

Capabilities & Characteristics:

- Fuze compatible with all current 105mm and 155mm bursting projectiles
- Fuze function settings:
 - Proximity
 - Time
 - PD
 - Delay
- Reduced logistic burden
- Rapid inductive set capability
- Improved combat effectiveness
- Setting Reliability:
 - Proximity: 95%
 - Time: 97%
 - PD: 97%
 - Delay: 93%

System Integration:

- 105mm M102 series Howitzers
- 105mm M119 series Howitzers
- 155mm M109A6 Paladin
- 155mm M777 Lightweight Towed Howitzer
- 155mm M198 series Howitzers

Configurations:

- **NA09**
- Suitable Substitutes:
 - N291: M732A2 Proximity Fuze
 - N464: M732 Proximity Fuze

Matériel Release: November 2005

Production Partners:

- Northrop Grumman (Rocket Center, WV)



The M782A1 MOFA, Increment 2 (MOFA II) is compatible with all current bulk filled bursting projectiles fired in the 105mm and 155mm cannon systems (M119, M109, and M777). The MOFA II provides proximity with multiple heights of burst, precision time, delay and impact functions in a single fuze, and is inductively set with the portable inductive artillery fuze setter.

Capabilities & Characteristics:

- Fuze compatible with all current 105mm and 155mm bursting projectiles
- Fuze function settings:
 - Proximity with multiple heights of burst
 - Time
 - PD
 - Delay
- Reduced logistic burden
- Improved Electronic Counter Countermeasures (IECCM)
- Rapid inductive set capability
- Improved combat effectiveness
- Setting Reliability:
 - Proximity: 95%
 - Time: 97%
 - PD: 97%
 - Delay: 93%

System Integration:

- 105mm M119 series Howitzers
- 155mm M109 series Paladins
- 155mm M777 series Lightweight Towed Howitzers

Configurations:

- **NA42**
- Suitable Substitutes:
 - **NA09**: M782 MOFA

Materiel Release: March 2007

Production Partners:

- Northrop Grumman (Rocket Center, WV)



The M762A1/ M767A1 is an Electronic Time (ET) fuze used with spin stabilized 105mm and 155mm artillery projectiles. The M762A1 (DODIC NA17) is used with the cargo-dispensing projectiles such as M485, M1066, M1123 and M1124 Illuminating Projectiles. The M767A1 (DODIC NA15) is similar to the M762A1; however, a booster cup is attached to its base end to provide compatibility with the bursting and fragmentation projectiles such as M795 and M549A1 HE Projectiles . Both fuzes can be set to function in the time mode or impact mode. The M762A1/M767A1 can be set manually without the need of a tool or set remotely via an inductive link with an inductive auto setter.

Capabilities & Characteristics:

- Hand and auto setting capabilities
- M762A1 initiates cargo-dispensing projectiles
- M762A2 has booster added for initiating bursting fragmentation projectiles
- Fuzes are compatible with all current 105mm and 155mm cargo and bursting projectiles
- Two function settings: Time and PD

System Integration:

- 105mm M119 series Howitzers
- 155mm M109A6 Paladin
- 155mm M777 series Towed Howitzers
- 155mm M198 series Howitzers

Configurations:

- **NA17**: M762A1 – used with cargo-dispensing projectiles
- **NA15**: M767A1 – used with bursting and fragmenting projectiles



Materiel Release: August 2003

Production Partners:

- L3 Harris (Cincinnati, OH)



M82/ M82A1 Percussion Primers are breech-loaded in all 155mm artillery weapon systems and used to initiate the burning of propellant charges. The M82A1 variant is a design to eliminate unintended M777 Primer Feed Mechanism (PFM) Magazine initiations and reduce “stuck” primers in all 155m weapon systems.

Capabilities & Characteristics:

- Initiation of 155mm weapon systems up to pressures of 55,000 pounds per square inch
- Brass cartridge
- Height: 1.944 inches
- Width: 0.500 inches (maximum)

System Integration:

- All 155mm Artillery Weapon Systems

Configurations:

- **NA35** – M82A1

Materiel Release: 1960s

Production Partners:

- Security Signals (Cordova, TN)
- Day & Zimmermann, Inc. (Texarkana, TX)





The M1156E5 PGK is a GPS Guidance Kit with PD and Proximity fuzing functions compatible with the XM1113, M1128, M795 and M549A1 155mm HE Artillery projectiles. PGK corrects the ballistic trajectory of the projectile to reduce delivery errors and thus improves projectile accuracy. The PGK effectively reduces target delivery errors for conventional artillery munitions and reduces the number of projectiles required to defeat the intended target, while minimizing collateral damage. The M1156E5 PGK variant includes an enhanced GPS Anti-jam capability to improve performance in GPS degraded environments.

Capabilities & Characteristics:

- Accuracy: <50 meters CEP (threshold); <30 meters CEP (objective)
- Reliability: >92% (threshold); >97% (objective)
- Integrated GPS receiver
- Deep intrusion fuze
- Reduced collateral damage and logistics burden
- GPS Capability: Peer threat environment

System Integration:

- 155mm M109A6/ A7 Paladin 155mm M777A2 Lightweight Towed Howitzer
- Next Generation Howitzer

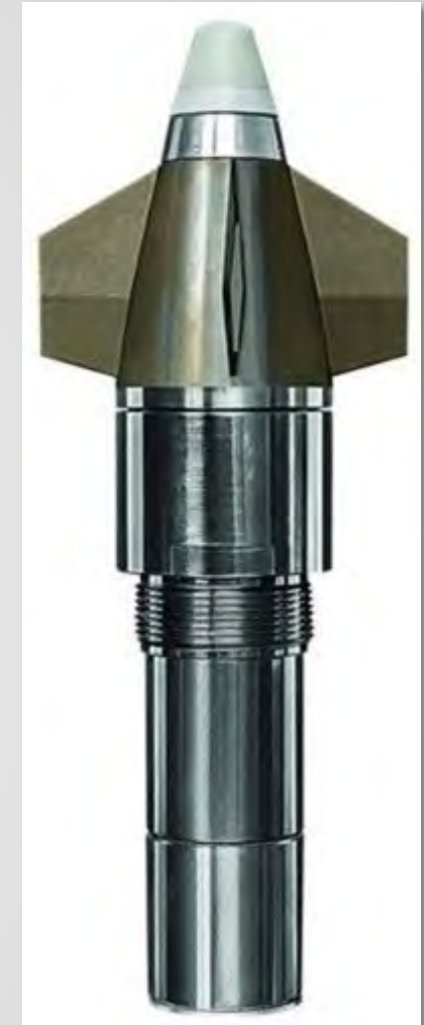
Configurations:

- **NA38:** M1156E5 adds GPS anti-jam capability
- **NA37:** Includes hardware and software updates for M-code GPS, XM1113 projectile compatibility, and M1128 performance optimization
- Suitable Substitutes:
 - NA36: M1156 includes a software update for Selectable 150 meter No-fire radius (on/ off)
 - NA29: M1156 adds reliability improvements and projectile compatibility with M1128 projectile
 - NA28: XM1156 PGK

Materiel Release: Fiscal Year 2026, 4th Quarter (projected)

Production Partners:

- Prime: Northrop Grumman Defense Systems (Plymouth, MN)
- GPS Anti-Jam: L3 Harris (Anaheim, CA)



The M1155A1 Enhanced Portable Inductive Artillery Fuze Setter (EPIAFS) is an electronic system consisting of three components: Setter, Platform Integration Kit (PIK), and Cable. Other cabling and interfaces are required to interface with the fire control system on the host platform. EPIAFS is currently integrated with the M109A6 Paladin Self-propelled Howitzer (SPH) the M119A3 Towed Howitzer, the M777A2 Joint Lightweight Towed Howitzer and the Swedish Archer SPH to enable firing of the Excalibur, PGK equipped projectiles, and U.S. and NATO inductive-set fuzes. The EPIAFS PIK provides an interface to the platform and the inductive element in the setter interfaces with the Excalibur, PGK and inductively-set fuzes.

Capabilities & Characteristics:

- Used to initialize and inductively set U.S. and NATO fuzes
- Used to initialize the 155mm M982 Excalibur, PGK, XM395 APMI
- Uses standard alkaline D-Cell or Lithium batteries
- Compatible with NATO standards
- RS-422 Serial Interface

System Integration:

- 155mm M109A6/ A7 Paladin
- 105mm M119A3 Towed Howitzer
- 155mm M777A2 Lightweight Towed Howitzer
- Multiple FMS Platforms

Materiel Release: Software Version 6
– 2019

Production Partners:

- Elbit Systems of America (Ft. Worth, TX)



The M1061 cartridge consists of a M734A1 fuze, a fuze adapter, an enhanced fragmentation body loaded with 254 grams of PBXN-110 explosive, an aluminum case, an obturating ring, a fin adapter and fin, four propelling charge increments, and an ignition cartridge. The design of the shell body produces lethal effects against both personnel and materiel targets. The cartridge will only be used in combat.

Capabilities & Characteristics:

- Range: 61 meters (minimum); 3,657 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 4 pounds
- Reliability: 98% at 80% confidence level
- Probable Error: 1.5% of mean range;
Deflection: 2.5 mils

60mm M1061 Enhanced Lethality Cartridge

System Integration:

- 60mm M224 Lightweight Company Mortar System (LWCMS)

Configurations:

- **BA42**

Materiel Release: June 2016

Production Partners:

- System Integration: PM CAS
- Warhead and LAP:
 - Day & Zimmermann, Inc. (Parsons, KS)
 - GDMS (Canada)





The M721 VL Illuminating cartridge is designed for use with the M224/A1 LWCMS in all light infantry battalions. The cartridge consists of a M776 MTSQ fuze, a thin wall steel body tube and aluminum tail cone that contains the payload (parachute and canister), and a fin assembly that contains the ignition cartridge and propelling charges. The payload is base ejected and upon ignition produces visible light illumination. The visible light illumination allows for monitoring of enemy activities and adjustment of fire at greater observation distances during night operations. It also provides a means for day/night signaling. It is particularly useful in combined operations with allies who may not have NVDs. The M721 is fired from the M224 Lightweight Mortar System and is ballistically similar to the 60mm M767 IR Illum cartridge.

Capabilities & Characteristics:

- Range: 200 meters (minimum); 3,200 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 3.79 pounds
- Length: 16.8 inches
- Illumination: 300,000 candlepower
- Burn Time: 32 seconds
- Reliability: 95% at 90% confidence level
- Probable Error: 1.5% mean range; Deflection: 2.5 mils

System Integration:

- 60mm M224/ A1 LWCMS

Configurations:

- **B647**
- Suitable Substitutes:
 - B627: 60m M83A3 VL Illuminating Cartridge with M65A1 Time Fuze



Materiel Release: June 2001

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- VL Candle: CAAA (Crane, IN)





The M767 IR Illuminating cartridge is designed for use with the M224/A1 LWCMS in all light infantry battalions. The cartridge consists of a M776 MTSQ fuze, a thin wall steel body tube and aluminum tail cone that contains the payload (parachute and canister) and a fin assembly that contains the ignition cartridge and propelling charges. The payload is base ejected and upon ignition produces IR illumination. The advantage of the IR over conventional illumination is that there is minimal visible light. This reduces the possibility of exposing forward friendly troop positions while also allowing covert adjustment of fire at greater observation distances through use of passive NVDs.

Capabilities & Characteristics:

- Range: 300 meters (minimum); 3,175 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 3.75 pounds
- Length: 16.80 inches
- Illumination: 30 watts per steradian
- Maximum 450 candlepower of VL emitted
- Burn Time: 40 seconds
- Reliability: 95% at 90% confidence level
- Probable Error: 1.5% of range; Deflection: 2.5 mils

System Integration:

- 60mm M224/ A1 LWCMS

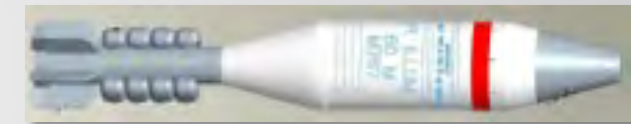
Configurations:

- **BA04**

Materiel Release: June 2002

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- IR Candle: CAAA (Crane, IN)





The M722A1 WP Smoke cartridge is designed for use with the M224/ A1 LWCMS in all light infantry battalions and serves as a spotting/marketing round. The steel projectile is bulk loaded with WP. When the fuze functions, it detonates the M85 burster, which ruptures the projectile and disperses the white phosphorus. The M722A1 replaced the mechanical M745 PD fuze with the reliable, safe, and cost effective electronic M783 PD/D fuze.

Capabilities & Characteristics:

- Range: 200 meters (minimum); 3,200 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 3.7 pounds
- Length: 14.84 inches
- Reliability: 98% at 90% confidence level
- Probable Error: 1.5% of range; Deflection: 2.5 mils

System Integration:

- 60mm M224/ A1 LWCMS

Configurations:

- **BA14:** M783 PD/D Fuze
- Suitable Substitutes:
 - B646: M745 PD Fuze
 - B630: 60mm M302A1 WP Smoke with M936 PD Fuze



Material Release: November 2005

Production Partners:

- Northrop Grumman (Rocket Center, WV)





The M720 Series HE Cartridges with Multi-Option Fuze are designed for use with the M224 LWCMS in all light infantry battalions. The complete round consists of a projectile body, a multi-option fuze, a fin assembly, four increments of propellant charge, an ignition cartridge and obturating ring. It is used against personnel and materiel providing both fragmentation and blast effects.

Capabilities & Characteristics:

- Range: 70 meters (minimum); 3,400 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 3.65 pounds
- Length: 14.84 inches
- Reliability: 98% at 90% confidence level
- Probable Error: 1.5% of mean range; Deflection: 2.5 mils

System Integration:

- 60mm M224 LWCMS

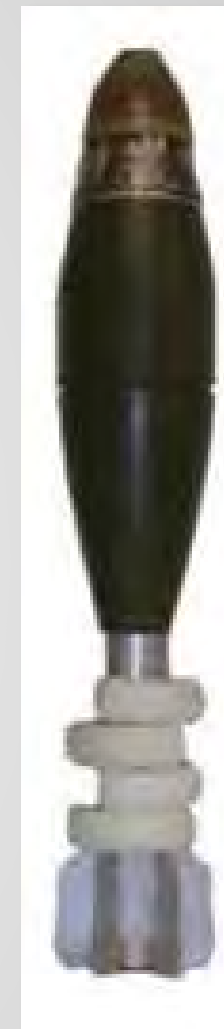
Configurations:

- **BA44**: IMX-101 Explosive, M734A1 Fuze
- Suitable Substitutes:
 - B642: Composition B Explosive, M734 Fuze
 - BA16: Composition B Explosive, M734A1 Fuze

Materiel Release: April 2006

Production Partners:

- System Integration: PM CAS
- Warhead and LAP:
 - Day & Zimmermann, Inc (Parsons, KS)
 - GDMS (Canada)





The M768 Series Mortar HE Cartridges are designed for use with the M224 LWCMS in all light infantry battalions. The complete round consists of a projectile body, a point detonating/delay fuze, a fin assembly, four increments of propellant charge, an ignition cartridge and obturating ring. This round is used primarily in training because it is significantly less expensive than the M720 Series HE cartridges, the preferred warfighting round. However, the M768 cartridges are also lethal and can be used in combat.

Capabilities & Characteristics:

- Range: 70 meters (minimum); 3,400 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 3.65 pounds
- Length: 14.84 inches
- Reliability: 99% at 90% confidence level
- Probable Error: 1.5% of mean range; Deflection: 2.5 mils

System Integration:

- 60mm M224 LWCMS

Configurations:

- **BA45**: IMX-101 Explosive
- Suitable Substitutes:
 - BA17: Composition B Explosive
 - B643: 60mm M888 HE

Material Release: April 2006

Production Partners:

- System Integration: PM CAS
- LAP:
 - GDMS (Canada)
 - Day & Zimmermann, Inc. (Parsons, KS)



The M888 Mortar HE cartridge is designed for use with the M224 LWCMS in all light infantry battalions. It is used against personnel and light materiel, providing both fragmentation and blast effect. The M888 has the same body and propulsion system as the M720 Series HE cartridges but uses the M935 PD Fuze. The M935 PD Fuze provides reversible selection between SQ and delay modes. The fuze functions on impact, detonating the fuze booster charge and, in turn, the Composition B HE. The M888 is purchased only by the USMC.

Capabilities & Characteristics:

- Range: 67 meters (minimum); 3,490 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 3.75 pounds
- Length: 14.738 inches
- Reliability: 99% at 90% confidence level
- Probable Error: 1.5% of mean range; Deflection: 2.5 mils

System Integration:

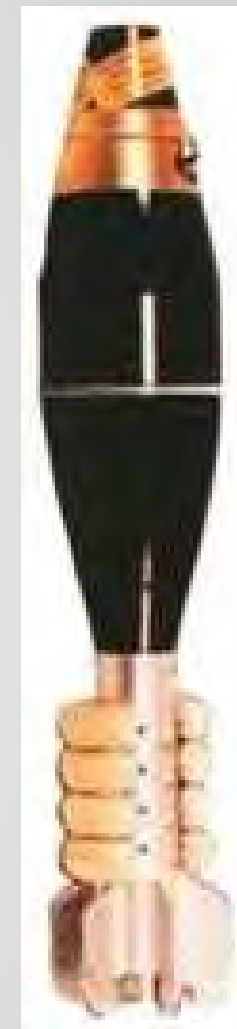
- 60mm M224 LWCMS

Configurations:

- B643

Materiel Release: March 1983

Specifications: USMC only





The M769 Full Range Practice Cartridge (FRPC) is designed for use with the M224 LWCMS in all light infantry battalions. The M769 is a low-cost, full range, practice round that will replace a percentage of the standard HE rounds used in 60mm mortar training. The complete round consists of a hollow projectile body with vent tube and four vent holes, a practice fuze, a fin assembly, four increments of propellant charge, an ignition cartridge and obturating ring and is identical in shape, size and weight to the M720/ M720A1 HE cartridges. The flash, bang and smoke signature provided by the fuze is channeled to exhaust holes in the rear of the cartridge using a center vent tube.

Capabilities & Characteristics:

- Compatible with 60mm M224 Lightweight Company Mortar System
- Range: 70 meters (minimum); 3,500 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained)
- Weight: 3.75 pounds
- Length: 14.88 inches
- Reliability: 98.7% at 90% confidence level
- Probable Error: 1.5% of mean range; Deflection: 2.5 mils
- Effectiveness: visual effect to allow adjustment from a range of 2,000 meters

System Integration:

- 60mm M224 LWCMS

Configurations:

- BA15

Materiel Release: June 2004

Production Partners:

- System Integration: PM CAS
- LAP:
 - Day & Zimmermann, Inc. (Parsons, KS)
 - Nammo-Pocal (Scranton, PA)
 - GDMS (Canada)



MORTAR AMMUNITION: 81mm

The M816 IR Illuminating cartridge is fired from the M252/A1 Improved Mortar System. The M816 cartridge is ballistically comparable to the M853A1 VL Illuminating Cartridge, except for the chemical composition of the illuminating material. The cartridge consists of a M772 MTSQ fuze, a thin wall aluminum body tube, aluminum tail cone that contains the parachute and canister, and a fin assembly that contains the ignition cartridge and 4 propelling charges. The payload is base ejected and upon ignition produces IR illumination. This reduces the possibility of exposing forward friendly troop positions while also allowing covert adjustment of fire at greater observation distances through use of passive NVDs.

Capabilities & Characteristics:

- Range: 1,025 meters (minimum); 4,925 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 15 rounds per minute (sustained)
- Weight: 9.43 pounds
- Length: 25.469 inches
- Illumination: 50 watts per steradian
- Maximum of 500 candlepower of VL emitted
- Burn Time: 60 seconds
- Reliability: 95% at 90% confidence level
- Probable Error: 1% of mean range; Deflection less than 15 meters at all ranges

81mm M816 IR Illuminating Cartridge



System Integration:

- 81mm M252/ A1 Mortar System

Configurations:

- C484

Matériel Release: April 2002

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- VL Candle: CAAA (Crane, IN)



MORTAR AMMUNITION: 81mm

The M819 Red Phosphorous (RP) cartridge is a smoke screen round developed for use in the 81mm M252/A1 Mortar System. The complete round consists of a fuze with an expulsion charge, a thin wall steel body tube containing 28 red phosphorus smoke wedges, a propelling charge comprised of four horse-shoe type propellant increments, a fin assembly, and an ignition cartridge with an integral percussion primer. After firing and a set time delay, the RP wedges are ejected and dispersed on the target to quickly produce an obscuring smoke screen. A full screen can be developed with 3 rounds as opposed to 15 rounds with the M375 series WP cartridge. This cartridge includes GAMS (Gas Adsorbent Modules) to adsorb the phosphine gas emitted by the RP to keep the round stable.

Capabilities & Characteristics:

- Range: 300 meters (minimum); 4,900 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 15 rounds per minute (sustained)
- Weight: 10.8 pounds
- Length: 25.375 inches
- Burn time: 5 minutes for 3 rounds
- Reliability: 98% at 90% confidence level
- Probable Error: 1.5% of mean range; Deflection 15 meters at all ranges
- Effectiveness: Provides 5 times the obscuration effectiveness of the 81mm M375 WP Cartridge

81mm M819 RP Smoke Cartridge

System Integration:

- 81mm M252/ A1 Mortar System

Configurations:

- C870

Materiel Release: September 1991

Production Partners:

- System Integration: PM CAS
- RP Pellet Production and LAP: PBA (Pine Bluff, AR)



MORTAR AMMUNITION: 81mm

The M853A1 VL Illuminating cartridge consists of a fuze, a thin wall aluminum body tube and aluminum tail cone that contains the payload (parachute and canister), and a fin assembly that contains the ignition cartridge and propelling charges. The payload is base ejected and upon ignition produces VL illumination. This VL illumination allows for monitoring of enemy activities and adjustment of fire at greater observation distances during night operations. It also provides a means for day/night signaling. It is particularly useful in combined operations with allies who may not have NVDs. This round illuminates to the full range of the M821A1 and M889A2 HE cartridges, which allows adjustment of fire at any distance out to the maximum range.

Capabilities & Characteristics:

- Range: 300 meters (minimum); 5,050 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 15 rounds per minute (sustained)
- Weight: 9.25 pounds
- Length: 25.499 inches
- Illumination: 525,000 candlepower
- Burn Time: 50 seconds
- Reliability: 95% at 90% confidence level
- Probable Error: 1% of mean range; Deflection less than 15 meters at all ranges

81mm M853A1 VL Illuminating Cartridge



System Integration:

- 81mm M252/ A1 Mortar System

Configurations:

- C871

Materiel Release: September 1991

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- VL Candle: CAAA (Crane, IN)





The 81mm M821 Series and M889 Series cartridges are HE rounds for the 81mm M252 Mortar System, designed for use against personnel and light materiel. The 81mm M821/M889 Series cartridges consist of an HF-1 steel projectile body loaded with approximately 2 pounds of Composition B conventional explosive or IMX-104 insensitive explosive, a plastic obturating ring, a M24 fin, four M220 Propelling Charges attached to the fin shaft, and a M299 Ignition Cartridge. These cartridges are identical, except for the fuze model the M821 Series uses the M734A1 Multi-option fuze, while the M889 Series uses the M783 PD/D fuze.

Capabilities & Characteristics:

- Range: 70 meters (minimum); 5,859 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 15 rounds per minute (sustained)
- Weight: 9.42 pounds
- Length: 19.6 inches
- Reliability: 98% at 80% confidence level
- Probable Error: 1.5% of mean range; Deflection: 1% at all ranges

System Integration:

- 81mm M252 Mortar System

Configurations:

- **CA63**: M889A4 – IMX-104 Explosive
- **C868**: M821A1 – Composition B Explosive
- Suitable Substitutes:
 - CA61: M821A3 – IMX-104 Explosive
 - CA43: M889A2 – Composition B Explosive

Materiel Release:

- M821 series: August 1994
- M889 series: September 2009

Production Partners:

- System Integration: PM CAS
- LAP:
 - GDMS (Canada)
 - Day & Zimmermann, Inc. (Parsons, KS)





The HE–Enhanced Fragmentation (HE–EF) M821A4 mortar cartridge is fired from the standard US Army 81mm M252 Mortar System and is used for fragmentation and blast effect against personnel and materiel targets. The M821A4 Mortar Cartridge is designed to satisfy modern IM requirements while enhancing lethality. The incorporation of an IMX-104 HE fill and formion melt-out fuze adapter allow for venting of the main charge, preventing high-order detonations from occurring in IM-related scenarios. The enhanced lethality is achieved by utilizing both tungsten pre-formed fragmentation and HF-1 steel. The major components of the M821A4 include the M734A1 Multi Option Fuze, M24 Fin Assembly, M299 Ignition Cartridge, M658 Propelling Charge, Obturating Ring, PBXN-12 Auxiliary Booster, a tungsten/Liquid Crystal Polymer (LCP) fragmentation matrix, and IMX-104 main HE fill.

Capabilities & Characteristics:

- Range: 5,600 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 15 rounds per minute (sustained)
- Weight: 9.67 pounds
- Lethality: ~66% of 120mm

System Integration:

- 81mm M252 Mortar System

Configurations:

- CA66

Materiel Release: November 2022

Production Partners:

- LAP:
 - GDMS (Canada)
 - Day & Zimmermann, Inc. (Parsons, KS)





The M879 FRPC is a US developed improved practice round for use in the M252, improved 81mm, Mortar System. The practice cartridge provides realistic training in place of the current 81mm HE Cartridges at a significant cost savings. The M751 PD Practice Fuze can be set, for training purposes, to the required fuze functioning mode for the fire mission. The M751 fuze used on this round detonates upon impact and produces a flash, bang and smoke signature which gives the forward observer the ability to adjust fire.

Capabilities & Characteristics:

- Range: 70 meters (minimum); 5,800 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 15 rounds per minute (sustained)
- Weight: 9.1 pounds
- Length: 19.55 inches
- Reliability: 97% at 80% confidence level
- Effectiveness: Visual effect to allow adjustment from a range of 2,500 meters

System Integration:

- 81mm M252 Mortar System

Configurations:

- **C875**

Materiel Release: October 2004

Production Partners:

- System Integration: PM CAS
- LAP:
 - Day & Zimmermann, Inc. (Parsons, KS)
 - Nammo-Pocal (Scranton, PA)
 - GDMS (Canada)





The Accelerated Precision Mortar Initiative (APMI) is a response to an Operational Need Statement (ONS) received from theater. The cartridge utilizes GPS technology to rapidly defeat personnel targets with low collateral damage. APMI completed qualification for Urgent Material Release in March 2011 and achieved Initial Operational Capability in April 2011. In 2016, it was also approved for Conditional Material Release for use by the GRF and ACF.

Capabilities & Characteristics:

- Precision capability for BCTs at Battalion level
- Ability to defeat targets with low collateral damage
- Accuracy: 10 meters (threshold); 5 meters (objective)
- Range: 1 kilometer (minimum); 6.25 kilometers (maximum)

System Integration:

- 120mm M120 Towed and Stryker Mortar Carrier Mortar Systems

Configurations:

- CA55

Materiel Release:

- Urgent Materiel Release: March 2011
- Conditional Material Release: Fiscal Year 2016, 1st Quarter



Production Partners:

- Alliant Tech Systems (Plymouth, MN)



MORTAR AMMUNITION: 120mm

The M933A1 HE cartridge is designed for use with the 120mm M120 and M121 Battalion Mortar Systems and is used against personnel, bunker and light materiel targets. It consists of a Steel Shell Body with Composition B explosive fill, and an aluminum M31 Fin Assembly. The propulsion system utilizes the M1020 Ignition Cartridge and four horseshoe-shaped, water-resistant M234 Propelling Charges. The M933A1 is comparable to the M934A1 HE cartridge, except the M934A1 uses the M734A1 Multi-Option Fuze while the M933A1 uses the M783 PD/D Fuze.

Capabilities & Characteristics:

- For use with BCT Mortar System
- Range: 200 meters (minimum); 7,200 meters (maximum)
- Rate of Fire: 16 rounds per minute (maximum); 4 rounds per minute (sustained)
- Weight: 30.2 pounds
- Length: 27.99 inches
- Reliability: 97% at 90% confidence level
- Probable Error: 1.5% of mean range; Deflection: 1% at maximum range
- Effectiveness: 50% improvement over 4.2-inch M329A2 HE Cartridge
- Utilizes M1020/ M234 Propulsion System to reduce residue
- Uses the M783 PD/D Fuze

120mm M933A1 HE Cartridge

System Integration:

- 120mm M120 Towed Mortar System
- 120mm M121 Carrier-mounted Mortar System

Configurations:

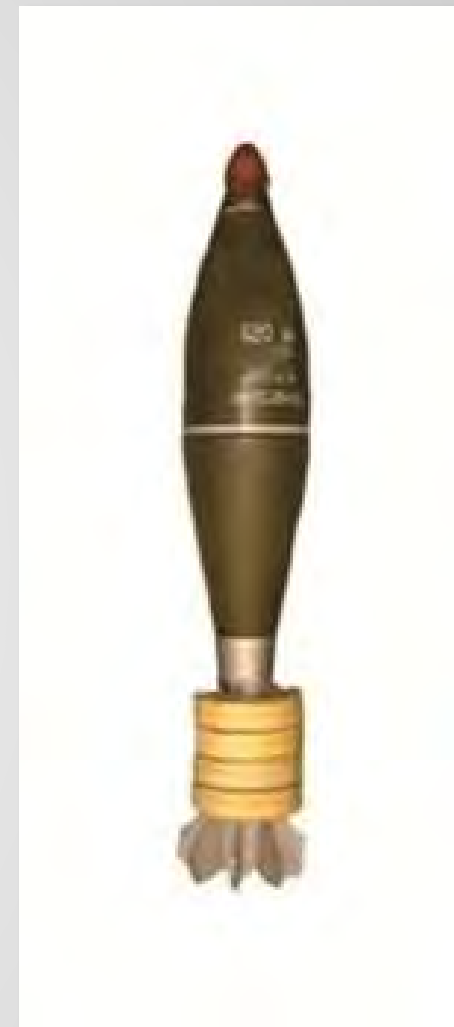
- **CA44**
- Suitable Substitutes:
 - C623: 120mm M933 HE with M745 PD Fuze

Materiel Release:

- July 2008

Production Partners:

- System Integration: PM CAS
- LAP:
 - GDMS (Canada)
 - Day & Zimmermann, Inc. (Parsons, KS)



MORTAR AMMUNITION: 120mm

The M934A1 HE cartridge is designed for use with the M120, 120mm Towed Mortar System and the M121, Carrier Mortar System. It is used against personnel and materiel providing both fragmentation and blast effects. It consists of a Steel Shell Body with Composition B fill, a multi-option fuze, an aluminum fin, an ignition cartridge and four propelling charges assembled around the fin shaft.

Capabilities & Characteristics:

- For use with BCT Mortar System
- Range: 200 meters (minimum); 7,200 meters (maximum)
- Rate of Fire: 15 rounds per minute (maximum); 6 rounds per minute (sustained)
- Weight: 30 pounds
- Length: 27.99 inches
- Reliability: 97% at 90% confidence level
- Probable Error: 1.5% of mean range; Deflection: 1% at maximum range
- Effectiveness: 50% improvement over 4.2-inch M329A2 HE Cartridge
- Utilizes the M1020/ M234 Propulsion System to reduce residue
- Uses the M734A1 Multi-Option fuze to improve safety with elimination of up-leg early functions

120mm M934A1 HE Cartridge

System Integration:

- 120mm M120 Towed Mortar System
- 120mm M121 Carrier-mounted Mortar System

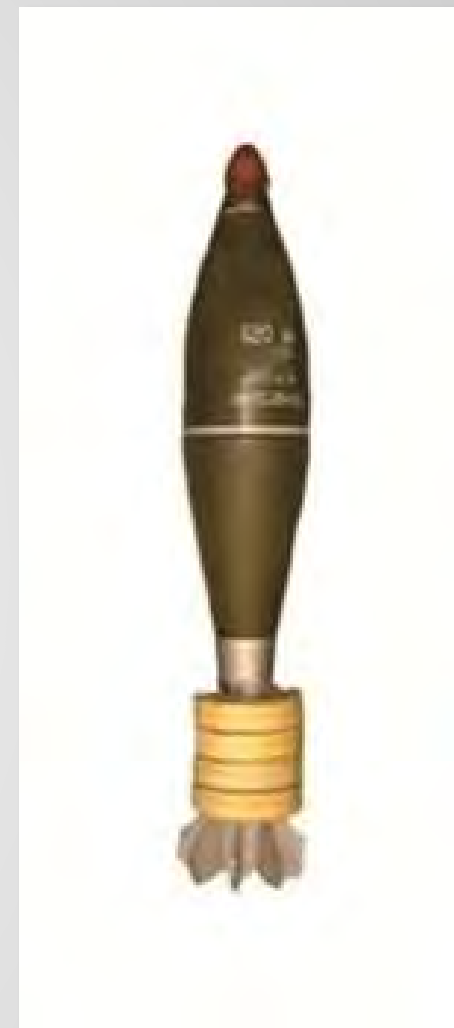
Configurations:

- **CA04**
- Suitable Substitutes:
 - C379: 120mm M934 HE with M734 MOF

Materiel Release: September 2003

Production Partners:

- LAP:
 - GDMS (Canada)
 - Day & Zimmermann, Inc. (Parsons, KS)





The M930 VL cartridge is fired from the M120 Towed and M121 Carrier-Mounted mortar systems and is intended for use in illuminating a desired point or area. The cartridge consists of a M776 MTSQ fuze, a steel 2-piece shell body that contains the parachute and canister, and a fin assembly. The payload is base ejected and upon ignition produces VL illumination. This VL illumination allows for monitoring of enemy activities and adjustment of fire at greater observation instances during night operations. It also provides a means for day/night signaling. This round illuminates to the full range of the M934A1 HE round, which allows adjustment of fire at any distance out to the maximum range and provides a significant increase in illumination intensity and effectiveness over the 4.2-inch illuminating cartridge that it replaces.

Capabilities & Characteristics:

- Range: 360 meters (minimum); 6,675 meters (maximum)
- Rate of Fire: 16 rounds per minute (maximum); 4 rounds per minute (sustained)
- Weight: 31.92 pounds
- Length: 27.68 inches
- Illumination: 1,000,000 candlepower
- Burn Time: 50 seconds
- Reliability: 95% at Point Estimate

System Integration:

- 120mm M120 Towed Mortar System
- 120mm M121 Carrier-mounted Mortar System

Configurations:

- **C625**
- Suitable Substitutes:
 - CA39: 120mm M930E1 VL Illuminating with M745 PD Fuze
 - C790: 120mm M91 Illuminating with DM93 Time Fuze



Materiel Release: March 2003

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- VL Candle: CAAA (Crane, IN)



MORTAR AMMUNITION: 120mm

The M983 IR Illuminating cartridge was developed for use in the 120mm M120 and M121 Battalion Mortar Systems. The M983 IR cartridge is ballistically comparable to the M930 VL cartridge except for the chemical composition of the illuminating material. The M983 provides a field of view equal or greater to that of the VL cartridge. The cartridge consists of a fuze, a steel 2-piece shell body, an illuminant candle and parachute assembly, a fin assembly, an ignition cartridge, and four propelling charges assembled around the fin shaft. The IR composition reduces the possibility of exposing forward friendly troop positions while also allowing covert adjustment of fire at greater observation distances through use of passive NVDs. This round illuminates to the full range of the M934A1 HE round.

Capabilities & Characteristics:

- For use with BCT Mortar System
- Range: 375 meters (minimum); 6,675 meters (maximum)
- Rate of Fire: 16 rounds per minute (maximum); 4 rounds per minute (sustained)
- Weight: 31.92 pounds
- Length: 27.68 inches
- Illumination: 75 watts per steradian
- Maximum 550 candlepower of VL emitted
- Burn Time: 50 seconds
- Reliability: 95% at 90% confidence level

120mm M983 IR Illuminating Cartridge



System Integration:

- 120mm M120 Towed Mortar System
- 120mm M121 Carrier-mounted Mortar System

Configurations:

- CA07

Matériel Release: October 2003



Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- IR Candle: CAAA (Crane, IN)



MORTAR AMMUNITION: 120mm

The M929 WP cartridge provides smoke obscuration for area targets. When the fuze functions, it detonates the burster, fragmenting the body and dispersing felt pads which are soaked with 5 pounds of WP. The smoke obscuration is generated by a spontaneous reaction between the WP and oxygen. Two configurations are in inventory: M929 with M734A1 Multi-Option Fuze and XM929 with M745 PD fuze.

Capabilities & Characteristics:

- For use with BCT Mortar System
- Range: 200 meters (minimum); 7,200 meters (maximum)
- Rate of Fire: 16 rounds per minute (maximum); 4 rounds per minute (sustained)
- Weight: 30 pounds
- Payload: 5 pounds of WP
- Length: 27.8 inches
- Burn Time: Approximately 6.5 minutes
- Reliability: 97% at 80% confidence level
- Probable Error: 2% of mean range at maximum range; Deflection 1% at maximum range
- Ballistically comparable to the M934A1 HE, M930/ M983 Illuminating, and M931 FRPC
- Effectiveness: Provides twice the obscuration effectiveness of the 4.2-inch M328A1 WP Cartridge

120mm M929 WP Smoke Cartridge



System Integration:

- 120mm M120 Towed Mortar System
- 120mm M121 Carrier-mounted Mortar System

Configurations:

- **CA03:** M734A1 PD/D Fuze
- Suitable Substitutes:
 - C624: M745 PD Fuze



Material Release: March 1999

Production Partners:

- System Integration: PM CAS
- LAP: PBA (Pine Bluff, AR)
- M86 Burster and Burster Housing: CAAA (Crane, IN)



This FRPC cartridge is for use in the 120mm M120 and M121 Battalion Mortar Systems, providing realistic training for 120mm Mortar crews at a reduced cost. The M931 is ballistically comparable to the M934A1/ M933A1 HE cartridges in size, shape and weight. The M931 is equipped with the M781 Point Detonating Practice Fuze which produces a flash, bang, and smoke signature upon impact, providing audio and visual feedback to the mortar crew and forward observer. The M931 cartridge is not to exceed 75% of the unit production cost of the M934A1/ M933A1 cartridges.

Capabilities & Characteristics:

- Range: 200 meters (minimum); 7,200 meters (maximum)
- Rate of Fire: 15 rounds per minute (maximum); 6 rounds per minute (sustained)
- Weight: 30 pounds
- Length: 27.99 inches
- Reliability: 97% at 80% confidence
- Effectiveness: Visual effect to allow adjustment from a range of 3,000 meters
- Utilizes M1020/ M234 Propulsion System
- Equipped with M781 PD Practice Fuze, a facsimile of the M734A1 Multi-Option Fuze

System Integration:

- 120mm M120 Towed Mortar System
- 120mm M121 Carrier-mounted Mortar System

Configurations:

- CA09

Materiel Release: January 1999

Production Partners:

- System Integration: PM CAS
- LAP:
 - Day & Zimmermann, Inc. (Parsons, KS)
 - GDMS (Canada)
- Fuze and M1020 Ignition Cartridges: Nammo Pocal Industries (Scranton, PA)
- Shell Bodies: GD-OTS NEPA
- M31 Tail Fins: Matech (Salisbury, MD)
- M234 Propelling Charges:
 - GD-OTS (Marion, IL)
 - AO-IAAAP (Middletown, IA)





The 60mm weapon system is a lightweight, high angle of fire, smooth bore, man-portable, muzzle loaded mortar with improved rate-of-fire capabilities. The M224 consists of the following components: M225 Cannon (tube), M170 bipod assembly, M7 baseplate, M8 auxiliary baseplate, and the M67 sight unit. The M225 Cannon is a smooth bore mortar barrel 40 inches long with external cooling fins on the base cap end. Attached to the base cap end is a combination carrying handle and firing mechanism. The carrying handle has a trigger, firing selector, and a range indicator assembly.

Capabilities & Characteristics:

- Elevation: 800 mils (minimum); 1,511 mils (maximum)
- Range: 70 meters (minimum); 3,500 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained with maximum charge)
- System Weight:
 - Cannon: 14.4 pounds
 - Bipod: 15.2 pounds
 - Baseplate: 14.4 pounds
 - M67 Sight Unit: 2.5 pounds
 - Total: 46.5 pounds

Material Release: March 1985

Production Partners:

- Cannons, Bipods, and Baseplates: Watervliet Arsenal (Watervliet, NY)
- System Engineering: DEVCOM-AC (Picatinny Arsenal, NJ)





The 60mm M224A1 Mortar system is approximately 20% lighter (8.9 pounds less) than the current legacy M224 mortar system while retaining the same rates of fire, range, and tube life. The M224A1 consists of the following components: M225A1 Inconel Cannon (tube), M170A1 bipod assembly, M7A1 baseplate, M8A1 auxiliary baseplate, and the M67 sight unit. The M225A1 Cannon is a smooth bore mortar barrel 40 inches long. Attached to the base cap end is a combination carrying handle and firing mechanism. The carrying handle has a trigger, firing selector, and a range indicator assembly.

Capabilities & Characteristics:

- Elevation: 800 mils (minimum); 1,511 mils (maximum)
- Range: 70 meters (minimum); 3,500 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 20 rounds per minute (sustained with maximum charge)
- System Weight:
 - Cannon: 13 pounds
 - Bipod: 12.85 pounds
 - Baseplate: 9.2 pounds
 - M67 Sight Unit: 2.5 pounds
 - Total: 37.55 pounds

Production Partners:

- Cannons, Bipods, and Baseplates: Watervliet Arsenal (Watervliet, NY)
- System Engineering: DEVCOM-AC (Picatinny Arsenal, NJ)





M252 is a smooth bore, muzzle loaded, high angle fire, smooth bore, muzzle loaded mortar with improved rate-of-fire capabilities. The M252 consists of the following components: M253 steel cannon (tube), M177 bipod, M3A1 baseplate, and the M67 sight unit. The M177 bipod mount is a K-frame design consisting of a barrel clamp, two buffers, a traversing mechanism, a cross-leveling mechanism, an elevating mechanism, and two legs.

Capabilities & Characteristics:

- Elevation: 800 mils (minimum); 1,511 mils (maximum)
- Range: 80 meters (minimum); 5,900 meters (maximum)
- Rate of Fire: 30 rounds per minute (maximum); 15 rounds per minute (sustained with maximum charge)
- System Weight:
 - Cannon: 30.5 pounds
 - Bipod: 27 pounds
 - Baseplate: 29 pounds
 - M67 Sight Unit: 2.5 pounds
 - Total: 89 pounds

Materiel Release: January 1991

Production Partners:

- Cannons, Bipods, and Baseplates: Watervliet Arsenal (Watervliet, NY)
- System Engineering: DEVCOM-AC (Picatinny Arsenal, NJ)





The 81mm M252A1 Mortar system is approximately 13% lighter (11.7 pounds less) than the current legacy M252 mortar system while retaining the same rates of fire, range, and tube life. M252A1 is a smooth bore, muzzle loaded, high angle fire weapon. The M252A1 consists of the following components: M253 steel cannon (tube), M177A1 bipod, M3A2 baseplate, and the M67 sight unit. The M177A1 bipod mount is an A frame design consisting of a barrel clamp, two buffers, a traversing mechanism, a cross-leveling mechanism, an elevating mechanism, and two legs. The M252A2 version is also available utilizing the M253A1 Inconel cannon.

Capabilities & Characteristics:

- Elevation: 800 mils (minimum); 1,511 mils (maximum)
- Range: 80 meters (minimum); 5,900 meters (maximum)
- System Weight:
 - Cannon: 30.5 pounds (Inconel Cannon: 29.5 pounds)
 - Bipod: 21.3 pounds
 - Baseplate: 23 pounds
 - M67 Sight Unit: 2.5 pounds
 - Total: 77.3 pounds (76.3 pounds with Inconel Cannon)

Materiel Release: January 1991

Production Partners:

- Cannons, Bipods, and Baseplates: Watervliet Arsenal (Watervliet, NY)
- System Engineering: DEVCOM-AC (Picatinny Arsenal, NJ)





The M120 towed System consists of the following components: M298 Cannon (tube), M191 bipod, M9 baseplate, and the M67 sight unit. The M120 when transported on the M1101 Trailer is primarily towed by a High Mobility Multi-Wheeled Vehicle (HMMWV).

Capabilities & Characteristics:

- Elevation: 710 mils (minimum); 1,510 mils (maximum)
- Range: 200-7,200 meters
- Rate of Fire: 16 rounds per minute (maximum); 4 rounds per minute (sustained)
- System Weight:
 - Cannon: 110 pounds
 - Bipod: 68 pounds
 - Baseplate: 136 pounds
 - M67 Sight Unit: 2.5 pounds
 - Total: 316.5 pounds

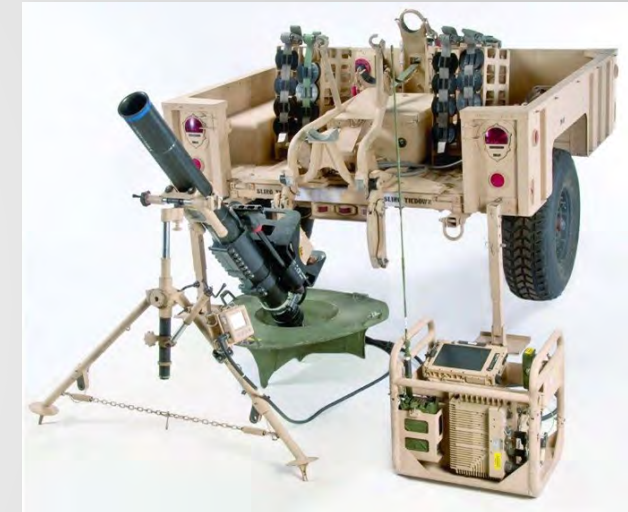
System Integration:

- M1101 Trailer

Matériel Release: March 2003

Production Partners:

- Cannons, Bipods, and Baseplates: Watervliet Arsenal (Watervliet, NY)
- Cannons:
 - Elbit Systems of America (Ft. Worth, TX)
 - Connectec, Inc. (Irvine, CA)
- System Engineering: DEVCOM-AC (Picatinny Arsenal, NJ)





M121 carrier mounted mortar system consists of the M298 Cannon, M9 baseplate (for ground mount mode), M191 bipod, an adaptor kit for mounting in the M1064A3, and the M67 sight unit with an extension assembly. The turntable provides a ninety-degree area of fire. The adaptation kit has a breech piece socket, bipod support, travel clamp assembly, step assembly, and brackets to mount the mortar into the M1064A3 mortar carrier and the Armored Multi-Purpose Vehicle (AMPV).

Capabilities & Characteristics:

- Elevation: 750 mils (minimum); 1,510 mils (maximum)
- Range: 200-7,200 meters
- Rate of Fire: 16 rounds per minute (maximum); 4 rounds per minute (sustained)
- System Weight:
 - Cannon: 110 pounds
 - Bipod: 78 pounds
 - Baseplate: 136 pounds
 - M67 Sight Unit: 2.5 pounds
 - Total: 326.5 pounds

System Integration:

- M1064A3 Mortar Carrier
- M1287 AMPV

Matériel Release: March 2003

Production Partners:

- Cannons, Bipods, and Baseplates: Watervliet Arsenal (Watervliet, NY)
- Cannons:
 - Elbit Systems of America (Ft. Worth, TX)
 - Connectec, Inc. (Irvine, CA)
- System Engineering: DEVCOM-AC (Picatinny Arsenal, NJ)



The M326 Mortar Stowage Kit (MSK) is a hydraulic powered lift system that is mounted on a M1101 trailer. It allows the crew to emplace and displace the M120 towed mortar system quickly and efficiently. The system allows the mortar and ammunition to be carried as a single unit.

Capabilities & Characteristics:

- Increased responsiveness (1-minute emplacement)
- Shoot and scoot capability (2-minute displacement)
- Serves as a platform to integrate MFCS-D
- Reduced crew fatigue

System Integration:

- 120mm M120A1 Towed Mortar Systems

Matériel Release: December 2009

Production Partners:

- Integration and Fielding: BAE Systems (Louisville, KY)
- System Engineering: DEVCOM-AC (Picatinny Arsenal, NJ)



The M150/M151 Mortar Fire Control System - Dismounted (MFCS-D) is an on-board system that integrates a fire control computer with an inertial navigation and pointing system. It allows mortar crews to send and receive digital call for fire messages, determine the pointing and position of the weapon, and calculate ballistic solutions. A gun can operate as the FDC, which allows the Mortar Section to execute dispersed operations. Accuracy of the mortar is increased by a factor of 3. M150 is the MFCS on the M120A1 towed mortar system; M151 is installed into the HMMWV prime mover that tows the weapon system.

Capabilities & Characteristics:

- Improves cartridge accuracy/ effectiveness
- Increases soldier survivability
- Interoperable with Forward Observer System (FOS) and Advanced Field Artillery Tactical Data System (AFATDS)

System Integration:

- 120mm M120A1 Ground-Mounted Mortar Weapon System

Materiel Release:

- Hardware: May 2009
- Software Version 7: 2017

Production Partners:

- Pointing Device: Honeywell Aerospace (Clearwater, FL)
- Driver's & Gunner's Displays: KVH (Middletown, RI)
- Commander's Interface: Miltope (Hope Hull, AL)
- Power Distribution Assembly: Milpower (Belmont, NH)
- System Engineering and Software: DEVCOM-AC (Picatinny Arsenal, NJ)



The M95/M96 Mortar Fire Control System-Mounted (MFCS-M) is a highly responsive and accurate fire control system for 120mm mortars. The system allows mortar crews to send and receive digital call for fire messages, determine the pointing and position of the weapon, and calculate ballistic solutions, providing significant enhancements in survivability, accuracy, and responsiveness. Accuracy of the mortar is also increased by a factor of 3. M95 is the MFCS on the M121 carrier-mounted mortar; M96 is installed into the M577 FDC vehicle.

Capabilities & Characteristics:

- MFCS allows mortars to stop, fire, and move in less than one minute (no crew dismount)
- A mortar section can utilize split operations, with the crew dismount not required, allowing for dispersed operations
- MFCS-M is an on-board system that integrates an FCC with an inertial navigation and pointing system

System Integration:

- 120mm M121 Carrier Mounted Mortar Weapon System

Materiel Release:

- Hardware Materiel Release: January 2009
- Software Version 7: 2017

Production Partners:

- Pointing Device: Honeywell Aerospace (Clearwater, FL)
- Driver's and Gunner's Displays: KVH (Middletown, RI)
- Commander's Interface: Miltope (Hope Hull, AL)
- Power Distribution Assembly: Milpower (Belmont, NH)
- System Engineering and Software: DEVCOM-AC (Picatinny Arsenal, NJ)



The M32 Lightweight Handheld Mortar Ballistic Computer (LHMBC) is a revolutionary improvement in mortar fire control capability, linking mortar fires with the digital battlefield. The LHMBC consists of modified MFCS software hosted on the Army Common Hardware Rugged Portable Digital Assistant (R-PDA). The R-PDA includes a tactical modem and embedded GPS. The LHMBC can be fielded to 60mm, 81mm, and 120mm dismantled units as a replacement for the M23 Computer.

Capabilities & Characteristics:

- Provides ammunition inventory management
- Functions as an FDC
- Supports all doctrinal mortar missions, calculating the ballistic solution for all U.S. 60mm, 81mm, and 120mm Mortar Systems and Ammunition
- Incremental software development approach
- Provides automatic gun positions via embedded GPS
- System weight: <4 pounds
- Joint development program with the USMC

System Integration:

- 60mm M224 series Mortar Weapon Systems
- 81mm M252 series Mortar Weapon Systems
- 120mm Mortar Weapon Systems without MFCS (used as a backup computer)

Materiel Release:

- Software Version 6.0: 2018

Production Partners:

- R-PDA Hardware: Tallahassee Technologies, Inc. (Tallahassee, FL)
- M32 Accessory Kits: Elbit Systems of America (Ft. Worth, TX)
- System Engineering and Software: DEVCOM-AC (Picatinny Arsenal, NJ)

R-PDA 5500 (Type-B)



The M32A1 LHMBC is a replacement for the M32 LHMBC, linking mortar fires with the digital battlefield. The LHMBC consists of modified MFCS software hosted on the Army Common Hardware R-PDA. The R-PDA includes a tactical modem and embedded GPS. The LHMBC can be fielded to 60mm, 81mm, and 120mm dismounted units

Capabilities & Characteristics:

- Provides ammunition inventory management
- Functions as an FDC
- Supports all doctrinal mortar missions, calculating the ballistic solution for all U.S. 60mm, 81mm, and 120mm Mortar Systems and Ammunition
- Incremental software development approach
- Provides automatic gun positions via embedded GPS
- System weight: <4 pounds

System Integration:

- 60mm M224 series Mortar Weapon Systems
- 81mm M252 series Mortar Weapon Systems
- 120mm Mortar Weapon Systems without MFCS (used as a backup computer)

Materiel Release:

- Software Version 6.0: January 2020

Production Partners:

- End User Device: Miltope (Huntsville, AL)
- System Engineering and Software: DEVCOM-AC (Picatinny Arsenal, NJ)



The M32A2 LHMBC is a replacement for the M32A1 LHMBC, linking mortar fires with the digital battlefield. The LHMBC consists of MFCS software hosted on the Nett Warrior End User Device Android Smartphone. The LHMBC can be fielded to 60mm, 81mm, and 120mm dismounted Units.

Capabilities & Characteristics:

- Provides ammunition inventory management
- Functions as an FDC
- Supports all doctrinal mortar missions, calculating the ballistic solution for all U.S. 60mm, 81mm, and 120mm Mortar Systems and Ammunition
- Incremental software development approach
- Provides automatic gun positions via embedded GPS
- System weight: <4 pounds

System Integration:

- 60mm M224 series Mortar Weapon Systems
- 81mm M252 series Mortar Weapon Systems
- 120mm Mortar Weapon Systems without MFCS (used as a backup computer)

Material Release:

- Software Version 3: May 2023

Production Partners:

- End User Device: Samsung via PdM Nett Warrior
- System Engineering and Software: DEVCOM-AC (Picatinny Arsenal, NJ)





The M119A3 is a lightweight, 105mm howitzer that provides continuous close fires to infantry brigade combat teams. The system weighs 4,690 pounds and is air assault/air drop capable. It has a range of 19.5 kilometers with rocket-assisted munitions (14 kilometers unassisted). It fires all currently fielded U.S. munitions and has a rate of fire of six rounds per minute. Its approved prime movers include the Humvee and 2.5-ton and 5-ton trucks.

A program to integrate digital fire-control capability onto the M119A2 howitzer was approved in 2008 and resulted in the FMR of the M119A3 in March 2013. Using the software for the M777A2 155mm howitzer maximizes commonality in operation and training while minimizing program cost, schedule and risk. The application of a digital fire control allows the digitized M119A3 to emplace and displace faster, provide more responsive fires, and become more survivable on the battlefield.

Capabilities & Characteristics:

- Improved lethality and strategic deployment
- Improved survivability (decreased emplace/ displace time – shoot and scoot tactics with digital fire control)
- 1-mil pointing accuracy
- Onboard ballistic calculations
- Embedded training
- M119A2 plus DFCS
- FCC
- Inertial navigation with GPS backup
- Integrated Muzzle Velocity Sensor (MVS)
- Self contained supplemental power
- Digital communication with FDC
- Rate of Fire: 10 cartridges per minute (maximum); 3 cartridges per minute (sustained)
- Emplace: 3 minutes
- Displace: 2-3 minutes

Materiel Release: March 2013





The 155mm M777A2 Lightweight Towed Howitzer, also known as the LW155, is a joint USMC and US Army program that replaces the 155mm M198 Towed Howitzer. The LW155 is a general support system for the Army's light units, a direct-support cannon fire support system for the Stryker brigade combat teams and the sole howitzer in the USMC.

The LW155 weighs less than 10,000 pounds and has a maximum firing range of approximately 30 kilometers with rocket-assisted projectiles, 24.7 kilometers with standard rounds and up to 40 kilometers using Excalibur. It has a maximum firing rate of four rounds per minute and a sustained rate of two rounds per minute.

The M777A2 is fitted with onboard electronics, giving it self-locating, self-laying and digital communications similar to the M109A6 Paladin. The M777A2 adds the ability to fire the Excalibur precision-guided munition.

Capabilities & Characteristics:

- Improved lethality and strategic deployment
- Increased tactical mobility and reliability
- Improved survivability (decreased emplace/displace time – shoot and scoot tactics with digital fire control)
- 1-mil pointing accuracy
- M776 NATO compliant cannon
- Titanium structures
- DFCS and Optical Fire Control
- Inertial navigation with GPS backup
- PFM
- Independent suspension
- Semi-automatic breech and loading tray
- Rate of Fire: 4 rounds per minute (maximum); 2 rounds per minute (sustained)
- Emplace: 3 minutes
- Displace: 2-3 minutes
- Weight: 10,000 pounds or less

Production Partners:

- BAE Systems (UK)

Materiel Release: July 2007



The Improved Positioning and Azimuth Determining System (IPADS) is a self-contained inertial survey system that provides common control for all Army and USMC field artillery, mortar, artillery meteorological and radar systems. IPADS-G adds a GPS feature to the IPADS and augments operations of the fire support community by providing the ability to maintain the current accuracy of IPADS without stopping for zero-velocity updates, increasing the artillery timeliness, availability of fires, lethality, survivability, and force protection on extended convoys or artillery missions. IPADS-G is also capable of operating in an inertial fashion independently of GPS aid.

Capabilities & Characteristics:

- Weight: 135 pounds
- Accuracy:
 - Horizontal: 4.0 meters CEP
 - Vertical: 2.0 meters CEP
 - Azimuth: 0.4 mils PE
- Survey Area:
 - 75 kilometer-radius from last update point
 - 221 kilometers from last update point
- Mission Duration: unlimited
- Temperature:
 - Operation: -46-56° Celsius
 - Storage: -46-71° Celsius

Capabilities & Characteristics (continued):

- **Power:**
 - Steady State: 104 watts (3.7 amp at 24 VDC)
 - Transient: 120 watts (5 amp at 24 VDC)
- Initialization Time: 5-10 minutes
- Mean Time Between Failures (MTBF): 2,500 hours
- Digital Interface to FOS/AFATDS
- Digital map capability
- Reliability 30 times greater than PADS
- Hot start capable
- 5-minute initialization
- Noise and light discipline features
- Keyboard light for night operations
- Enhanced control display performance
- All required data on single screen
- Embedded navigation
- Embedded emulator for Unit training
- Establishes common survey
- Increased lethality
- Enables massing of fires
- Two-level maintenance operator
- Remove and Replace: 1 PADS IMU = 2/3 New IPADS
- 5-year system warranty

Configurations:

- LIN S69925

Materiel Release: January 2007

Production Partners:

- L3 Communications



Lightweight Area Determination System (LADS) is a man-portable Survey System that is Military Occupation Specialty (MOS) agnostic, minimal training required.

Vehicle agnostic: can be installed on virtually any military vehicle. Contains government developed architecture and software. Addresses obsolescence/affordability issues with legacy IPADS-G system.

LADS provides a critical survey capability, maintaining accurate position location and directional control to Field Artillery Cannon Battalions in a GPS degraded or denied environment. Enables timely and accurate close fires in support of BCTs

Capabilities & Characteristics:

- Provides a man-portable capability for precision location and azimuth under GPS-degraded and –denied conditions
- Significant size and weight reduction from IPADS-G that enhances deployment ability and can be operable by any MOS with minimal training
- LADS replaces the legacy IPADS-G as a one-for-one replacement

Material Release: Fiscal Year 2025, pending

Production Partners:

- DEVCOM-AC (Picatinny Arsenal, NJ)
- SYSCOM



Secondary Configuration:
Portable





Project Manager Close Combat Systems (PM CCS) provides dominant and innovative lethal and protective capabilities for the Joint Warfighter. Team CCS' contributions span multiple Services and support the spectrum of conflict from lethal to intermediate force, and end of life-cycle demilitarization for all Department of Defense conventional munitions. The capabilities are used in multi-domain operations to enable efficient and effective Joint Warfighter success.



Mission areas include:

- Terrain Shaping Capabilities & Area Denial
- Obstacle Breaching & Demolition Capabilities
- Shoulder-launched Munitions
- Lethal & Protective Payload from Small Uncrewed Aircraft Systems (sUAS)
- Hand & Vehicle Deployed Grenades
- Aviation Bombs, Countermeasures & Actuated Devices
- Conventional Munition Demilitarization
- Explosive Hazard Detection & Neutralization Capabilities
- Signaling & Training Simulators
- Intermediate Force & Protection Systems



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Cartridge Actuated Devices (CAD) and Propellant Actuated Devices (PAD) are items that function as a system component.

CAD/ PAD items are unique since they are airframe components but are regarded as munitions devices. The design and function of these devices vary widely in complexity.

Capabilities & Characteristics:

- In operation, these items release precise explosive energy to assist in Aircrew escape, fire suppression, or emergency release systems.
- These items have a set shelf life and installed life.
- Both CADs and PADs contain energetic materiel along with a mechanical or electronic actuating component.

System Integration:

- Army combat aviation rotary aircraft

Configurations & Production Partners:

- AH-64 Apache:
 - MS81: Shielded Mild Detonating Cord (SMDC)
 - MS82: Shielded Mild Detonating Cord
 - MS83: Shielded Mild Detonating Cord
 - MS85: Shielded Mild Detonating Cord
 - MS86: Shielded Mild Detonating Cord
 - MS87: Shielded Mild Detonating Cord
 - MS91: Flexible Confined Detonating Cord
 - MS92: Flexible Confined Detonating Cord
 - MS94: Window Cutting Assembly
 - MS95: Window Cutting Assembly
 - MS96: Window Cutting Assembly
 - MS97: Shielded Mild Detonating Cord
 - MT06: JAU-59A Initiator
 - SP02: TLX Detonating Cord Assembly
 - SP03: TLX Detonating Cord Assembly
 - JM78: Cockpit Air Bag System 60L Gas Generator
 - JM79: Cockpit Air Bag System 30L Gas Generator
 - MD66/JM92: HERO Safe Stores Release Cartridge
 - WB53: Aircraft Fire Extinguisher Cartridge
- UH-60 Blackhawk:
 - M514: Impulse Cartridge
 - MD65: CCU-45/B Impulse Cartridge
 - MJ21: CCU-92/A Impulse Cartridge
 - MT20: Aircraft Fire Extinguisher Cartridge
 - DWGS: Cable Cutter Assembly
 - MU02: Cable Cutter Assembly
 - MU34: Refire Kit
 - JM96: Impulse Cartridge
 - MD66/JM92: HERO Safe Stores Release Cartridge
 - WB53: Aircraft Fire Extinguisher Cartridge
- CH-47 Chinook:
 - JM96: Impulse Cartridge
 - M514: Impulse Cartridge
 - MT20: Aircraft Fire Extinguisher Cartridge
 - TY60: Aircraft Fire Extinguisher
 - WB53: Aircraft Fire Extinguisher Cartridge
- A/MH-6 Little Bird:
 - MD66/JM92: HERO Safe Stores Release Cartridge
- C-130 Hercules (USAF Leased):
 - DWEA: MK 273 Mod 0 Parachute Release Initiator Actuated Cartridge
 - M500: G-1 Cargo Parachute Reefing Line



Production Partners :

- 1) Ametek Ameron, Baldwin Park, CA: MT20, TY60, WB53, JM96
- 2) Applied Energy Technology Corp, Burton, TX: JM96, M514, MD66
- 3) Breeze Eastern, Whippany, NJ: MJ20
- 4) CAD, Inc, Fairfield NJ: M514, DWGS , MD65
- 5) Collins Aerospace (UTAS), Fairfield, CA: SP02/SP03, MT06, MS80s, MS91/MS92, MS94/MS95/MS96/MS97
- 6) Goodrich Corp, Diamond Bar, CA: DWGS
- 7) Kidde Aerospace, Wilson, NC: MT20, TY60
- 8) Pacific Scientific, Chandler, AZ: MJ21, DWEA, M514
- 9) Pacific Scientific, Hollister, CA: MT06, MS81/MS82/MS83/MS85/MS86/MS87, MS91/MS92, MS94/MS95/MS96/MS97
- 10) Pyrotechnic Specialties Inc.: Byron, GA: MD65, MD66
- 11) Stratus Systems, New Orleans, LA: JM96
- 12) Technical Ordnance (also known as AMTEC Corp), Clear Lake, SD: MD65, MD66



The Bomb Live Unit (BLU)-110 General Purpose (GP) Bomb is identical to the MK 83 Mod 4 1,000-pound GP Bomb, apart from the explosive fill. The BLU-110 Bomb is filled with PBXN-109 Explosive while the MK 83 MOD 4 Bomb is filled with Tritonal Explosive.

The BLU-110 Bomb is used by the USN and USAF. The USN version is thermally-protected to extend the cook-off times and has three yellow bands on the bomb. The USAF version has only one yellow band.

This bomb has a slender body made of steel with a well in the nose section for a proximity sensor, mechanical fuze and adapter booster, or a penetrating nose plug; and a well in the aft section for a tail electric fuze. It is compatible with proximity sensors, mechanical and electrical or electronic fuzes. It uses a conical or retarding fin, laser/GPS guidance airfoil kit, or a mine kit

Capabilities & Characteristics:

- Attacks soft, fragment-sensitive targets such as troops, petroleum-based liquids, radars, and aircraft in the open
- Weight: 903 pounds
- Length: 72.47 inches
- Diameter: 14.22 inches

System Integration:

- Various fixed-wing aircraft

Configurations:

- F288: BLU-110A/B
- EB28: BLU-110/B
- ED42: BLU-110 C/B

Production Partners:

- Empty Bomb Assembly: GD-OTS (Garland, TX)
- LAP: MCAAP (McAlester, OK)
- Explosives: HSAAP (Kingsport, TN)





The BDU-56 Practice Bomb is an inert version of the MK 84 2,000-pound GP Bomb.

The bomb is manufactured as a forged steel body with concrete fill.

Capabilities & Characteristics:

- Training bomb used to simulate the 2,000-pound MK 84 GP bomb
- Weight: 2,168.42 pounds
- Length: 291.84 inches
- Diameter: 18 inches

System Integration:

- Various fixed-wing aircraft

Configurations:

- E756: BDU-56/B (Concrete fill)

Production Partners:

- Empty Bomb Assembly: GD-OTS (Garland, TX)
- LAP: MCAAP (McAlester, OK)



The BLU-117 2,000-pound GP Bomb is used by the USAF and the USN.

It has a slender body made of steel with a well in the nose section for a proximity sensor, mechanical fuze and adapter booster, or a penetrating nose plug; and a well in the aft section for a tail electric fuze. It uses a conical fin, or laser/GPS guidance airfoil kit, or a mine kit.

The BLU-117 is identical to the MK 84 Mod 4 2,000-pound GP Bomb except for the explosive fill. Instead of the MK84's Tritonal fill, the BLU-117 uses either AFX-795 or PBXN-109 IM explosive.

Capabilities & Characteristics:

- Attacks soft and intermediately protected targets, buildings, rail yards, and lines of communication
- Weight: 1,880 pounds
- Length: 97.34 inches
- Diameter: 18.30 inches

System Integration:

- Various fixed-wing aircraft

Configurations:

- EB04: BLU-117A/B (PBX-loaded IM)
- EF92: (BLU-117A/B PBX-loaded IM without cable)

Production Partners:

- Empty Bomb Assembly: GD-OTS (Garland, TX)
- LAP: MCAAP (McAlester, OK)
- Explosives: HSAAP (Kingsport, TN)





The BLU-136/B is a 2,000-pound class variant Next Generation Area Attack Weapon (NGAAW).

Capabilities & Characteristics:

- The BLU-136/B can be paired with the JDAM guidance kit (KMU-557), HoB DSU-33 Sensor, and FMU-156A/B Fuze
- The AUR weapon capability provides greater effectiveness in area attack defeat compared to the MK 84

System Integration:

- Various fixed-wing aircraft

Configurations:

- EE92

Production Partners:

- Empty Bomb Assembly: TBD
- LAP: MCAAP (McAlester, OK)
- Explosives: HSAAP (Kingsport, TN)





The BLU-109 is a 2,000-pound hard target penetrator warhead for the following guided bombs and missiles: GBU-10, -15, -24, -27, and -31(V)3/B; and AGM-130.

The BLU-109 body is approximately twice the wall thickness of the MK 84. It is typically detonated by an FMU-143 series tail fuze. The absence of a nose fuze well makes the nose stronger, and the weapon base plate is reinforced to better protect the fuze from the shock of impact.

The BLU-109A/B is fitted with a permanent external hardback and has an external thermal protective coating. The BLU-109C/B is an IM version with AFX-757 explosive and vent plate used by the USAF.

Capabilities & Characteristics:

- Penetrates bunkers, aircraft shelters, and concrete structures
- Weight: 2,168.42 pounds
- Length: 98.85 inches
- Diameter: 14.50 inches

System Integration:

- Various fixed-wing aircraft

Configurations:

- F142: BLU-109A/B, PBXN-109 Fill (USN)
- F342: BLU-109A (D-1)/B, Inert Fill (USN)
- F034: BLU-109 (D-1)/B, Inert Fill (USAF)
- F140: BLU-109/B, Tritonal Fill (USAF)
- ED49: BLU-109C/B, AFX-757 Fill (USAF)



Production Partners:

- Empty Bomb Assembly:
 - GD-OTS (Garland, TX)
 - Ellwood National Forge (Irvine, PA)
- LAP: MCAAP (McAlester, OK)
- Explosives: HSAAP (Kingsport, TN)





The BDU-33 Practice Bomb is a teardrop-shaped bomb that simulates a MK 82 low-drag configuration. It utilizes a spotting charge to display target marking.

When the bomb is released from the aircraft, it free falls until impact. Upon impact, the bomb drives a firing pin assembly against a primer, activating the signal charge. The resulting flash and puff of smoke permits visual evaluation of accuracy. The USN's MK 76 bomb configuration has similar function but has different dimensional attributes.

Capabilities & Characteristics:

- Training bomb designed to simulate the MK 82 series 500-pound GP bomb in low-drag configuration
- Used by the U.S. Army

System Integration:

- Various fixed-wing aircraft

Configurations:

- E969

Production Partners:

- Delfasco, LLC (Afton, TN)



The MK 76 Practice Bomb is a teardrop-shaped bomb that simulates an MK 82 low-drag configuration used by the USN. It is comparable to the USAF's BDU-33.

The MK 76 utilizes the M4 or CXU-3 signal cartridges as a spotting charge to display target marking. Upon impact, the bomb drives a firing pin assembly against a primer, activating the signal charge. The resulting flash and puff of smoke permits visual evaluation of accuracy.

Capabilities & Characteristics:

- USN training bomb designed to simulate the MK 82 series 500-pound GP bomb in low-drag configuration

System Integration:

- Various fixed-wing aircraft

Configurations:

- E973

Production Partners:

- Delfasco, LLC (Afton, TN)



The MK 82 GP Bomb is designed for soft, fragment-sensitive targets such as troops, petroleum-based liquids, radars, and aircraft. The USAF is the primary user.

This weapon is not intended for hard targets or penetrations. The primary fill for the MK 82 is Tritonal (live load), but it is also loaded with an inert fill.

Capabilities & Characteristics:

- Weight: 533.10 pounds
- Length: 85.86 inches
- Diameter: 10.80 inches

System Integration:

- Various fixed-wing aircraft

Configurations:

- E485: MK 82 Mod 1, Tritonal Fill
- F237: MK 82 Mod 1, Inert Fill
- F243: MK 82 Mod 1, Inert Fill

Production Partners:

- Empty Bomb Assembly: GD-OTS (Garland, TX)
- LAP: MCAAP (McAlester, OK)





The BLU-111 GP Bomb is identical to the 500-pound MK 82 Mod 1 Bomb, except for the explosive fill.

The BLU-111 is filled with PBXN-109 Explosive while the MK 82 Mod 1 is filled with Tritonal Explosive. The BLU-111 is used by the USN and USAF.

Capabilities & Characteristics:

- Attacks soft, fragment-sensitive targets such as troops, petroleum-based liquids, radar, and aircraft in the open
- Weight: 460 pounds
- Length: 60.57 inches
- Diameter: 11.05 inches

System Integration:

- Various fixed-wing aircraft

Configurations:

- ED15: BLU-111 B/B (USAF)
- ED16: BLU-111 C/B (USN, thermal coating)

Production Partners:

- Empty Bomb Assembly: GD-OTS (Garland, TX)
- LAP: MCAAP (McAlester, OK)
- Explosives: HSAAP (Kingsport, TN)





The BLU-129/B is a low collateral damage weapon, made from a carbon-fiber composite for low fragmentation, with a Multi-Phase Blast Explosive (MBX) fill.

Capabilities & Characteristics:

- The BLU-129/B bomb has the equivalent outer mold line and mass properties to a standard MK 82 bomb
- Compatible with inventory laser sensors, GPS/ INS guidance kits, and fuzes

System Integration:

- Various fixed-wing aircraft

Configurations:

- ED78

Production Partners:

- Empty Bomb Assembly: TBD
- LAP: MCAAP (McAlester, OK)
- Explosives: BAE-HSAAP (Kingsport, TN)





The BDU-50 500-pound Practice Bomb is an inert version of the MK 82 Bomb.

This inert bomb is dropped either with a parachute for "High Drag" mode or with no drag device for "Slick" mode. The bomb is manufactured as a cast ductile iron configuration

Capabilities & Characteristics:

- Weight: 521 pounds
- Length: 89.44 inches
- Diameter: 10.80 inches

System Integration:

- Various fixed-wing aircraft

Configurations:

- ED96: BDU-50D/B
- EB71: BDU-50C/B

Production Partners:

- Tower Industries, Inc. (Allied Mechanical Wisconsin (AMW)) (Greenville, WI)





The MK 84 Fin is used on 2,000-pound GP Bombs such as the BLU-117 and on practice bombs.

Capabilities & Characteristics:

- Stabilizes the bomb for delivery from high altitudes while enhancing accuracy

System Integration:

- 2,000-pound MK 84 GP Bomb
- 2,000-pound BLU-117 GP Bomb

Configurations:

- F607

Production Partners:

- Innovative Technologies International, Inc. (NovaTech) (Lynchburg, VA)





The BSU-33 Conical Fin is used on 500-pound GP and practice bombs. It is the smaller version of the MK 84 Conical Fin.

Capabilities & Characteristics:

- Stabilizes the bomb for delivery from high altitudes while enhancing accuracy

System Integration:

- 500-pound MK 82 GP Bomb
- 500-pound BLU-111 GP Bomb

Configurations:

- F782

Production Partners:

- Capco, LLC (Valor) (Grand Junction, CO)



The combined use of the Nose Support Cup and Nose Plug is to prevent fuze well collapse on impact when nose fuzing is not utilized.

The Nose Plug is also used in cement-filled bombs to prevent cement particles from being ingested into aircraft engines.

Capabilities & Characteristics:

- Tubing Diameter: 2.87 inches
- Length: 6.4 inches
- Nose Support Cup:
 - Swedged on one end to form a beveled area with a 1.62-inch hole beveled into the end to slip over the fuze well nut
- Nose Plug:
 - Forged solid piece of metal (cone shaped) with a 3.5-inch threaded area and two cutout areas used for wrenching purposes

System Integration:

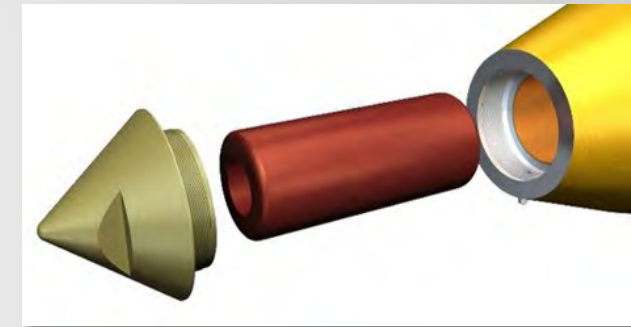
- 500-pound MK 82 GP Bomb
- 1,000-pound MK 83 GP Bomb
- 2,000-pound MK 84 GP Bomb

Configurations:

- FW26: Nose Support Cup
- G008: Nose Plug

Production Partners:

- Hy-Tek Manufacturing Co., Inc.
(Sugar Grove, IL)



The MS3314 bomb suspension lugs are used to suspend weapons and stores on standard bomb racks.

Capabilities & Characteristics:

- Threaded metal suspension lug designed to secure munitions to aircraft bomb rack
- Length: 2.375 inches
- Diameter: 1.75 inches
- Thread Size: 1.75 inches-12 UN-3A

System Integration:

- 500-pound MK 82 GP bombs and training variants
- 1,000-pound MK 83 GP bombs and training variants

Configurations:

- G261

Production Partners:

- Premier Precision Machining, LLC
(Rand Precision Machining)
(Falconer, NY)



The MK 3 Mod 0 bomb suspension lugs are used to suspend weapons and stores on standard bomb racks.

Capabilities & Characteristics:

- Threaded metal suspension lug designed to secure munitions to aircraft bomb rack
- Length: 3.62 inches
- Diameter: 2.5 inches
- Thread Size: 2.5 inches-12 UN-3A

System Integration:

- 2,000-pound MK 84 GP Bombs, Penetrator Bombs, and Training Variants

Configurations:

- G261

Production Partners:

- Premier Precision Machining, LLC (Rand Precision Machining) (Falconer, NY)





The CXU-3A/B Signal Cartridge is used with practice bombs to mark the point of impact. This fire-free spotting charge is for daytime use during good visibility.

Capabilities & Characteristics:

- Aluminum case with a primer, expelling charge, and glass ampule containing titanium tetrachloride
- Titanium tetrachloride produces large volumes of white smoke when exposed to the air to mark the location of impact for practice bombs
- Requires use of MK 89 Spotting Charge Adapter
- Weight: 0.287 pounds
- Length: 6 inches
- Diameter: 0.927 inches

System Integration:

- MK 76 Practice Bomb
- BDU-33 Training Bomb
- MK 106 Practice Bomb
- BDU-48 Training Bomb
- Laser Guided Training Round
- MK 80 Series Practice Bombs
- BDU-45 Training Bomb

Configurations:

- EB01

Production Partners:

- Spectra Technologies (Camden, AR)





The MK 4 Mod 3 Signal Cartridge is used with practice bombs to mark the point of impact. It is a nighttime spotting charge that also provides excellent visual marking in daylight.

Capabilities & Characteristics:

- Aluminum case with a percussion primer, expelling charge, and RP
- RP produces smoke and a large flame to mark the location of impact for practice bombs
- Used in tail fuze well
- Requires use of MK 89 Spotting Charge Adapter
- Weight: 0.233 pounds
- Length: 5 inches
- Diameter: 0.927 inches

System Integration:

- MK 76 Practice Bomb
- BDU-33 Training Bomb
- MK 106 Practice Bomb
- BDU-48 Training Bomb
- Laser Guided Training Round
- MK 80 Series Practice Bombs
- BDU-45 Training Bomb

Configurations:

- EB03

Production Partners:

- Day & Zimmermann Lone Star (Texarkana, TX)





Product Director Demilitarization performs the Demilitarization portion of acquisition life-cycle management of conventional ammunition and tactical missiles for the Military Services and other US Government agencies. Current demilitarization stockpile exceeds 310K tons.

Demilitarization is accomplished at US Government Owned Government Operated (GOGO) and Government Owned Contractor Operated (GOCO) facilities (depots and army ammunition plants (AAPs)) and US commercial facilities and facilities outside of the continental US (OCONUS). Currently the annual program budget is distributed to 57% US government facilities, 42% US commercial facilities, and 1% OCONUS. Demilitarization is currently accomplished through Closed Disposal Technologies (CDT) and Open Burning/Open Detonation (OB/OD).

Capabilities/ Characteristics:

- Open Burn / Open Detonation
- APE 1236M2 Explosive Waste Incineration
- Rockeye Download
- 30mm Super Pull Apart Machine

System Integration:

- GOGO, GOCO and COCO Facilities

Key Focus Areas:

- Conventional Ammunition Demil Contract (FY26-30)
- Alternate Technology for Demil Execution
- 30mm Depleted Uranium Penetrator Reclamation
- Donor Material Stockpile – TNT
- Ammonium Perchlorate Rocket Motor Destruction (ARMD) Letterkenny Munitions Center

Production Partners:

- Gradient Technology Inc
- General Dynamics Munitions
- Arcwood Environmental
- Enviro Safe Demil
- EXPAL USA



APE 1236 Rotary Kiln Incinerator at Tooele Army Depot



Product Director Demilitarization performs the Conventional Munitions Demilitarization Technology project develop capability and capacity as well as technology facilities to support the CONUS organic mission.

PdD DEMIL RDTE has transitioned Priority Projects:

- G26 IR Grenade
- Nike Hercules Safety and Condition Assessment
- 155mm Projectile Improved Conventional Munitions Demil D561/D562
- Engine Starter Cartridge Static Fire
- Ammonium Perchlorate Rocket Motor Destruction
- Rockeye Cluster Bomb Demil Process

Requirement focused on unique class of munitions/DODICs that lack an existing Demil solution

- Closed Disposal Capabilities
- Smoke and Illumination Ammunition
- Cluster Bomb Units
- Asbestos Containing Munitions

Capabilities/ Characteristics:

- Open Burn / Open Detonation
- APE 1236M2 Explosive Waste Incineration
- Rockeye Download
- 30mm Super Pull Apart Machine

System Integration:

- GOGO, GOCO and COCO Facilities

Technology Transition: Demil RDTE Develops Capability

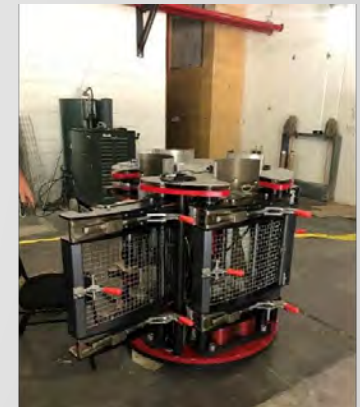
Capacity Development
Efficiency Improvements
Omnivorous Capability

FY26–30 RDTE Focus Areas

- Alternate Technologies
- Munitions Cryofracture Demilitarization Facility (MCDF)
- Size Reduction of HE Munitions for Closed Disposal
- Demil of Flechette Ammunition
- Demil of Riot Control Munitions
- Modernization of CONUS Depot Demil Capabilities



Engine_Starter_Cartridge



Product Director Demilitarization performs management of the Ammunition Peculiar Equipment (APE) Program. The goal of the APE program is to provide a centralized source of standard, modern, safe, reliable and environmentally acceptable equipment for ammunition maintenance, ammunition surveillance and Demil operations to Army and non-Army Users worldwide, with a focus on preventing injury to personnel and damage to ammunition and/or related facilities.

Capabilities/Characteristics:

The APE program currently funds nearly two dozen projects, including recurring projects (maintenance and sustainment), non-recurring projects (new equipment fabrications, redesigns and gages), as well as five contracts for hardware and services, across the Enterprise.

PD Demil partners with Joint Munitions Command APE Team (Project Management) and Tooele Army Depot (Project Execution) to execute the APE mission worldwide.

Currently executing projects and contracts worth nearly \$15M total, with \$16M budgeted for the APE program in FY26.



APE 1106M2 Prime/Deprime



APE 1953M2 Conductive Shoe Tester



APE1408 saa safety cert



Product Director Demilitarization performs management of the Demil Resource Recovery and Recycling (R3) program, which allows the Army to sell recyclable residual materials generated from the munitions demil process, with the proceeds reinvested back into the program.

R3 funding purchases machinery, supplies and processes to help reduce the demil stockpile while reducing cost of recovery and recycling operations.

Capabilities/ Characteristics:

- Currently in operation at 6 CONUS Depots and 1 OCONUS location

The R3 program currently has \$8.2M funding available for new projects. Currently, 7 projects in execution utilizing \$6M total.



Scrap Metal

DEMOLITIONS: Bangalore Torpedo

The Bangalore Torpedo demolition kit is a man-portable device used to clear paths through barbed wire entanglements and minefields. It clears a path 3 to 4 meters wide through barbed wire entanglements; in minefield breaching, it will explode all antipersonnel mines and most of the antitank mines in a narrow foot path.

Many of the mines at the sides however maybe shocked into a sensitive state, which makes extreme care necessary in any further mine-clearing. Bangalore torpedoes have also been used successfully for clearing heavy undergrowth of bamboo and may also be used as a cratering charge, especially in connection with shaped charges against reinforced concrete targets.

Capabilities/ Characteristics:

- Used for most AP and AT mines
- When the charge is detonated, the resultant blast from the shock wave clears a narrow path through a minefield or barbed wire entanglement.
- Kit consists of eight 2.5-foot-long tubes
- Tube fill: 4.6 pounds of Composition B4 and an additional 0.5-pound Composition A3 booster at each end

M1A3 Bangalore Torpedo

System Integration:

- Hand Emplaced

Configurations:

- **MP03**
- Suitable Substitutes:
 - M026: M1A1 Bangalore Torpedo
 - M028: M1A2 Bangalore Torpedo

Materiel Release: May 2008

Production Partners:

- Spectra Tech (East Camden, AR)



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Capabilities/ Characteristics:

- Used for most AP and AT mines
- When the charge is detonated, the resultant blast from the shock wave clears a narrow path through a minefield or barbed wire entanglement.
- Kit consists of eight 5-foot-long tubes
- Tube fill: 9.2 pounds of Composition B4 and an additional 1.0-pound Composition A3 booster at each end

M1A2 Bangalore Torpedo

System Integration:

- Hand Emplaced

Configurations:

- M028

Materiel Release: May 2008

Production Partners:

- Spectra Tech (East Camden, AR)



The M6 Electric Blasting Cap is used to initiate high explosives with a blasting machine or other source of electric power. It consists of a base charge of RDX, an intermediate charge of lead azide and an ignition charge of smokeless powder, potassium chlorate and lead salt of dinitro cresol in an aluminum alloy cup. It has two 12-foot lead wires, connected by a bridge wire in the ignition charge, extend through a rubber plug assembly in the open end of the cup.

Capabilities/ Characteristics:

- Weight: 0.07 pounds
- Length: Maximum - 2.35 inches
- Diameter: Maximum - 0.247 inches
- Explosive: RDX
- Material: Aluminum
- Color: Silver

System Integration:

- Hand Emplaced

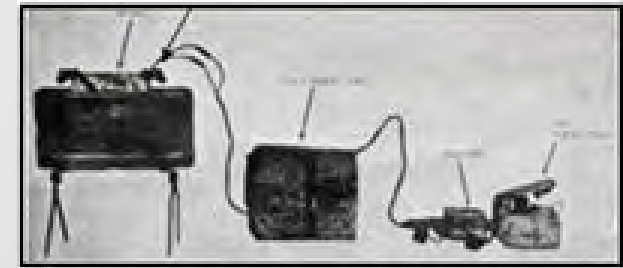
Configurations:

- **M130**

Materiel Release: February 1989

Production Partners:

- Stressau Labs (Spooner, WI)



The M7 Non-electric Blasting Cap is used with the M700 Time Blast Fuse to initiate high explosive and demolition items. It consists of an aluminum alloy cup containing an ignition charge of lead styphnate, an intermediate charge of lead azide, and a base charge of RDX. The cup is flared at the mouth to mate with the matching shape of the nipple of a firing device base coupling and the flared end facilitates insertion of time-blasting fuse or detonating cord.

Capabilities/ Characteristics:

- Weight: 0.004 kilograms
- Burst Radius: 25 meters
- Basic Load: 20 each
- Load Weight: 0.08 kilograms
- Packaging: 3,600 per case
- Package Weight: 51.5 kilograms

System Integration:

- Hand Emplaced

Configurations:

- **M131**

Materiel Release: March 1986

Production Partners:

- Stressau Labs (Spooner, WI)



Modern Demolition Initiators (MDI) are a suite of initiating components used to activate all standard military demolitions and explosives. Developed for the U.S. Army Engineer School, the suite consists of non-electric blasting cap assemblies and booster assemblies. The suite replaces all electric and non-electric firing systems for conventional forces while maintaining compatibility with existing Army systems.

Capabilities/ Characteristics:

- Initiates all standard military explosives and demolition devices
- Initiate C-4 Explosive, shaped charges, Claymore Mines and all new demolitions
- Initiation signal via shock tube or low strength detonation cord
- Prime charges under 60 feet of seawater or underground
- Easy to use; blasting cap assemblies have their activation system pre-assembled for increased reliability and reduced time-on-target

System Integration:

- Hand Emplaced

Configurations:

- **ML47:** M11 Non-electric Blasting cap; factory-crimped to a 30-foot length of shock tube
- **MN06:** M14 Non-electric Blasting Cap with a 5-minute delay
- **MN38:** M15 Inert Non-electric Blasting Cap; factory-crimped to a 70-foot length of shock tube
- **MN07:** M15 Non-electric Blasting Cap; factory-crimped to a 70-foot length of shock tube
- **MN68:** M151 Booster Charge
- **MN75:** M152 Inert Booster Charge
- **MN41:** M18 Non-electric Blasting Cap with a 20-minute delay
- **MN86:** M19 200-foot Non-electric Blasting Cap
- **MN87:** M20 200-foot Inert Non-electric Blasting Cap
- **MN88:** M21 500-foot Non-electric Blasting Cap
- **MN89:** M22 500-foot Inert Non-electric Blasting Cap
- **MN90:** M23 1,000-foot Blasting Cap
- **MN37:** M14 Inert Non-electric Blasting Cap
- **MN08:** M81 Fuse Igniter
- **ML45:** M9 Non-electric Blasting Cap holder; securely holds the shock tube branch lines

Production Partners:

- Cap Assemblies:
 - Shock Tube (Charlestown, RI)
- Booster Assemblies:
 - EBA&D (Simsbury, CT)
- Igniter:
 - MAST Tech (LCAAP, Independence, MO)



The MK 788 Main Charge Disrupter is a field-assembled, explosively-formed penetrator for use by EOD. Its purpose is to prevent full detonation in an explosive target by rapidly disabling one or more components of an explosive train before propagation occurs.

Alone, the MK 788 contains no energetics. Before use, an EOD technician will load this item with C4 explosive and prime it with a blasting cap. Both of those energetic items are issued separately.

The MK 788 is cylindrical in shape with a concave copper insert at one end that serves as the explosively-formed projectile. Upon functioning, the copper disk will form into a projectile.

Capabilities & Characteristics:

- Dimensions: cylindrical, roughly 2 inches in diameter and 4 inches in length
- Velocity: 6,500-9,500 feet per second

System Integration:

- Hand emplaced

Configurations:

- DWDF

Production Partners:

- DEVCOM-AC (Picatinny Arsenal, NJ)
- USN

Matériel Release: EOD use only





The M2A4 and M3A1 Shaped Charges are shaped for the purpose of concentrating explosive force in a particular direction. They use HE to form a metallic or glass liner into a high velocity jet of molten material with the ability to stretch several times its original length. They can obtain tip velocities that can exceed 8 kilometers per second.

The M2A4 15-pound Shaped Charge has been specially designed for use against reinforced concrete. The M3A1 40-pound Shaped Charge is useful against thick reinforced concrete pavement laid on dense high-strength base courses.

Capabilities & Characteristics:

- Blast craters in paved and unpaved roads
- Bore holes in metals, masonry, or concrete
 - M2A4: 6-inch stand-off, 11.5-pound Composition B explosive main charge, 0.11-pound Composition A3 booster
 - M3A1: 15-inch stand-off, 29.5-pound Composition B explosive main charge, 0.11-pound Composition A3 booster

System Integration:

- Hand emplaced

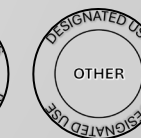
Configurations:

- **M420**: M2A4
- **M421**: M3A1
- Suitable Substitutes:
 - M002: M1A4/ M1A5 Priming Adapter

Production Partners:

- Day and Zimmermann, Inc (Parsons, KS)

Materiel Release: June 1985





The M112 charge consists of 1.25 pounds of Composition C4 explosive packed in an olive drab, mylar-film container with a pressure-sensitive adhesive tape on one surface.

The blocks are primarily used for cutting and breaching operations. The adhesive backing allows the block to be placed on any relatively flat, clean, dry surface, without movement.

Capabilities & Characteristics:

- Primary block demolition charge presently in use
- Can be cut to fit irregularly shaped targets

System Integration:

- Hand emplaced

Configurations:

- M023

Production Partners:

- AO-IAAAP (Middletown, IA)

Materiel Release: November 1986





The TNT charges are effective for all types of demolition work and are available in three sizes. The 0.25-pound block is issued in a cylindrical, waterproof, yellow polyethylene container with a threaded Cap well in one end. The 0.50-pound and 1-pound blocks are available in rectangular, waterproof, olive drab cardboard containers with metal ends, a threaded cap well in one end.

Capabilities & Characteristics:

- Well suited for cutting or breaching hard surfaces except special steel-cutting applications

System Integration:

- Hand emplaced

Configurations:

- **M030**: 0.25-pound block
- **M031**: 0.50-pound block
- **M032**: 1-pound block

Production Partners:

- TBD; anticipated contract award July 2025

Materiel Release: October 1979





The 40-pound Cratering Charge contains 39 pounds of Composition HE (H-6) Explosive loaded in a steel cylinder. It is approximately 7 inches in diameter and 20 inches tall and packed in an M18A2 container.

The H-6 explosive has a relatively low detonating velocity and is therefore unsuitable for cutting and breaching operations. However, the blast effect, which is related to pressure of gases produced, gives it a pushing or heaving effect which makes it suited for cratering and ditching operations. Because of the large amount of explosive in convenient form, they may also be used in destroying buildings and fortifications and overturning bridge abutments.

Capabilities & Characteristics:

- Used primarily for cratering and ditching operations
- Typically employed following 15- or 40-pound Shaped Charge use and dual primed with two M112 Demolition Blocks
- Used in destroying buildings and fortifications and for overturning bridge abutments

System Integration:

- Hand emplaced

Configurations:

- M039

Production Partners:

- American Ordnance-IAAAP (Middletown, IA)

Materiel Release: December 1993



Demolition Sheet Charges of flexible explosive come in various lengths and thicknesses. The sheets are easily cut to the desired shape and can be quickly applied to irregular and curved surfaces with adhesive.

The sheet charges are used by Army Engineers, EOD personnel and U.S. Special Operations Forces (SOF) as a cutting charge against steel, trees and targets of irregular shape.

Capabilities & Characteristics:

- Easily cut to any dimension
- Used as small breaching charges

Demolition Sheet Charges

System Integration:

- Hand emplaced

Configurations:

- **M980**: 38-foot roll
- **M981**: 25-foot roll
- **M060**: 50-foot roll
- M024: M118 Demolition Block Charge
- **M993**: 50-foot roll
- Suitable Substitutes
 - M982: 19-foot roll
 - M983: 15-foot roll
 - M984: 13-foot roll
 - M985: 11-foot roll
 - M986: 9-foot roll
 - MM30: MK 140 Mod 0 Flexible Demolition Charge
 - MW84 MK 75 Mod 0 Tubular Demolition Kit



Production Partners:

- EBA&D (Simsbury, CT)



The 60-pound Shock Test Charge is used to test the ability of a component or system to withstand a nearby underwater explosion as may be encountered in a field deployment without compromising function or safety.

The item consists of 60 pounds of High Blast Explosive type 1 (HBX-1) packed in a Polypropylene charge container. A Pentolite 50/50 booster is secured to the top of the container.

Capabilities & Characteristics:

- Charge exposes a device to a controlled underwater explosion of known force and orientation, helping engineers prepare and design products able to withstand testing and gain acceptance for use in military service
- New design is lighter and easier to handle during test activities

System Integration:

- Hand emplaced

Configurations:

- XW65

Production Partners:

- Indian Head Division, Naval Surface Warfare Center (Yorktown, VA)
- CAAA (Crane, IN)





The MK 75 is used as a cutting charge against underwater impediments such as coral and sand bars. It consists of 50 pounds of flexible explosive formed in a 25-foot (length) hollow tube. The interior of the tube contains a corrugated hose to ensure the item maintains shape; the exterior is sheathed with a plastic wrap to help protect against abrasion.

The unit comes with rubber boots which seal the ends. The hollow construction ensures proper buoyancy for ease of transport through water, with the boots removed at site to sink the charge.

Capabilities & Characteristics:

- Charge is hollow for buoyancy/ ease of transport
- Boots/ covers on end can be removed to sink at site
- MK 29 Accessory Kit has connectors to link multiple charges together
- Used as a blasting charge against coral/ sand bars and underwater impediments
- 50 pounds of flexible explosive formed in a hollow tube

System Integration:

- Hand emplaced

Configurations:

- MW84

Production Partners:

- EBA&D (Simsbury, CT)





The M18A1 Claymore Mine is used when a directional, fixed, fragmentation mine is required for the defense of bivouac areas, outposts, and against infiltration tactics. It is also used against thin-skinned vehicles.

The main charge may be initiated by electrical or nonelectrical methods. The electrical method is by manual initiation of the electric blasting cap. The non-electric method makes use of a pull-type firing device, such as the M81 Igniter, operated by an observer or by trip wires. The firing device initiates a length of detonating cord attached to a nonelectric blasting cap.

Capabilities & Characteristics:

- To be used as a deterrent for enemy pursuit
- Used for encampment perimeter defense
- Ambush-type weapon
- Directs fragments in a 60-degree arc
- Can be used with the Spider Munitions System
- Weight:
 - Electric initiator configuration: 6.635 pounds
 - Non-electric initiator configuration: 4.153 pounds
- More than 700 each 0.25-inch diameter steel balls for fragmentation
- M4 Cap and M57 initiator (production prior to 2005)
- Non-electric (shock tube) initiator (production started in 2005)

System Integration:

- Hand emplaced
- In conjunction with the Spider Munitions System

Configurations:

- **J007:** Non-electric initiation system
- Suitable Substitutes:
 - K143: Electric initiation system
 - K145: Electric initiation system

Production Partners:

- Accurate Energetic Systems (McEwen, TN)





The M68 Inert Claymore Trainer simulates the M18 Series Claymore Mines and is used for training in the proper methods and precautions to be observed in the care and handling, booby trapping, arming, and disarming of HE service AP mines.

Capabilities & Characteristics:

- Uses non-electric, inert mini-detonation assembly

System Integration:

- Hand emplaced

Configurations:

- J008: Non-electric initiation system
- Suitable Substitutes:
 - K139: Electric initiation system

Production Partners:

- Accurate Energetic Systems (McEwen, TN)



The Demolition Attack Munition (DAM) is a hand-emplaced munition which is readily portable and designed for use against lightly armored infantry vehicles, parked aircraft, wheeled or tracked support vehicles, and ammunition or Petroleum, Oil and Lubrication (POL) storage sites.

It can operate day or night, during all weather conditions, and at close range or at a standoff distance of up to 25 feet to defeat selected targets using an explosively-formed penetrator warhead.

This item was initially developed for, and fielded to SOF and was fully transitioned to Army inventory in the early 2000's.

Capabilities & Characteristics:

- Effective range: up to 25 feet
- Weight: 2.2-3 pounds
- Length: 5.2 inches
- Width: 3.5 inches
- Depth: 2.2 inches
- Operational Mode: Command Detonation – operator initiated using standard blasting caps or MDI
- M3 SOF version, only used in command-detonation mode

System Integration:

- Hand emplaced

Configurations:

- MM16

Production Partners:

- Northrup Grumman Systems Corporation (Plymouth, MN)



The Type I, Class E Detonating Cord consists of a core of HV explosive in a seamless textile tube. The tube is covered with a thin layer of asphalt and sheathed in an outer cover of plastic-coated textile. The plastic outer cover is smooth and colored olive drab.

Type I, Class M Detonating Cord, also known as Reinforced Detonating Cord, consists of a core of HV explosive covered in synthetic textile and encased by a plastic sheath. The outer layer is synthetic textile and finished with a wax coated surface.

Capabilities & Characteristics:

- Detonation cord is used to prime and detonate the explosive charges
- Detonating velocity of 5,900 meters per second
- Available in 500-foot and 1,000-foot spools
- Waterproof version and canine scent versions exist

System Integration:

- Hand emplaced

Configurations:

- M456: Tactical (Type 1E)
- M456R: Tactical (Reinforced)
- M458: Inert (Blue outer coating)

Production Partners:

- Prime: EBAD (Simsbury, CT)
- Production: EBAD (Graham, KY)

Material Release: May 1987



The M152 and MK152 Mod 0 Radio Frequency-Remote Activation Munition System (RF-RAMS) is a secure, radio-controlled system designed to provide dismounted soldiers/sailors wireless initiation capability of explosives, demolition charges and munitions. The system was initially designed for and fielded to SOF personnel and subsequently to EOD and Army Engineers.

The M152/ MK 152 Mod 0 consists of one transmitter and a family of receivers which enables the user to remotely employ and detonate explosives while avoiding direct enemy contact. Prior to engagement, operators can perform a full power range data link test. All operations are verified to the user via light-emitting diode (LED).

Capabilities/ Characteristics:

- M26/ MK 26 Transmitters: transmits to one or more receivers up to 2-5 kilometers (Line-of-Sight (LoS)) and over 10 kilometers (with power pack) range
- M16/ MK 16 Receivers: Simultaneously function 4 M6 Blasting Caps in series
- M17/ M17A1 Receivers: explosive output initiates an M7 Blasting Cap
- M85/ M85A1 Functional Trainers: Inert trainer for M17/ M17A1 Receivers
- M50 Initiator: interface used to initiate MDI when attached to M16 Receiver
- Receivers programmable to any M26 Transmitter
- Temperature range: -25 degrees to +135 degrees Fahrenheit
- Reduces Soldier/ Sailors exposure to threats such as IED/ Small Arms
- Light weight and man portable

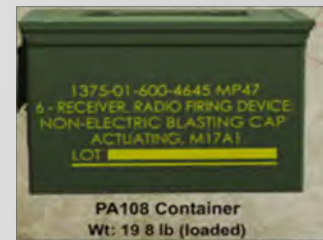
System Integration:

- Hand emplaced

Production Partners:

- American Ordnance (Milan, TN)

Materiel Release: July 1999



M17A1 Receiver has an explosive output that initiates non-electric blasting caps. There are no primary explosives in its fire train. It uses an internal LEEFI detonator to initiate attach blasting caps use to detonate demolition block charges and munitions.

The M17A1 is programmed and functioned by the MK 152/ MK 152 Mod 0 Transmitter. Prior to engagement, operators can perform a full power range data link test. All operations are verified to the user via LED.

Capabilities/ Characteristics:

- M17A1 receiver(s) are field programmable by any RF-RAMS/ MK 26 Transmitter.
- The receiver provides wireless initiation of charges, explosives via MDI inline shock tube and M7 nonelectric blasting caps over ranges of 1 kilometer LOS.
- The receiver is powered by a 123 battery.
- M17A1 Receiver: explosive output initiates an M7 Blasting Cap and M17A1 provides untethered initiator for robotic deployment during IED defeat and Route Clearance missions enabling Soldiers to remotely detonate explosives while avoiding direct enemy contact

System Integration:

- Hand emplaced

Configurations:

- MP47

Production Partners:

- Mnemonics, Inc. (Melbourne, FL)

Materiel Release: 2006



The Selectable Lightweight Attack Munition (SLAM) is a multipurpose munition designed to be readily portable and hand-emplaced against lightly armored infantry vehicles, parked aircraft and petroleum storage sites. It can operate day or night during all weather conditions, and at close range or at a standoff distance of up to 25 feet to defeat selected targets using an explosively-formed penetrator warhead.

SLAM has four operating modes: bottom- attack, side-attack, timed-detonation and command-detonation. SLAM will self-destruct at the end of a set time selected by the operator during its employment. Older variants for the U.S. SOF have been superseded by the regular Army versions.

Capabilities/ Characteristics:

- Effective Range: up to 25 feet
- Weight: 2.6 pounds
- Size: Length - 5.6 inches; width - 3.9 inches; depth - 2.2 inches
- Operational Modes:
- Bottom attack - magnetic signature of target vehicle triggers SLAM
- Side attack - infrared signature of target vehicle triggers SLAM
- Time detonation - detonates at user selected time
- Command detonation - operator initiated using standard blasting caps or MDI

System Integration:

- Hand emplaced

Production Partners:

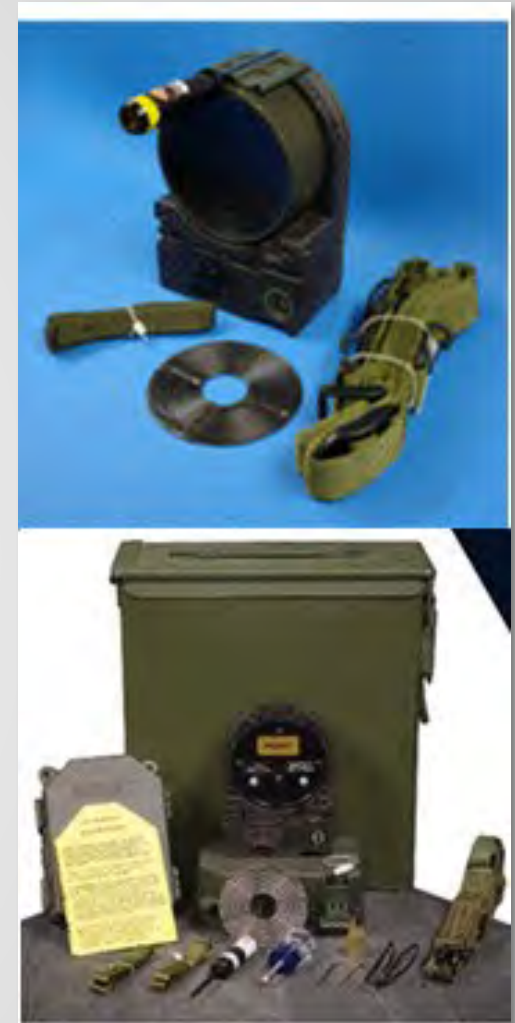
- Northrop Grumman Systems Corporation (Plymouth, MN)

Configuration:

- **MP12**: M4A1 Army version; enhanced safety features
- Suitable Substitutes:
 - MN28: M4 Army version; self-destruct capability

Materiel Release:

- MN28: March 2003
- MP12: November 2014



The SLAM is a multipurpose munition designed to be readily portable and hand-emplaced against lightly armored infantry vehicles, parked aircraft and petroleum storage sites. It can operate day or night during all weather conditions, and at close range or at a standoff distance of up to 25 feet to defeat selected targets using an Explosively Formed Penetrator warhead.

SLAM has four operating modes: bottom-attack, side-attack, timed-detonation and command-detonation. The M2 SLAM will self- neutralize at the end of a set time selected by the operator during its employment. The M2 variant was designed and produced for the US SOF.

Capabilities/ Characteristics:

- M26/ MK 26 Transmitters: transmits to one or more receivers up to 2-5 kilometers (Line-of-Sight) and over 10 kilometers (with power pack) range
- M16/ MK 16 Receivers: Simultaneously function 4 M6 Blasting Caps in series
- M17/ M17A1 Receivers: explosive output initiates an M7 Blasting Cap
- M85/ M85A1 Functional Trainers: Inert trainer for M17/ M17A1 Receivers
- M50 Initiator: interface used to initiate MDI when attached to M16 Receiver
- Receivers programmable to any M26 Transmitter
- Temperature range: -25 degrees to +135 degrees Fahrenheit
- Reduces Soldier/ Sailors exposure to threats such as IED/ Small Arms
- Light weight and man portable
- Effective Range: up to 25 feet
- Weight: 2.2 pounds
- Size: Length 5.2 inches; width 3.5 inches; depth 2.2 inches
- Operational Modes:
 - Bottom attack magnetic signature of target vehicle triggers SLAM
 - Side attack infrared signature of target vehicle triggers SLAM
 - Time detonation detonates at user selected time
 - Command detonation operator initiated using standard blasting caps or MDI

System Integration:

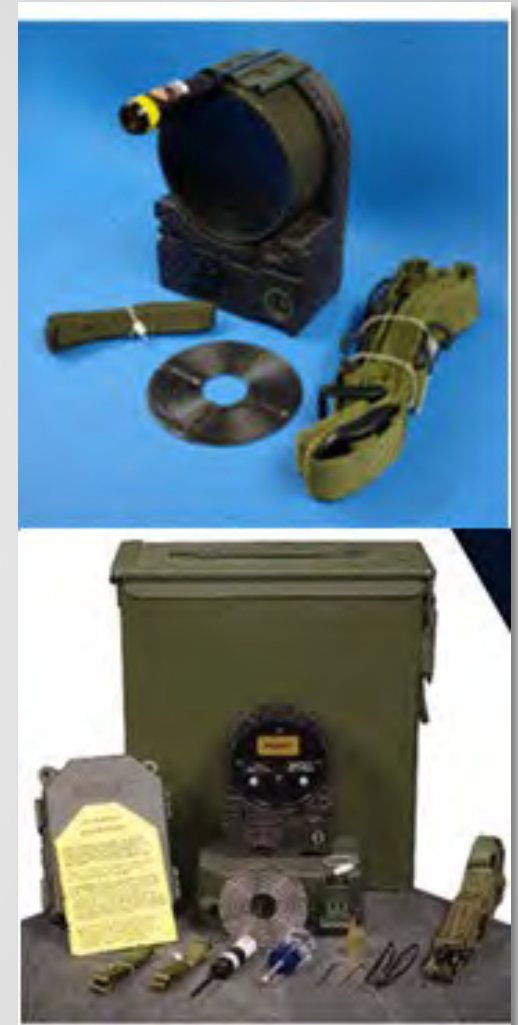
- Hand emplaced

Production Partners:

- Northrop Grumman Systems Corporation (Plymouth, MN)

Configuration:

- **MM15**: M2 SOF version; self-neutralizes at the end of its active period
- **MM16**: M3 SOF version; can only be used in command-detonation mode



The M320A1 SLAM Trainer is a compact, lightweight trainer. It is similar in size and shape to the M4A1 SLAM but is totally inert and powered to provide feedback to the user and instructor. The controls and functions on the M320A1 SLAM Trainer are identical to the controls and functions on the M4A1 SLAM, but the warhead on the M4A1 is replaced by an interface module on the M320A1 SLAM Trainer that houses LED lights and a push button for user interaction.

Capabilities/ Characteristics:

- Effective Range: up to 25 feet
- Weight: 2.6 pounds
- Size: Length - 5.6 inches; width - 3.9 inches; depth - 2.2 inches
- Operational Modes:
 - Bottom attack - magnetic signature of target vehicle triggers SLAM visual and audible signals
 - Side attack - infrared signature of target vehicle triggers SLAM visual and audible signals
 - Time detonation - provides visual and audible signals at user selected time
 - Command detonation – allows operator to train with inserting standard inert blasting caps or inert MDI
- Trainer can be easily reset for reuse
- Kit contains spares for consumable parts

SLAM Improved Functional Training Kit



System Integration:

- Hand emplaced

Production Partners:

- Northrop Grumman Systems Corporation (Plymouth, MN)

Configuration:

- MZ40



The EOD Tool and Equipment Kit (ETEK), previously known as the Render Safe Kits and Outfits (RS SKO) provides 11 lightweight counter-Explosive Hazard (EH) solutions to the Army EOD core competencies of detection, diagnostics, exploitation and render-safe of all Explosive Ordnance (EO). The components enhance the EOD team's ability to conduct remote reconnaissance, incident site control, detection, render safe, and disposal operations.

Capabilities/ Characteristics:

- Low-light visual augmentation (L3 Harris)
- Electronic Countermeasure Systems (ECM) (Parry Labs and Sierra Nevada Corp)
- Buried IED detection (CEIA)
- Dismounted X-ray Imager/Processor Smart Ray Vision / Golden Engineering)
- Trace explosive, chemical, and drug detection (908 Devices)
- Unmanned aerial reconnaissance (TBD)
- Power management (Galvion)
- Gamma and neutron search and detection (Thermo Scientific)
- Render safe initiation (Duke Pro)

System Integration:

- Hand emplaced

Materiel Release:

- Approved for EOD use (AEODU) June 2022



The Decision Support System (DSS) is an Information Technology (IT) Service-Oriented Architecture (SOA), web/portal-based program that addresses Joint Service Explosive Ordnance Disposal (JSEOD) gaps in asset location, collaboration, coordination and real-time data/action sharing and reporting. It provides JSEOD Technicians with EOD-unique situation awareness, improved knowledge management, and advanced collaborative decision making.

Capabilities/ Characteristics:

- JSEOD DSS is composed of 3 core products:
 - JEODNET: provides secure tactical transport mechanism
 - JEOD Portal: provides access to critical EOD info & tools
 - Mobile Field Kit (MFK) Software: JSEOD mission-performance special warfare (SW) tool suite
- Software is updated quarterly via CDs, mailed to users
- Current laptop is Panasonic Toughbook but operates on any laptop
- DSS can access Joint EOD Portal via SIPR

System Integration:

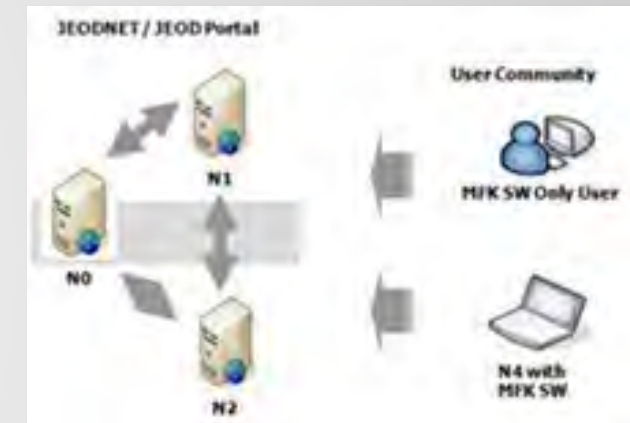
- Hand emplaced

Program Partners:

- Panasonic Headquarters (Secaucus, NJ)

Materiel Release:

- AEODU January 2011



EOD Response Kit (ERK) consists of hand tools, power tools, bolt cutters, micrometers, flashlight, stethoscopes and equipment used by EOD personnel to examine, gain access, dispose and render safe unexploded ordnance and improvised explosive devices.

Capabilities/ Characteristics:

- Augments existing EOD tool sets and provides additional tools to examine, gain access, render safe, and dispose of unexploded ordnance and IED
- The kit's capabilities also include exploitation and precision aiming for IED neutralization.
- Configured into separately packaged functional mission modules:
 - General demolition
 - Technical Intelligence
 - Reconnaissance
 - IED search

Program Partners:

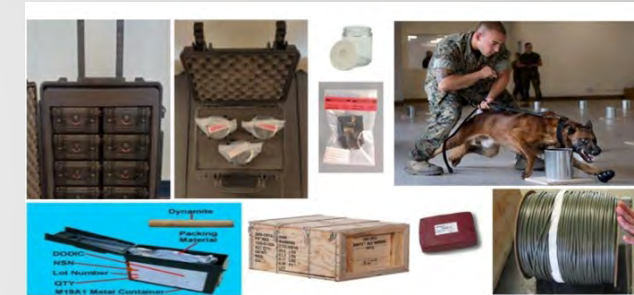
- Mithix Pro, LLC (Farmersville, TX)



System Integration:

- Hand Emplaced

- Patrol Explosive Detection Dog (PEDD) specializes in finding explosives and IEDs
- Patrol Narcotics Detection Dog (PNDD) specializes in drug enforcement programs
- Specialized Search Dog (SDD) is capable of multiple roles
- Mine Detection Dog (MDD) finds all buried mines
- New Scent Kits for SDD and Joint capability contain 12 odors vs. 9 sustained odors for PEDD
- Standard Dog Handlers Kit
- Deployable Kennel Systems
- Organizational/ Installation Kennel Systems





The MK 2 Mod 1 is a .50 caliber de-armor that provides the EOD soldier the capability to render safe small firing devices and fuzes by means of a mechanical, explosively initiated system as well as cutting, penetration of, and withdrawal of fuze components.

Capabilities/ Characteristics:

- Other uses include cutting, penetration of and the withdrawal of fuze components
- Cartridge tool used principally for shearing and jamming purposes
- Consists of the cartridge tube and standard breech plug
- Standard breech plug accepts either a .50 caliber electrically initiated cartridge or specially prepared non-electric .50 caliber
- Fires either a standard, wedge, chisel or fork slug

System Integration:

- Hand Emplaced

Production Partners:

- Savit Corp (Rockaway, NJ)

Materiel Release: AEODU November 2007



The Hook and Line Set allows the EOD team to quickly construct a hook and line mechanism that enables the team to investigate and facilitate detonation and/or removal of incendiary materials in as safe a manner as possible.

Capabilities/ Characteristics:

- Provides capabilities to move, attach, anchor, reach, manipulate, handle and access various items.
- Set of hooks, extension rods, 120m line, blocks, swivels, slings, pull handles, vice grips, pulleys, door wedges, carabineers and search mirror.
- Wide applications in both IEDs and UXOs defeat operations.
- Over 50 components of 28 different types.
- All housed in a watertight, dustproof, crushproof hard case with dense foam insert for exact/easy tool stowage, retrieval and inventory.

System Integration:

- Hand Emplaced

Production Partners:

- Mithix Pro (Farmersville, TX)

Material Release: June 2002





MK 36 is a tool kit that provides the capability to gain access to buried ordnance items known or suspected to have magnetically influenced fuzing systems.

Capabilities/ Characteristics:

- Consists of an assortment of non-magnetic and non-sparking hand tools.
- Provided in a hard case weighing approximately 76 pounds

System Integration:

- Hand Emplaced





The MK 38 MOD 0 Small Caliber De-armer (SCD), is used by EOD soldiers to remotely render safe unexploded ordnance by cutting, gagging, severing, or jamming small fusing components on UXO and booby traps. The SCD is used against small munitions such as landmine fuses and booby trap firing devices where current EOD tools are too large to be effectively emplaced or not precise enough to effectively render safe these targets.

Capabilities/ Characteristics:

- Cutting, gagging, severing or jamming small concealed, or otherwise screened, threat targets
- Set contains a breech assembly and three barrels for standard 9mm ball ammunition, an adjustable tripod stand, and carrying/storage case.
- Barrels lengths: 2.5 inches, 6 inches and 13.81 inches
- Single shot device initiated by MDI, also known as shock tube.

System Integration:

- Hand Emplaced

Materiel Release: June 2002



A modular, recoilless, inert tool, the Unexploded Ordnance Stand-Off Disrupter (UXO SD) was designed to remotely disrupt IEDs and UXOs from a stand-off distance via a percussion activated projectile.

Capabilities/ Characteristics:

- Capable of firing a range of solid projectiles to defeat various threats
- Can configured as a stand-off de-armer
- Features both a laser aiming sight and an optical aiming sight
- Features a lightweight aluminum tripod with adjustable legs and spring-loaded joints for versatile positioning of the tool
- Uses a standard military M174 cartridge to propel the projectile

System Integration:

- Hand Emplaced

Program Partners:

- DTI (Arlington, VA)



Medium Directional Energy Tool (MDET) is part of a suite of large improvised explosive device (LIED) countermeasure technology and equipment that provides EOD technicians the ability to access, disrupt, and neutralize LIEDs. A LIED is most commonly seen as a car or truck bomb and can also include boats, aircraft, large shipping containers, etc.

Capabilities/ Characteristics:

- Includes 6 to 8 EOD tools required to access, disrupt, or render safe LIEDs
- Greater than 100 pounds net TNT equivalent weight
- 2.75-inch diameter recoilless smoothbore disrupter
- Fires a 1.2-liter water charge to penetrate car door or semitrailer side to disrupt LIED inside

System Integration:

- Hand Emplaced

Program Partners:

- MDET: Packaging Strategies, Inc. (Baltimore, MD)
- Propellant Charge: R Stresau Laboratories, Inc. (Spooner, WI)



The Tool Kit, Supplemental, Explosive Ordnance Disposal (a.k.a. Platoon Supplemental Kit (PSK)) provides EOD soldiers with an extended capability to access, locate, identify, disarm, exploit, reduce, remove, and dispose of explosive and chemical hazards from UXO, IEDs, Homemade Explosives (HME), Precursors, Toxic Industrial Chemicals (TICs), and Toxic Industrial Materials (TIMs).

Capabilities/ Characteristics:

- Provides EOD Teams with scenario specific supplies and equipment to enhance the capability at the team level to attack incidents within the scope of the EOD mission that are considered unusual and highly visible.
- Fiberscope Kit- inspection device used to investigate small, confined spaces to locate hazardous items and material.
- X-Ray Generator- power source for use with the Dismount X-Ray Processor/ Imager.
- Battery Charging Station- charges rechargeable batteries used by EOD soldiers.
- Wire Attack Kit- Includes color coded wire piercing probes, multimeter, wire cutters, clamp on probe, and fuses.
- Battery operated LED work lights- Tripod mounted, battery operated, LED work lights providing lighting capability in dark or dimly lighted environments.
- Personal protective items (coveralls, nitrile gloves, particulate respirator), anti-static bags and colored marking flags.

Program Partners:

- Mithix Pro, LLC (Farmersville, TX)

Materiel Release: AEODU May 2022



The Standoff Robotic Explosive Hazard Detection (SRHED) consists of a suite of three payload modules to be deployed on a remotely operated Man Transportable Robotic System (MTRS). SRHED will give the operator a leap-ahead capability for the detection, marking, and neutralization of explosive hazards at standoff in complex and urban terrain, including confined areas and subterrain environments.

Capabilities/ Characteristics:

- Mine Detection and Marking Payload Module: remotely detects and marks surface-laid and buried metallic and low-metallic AT and AP landmines and scatterable munitions.
- Explosive Hazards Detection and Marking Payload Module: remotely detects and marks surface-laid, partially buried, and camouflaged explosive hazards.
- Neutralization Payload Module: remotely neutralizes surface-laid, buried, and camouflaged explosive hazards.
- Remotely locates mines at a minimum of 10 meters forward.
- Increases rate of advance for unit action.
- Marked path for explosive threat avoidance.
- Precision marking for threat identification.
- Sweeps 0.5-1-meter width (depending on configuration).





Jackal is a vehicle mounted system that protects against passive infrared (PIR)-triggered IEDs. It can be mounted on a wide variety of host platforms, causing IEDs to detonate at significant standoff distances before the vehicle's arrival in the blast zone.

Unlike its predecessors, the Jackal is designed to be modular and adaptable to new and emerging IED threats. It can be integrated on a wide variety of tactical wheeled vehicle platforms.

Capabilities/ Characteristics:

- Non-standard capability (i.e., not Type-Classified; requires Materiel Release before issue to the field).
- Pre-detonates passive infrared sensor-triggered IEDs at standoff distance
- Selected as best-of-breed in 2009 JIEDDO sponsored testing
- Comprised of two major components:
 - Electronic Kit
 - Vehicle installation kits
- Modular architecture; adaptable to new and emerging IED threats
- Can be used on multiple ground vehicle platforms with or without SPARK mine rollers.

System Integration:

- Multiple Vehicle Platforms

Program Partners:

- V2X, Inc.

Materiel Release: October 2023

- Not a POR, developed and produced under an ONS





Rhino is a vehicle mounted system that protects against PIR-triggered IEDs. It can be mounted on a wide variety of host platforms, causing IEDs to detonate before the vehicle's arrival in the blast zone. Rhino is relatively inexpensive and simple to manufacture and distribute in large quantities, allowing for equipping on large numbers of vehicles.

Capabilities/ Characteristics:

- Non-standard capability (i.e., not Type-Classified; requires Materiel Release before issue to the field)
- Vehicle mounted IED pre-detonation capability
- Works against passive infrared-triggered IEDs
- Two current versions:
 - Rhino 2.6 (NSN: 2590-01-588-3902)
 - Rhino 3.0 (MCN: 5895-01-X00-0964)
- Basic systems common to all combat and tactical vehicle platforms
- Uses vehicle-specific wiring and brackets
- Originated as a soldier-designed & built solution, then refined for mass production and usability

System Integration:

- Multiple Vehicle Platforms

Materiel Release: August 2021 (UMR)

- Not a POR, developed and produced under an ONS



The Solid State - Active Denial Technology (SS-ADT) is a directed energy transmitter that immediately incapacitates targeted personnel or materiel while minimizing fatalities, permanent injury to personnel, and undesired damage to property in the target area. The system provides a nonlethal “Repel” or “Shove” effect against potentially hostile personnel for area security/force protection, including options but and vehicle borne (including watercraft) applications.

SS-ADT gives the Warfighter flexible options in time and range. The SS-ADT does not replace lethal force options but rather expands force options available so Warfighters can tailor their response to mission needs.

Capabilities/ Characteristics:

- Prototype directs radio frequency energy in approximately the 90-95 GHz frequency range at designated targets, from a remote operator control station.
- Solid state technology
- Provides Nonlethal vehicle and force protection

System Integration:

- Nonlethal, Directed Energy System

Materiel Release: August 2021 (UMR)

- Not a POR, developed and produced under an ONS



Current SS-ADT Prototype





Burn time of 90 - 150 seconds

Utilizes a fill (HX fill) that has lower ecological toxicity than the AN-M8 which uses a more toxic HC fill.

Capabilities/ Characteristics:

- M330 provides Obscuration smoke for 90 - 120 seconds.
- Replaces the AN-M8 which is restricted to contingency use only.

System Integration:

- Requires M201 A1 fuze with the Grenade Body

Configuration:

- **GG46**
- Suitable Substitutes:
 - G930: M330 HG Screening Smoke Hand Grenade

Production Partners:

- PBA (Pine Bluff, AR)
- Fuze:
 - Day & Zimmermann, Inc. (Texarkana, TX)
 - Nammo Defense Systems (Perry, FL)

Material Release: Fiscal Year 2027, 2nd Quarter (projected)





The L8A1/ L8A3 Screening Smoke Grenade consists of a rubber cylindrical body and a metal base. The rubber body contains 360 grams of a red phosphorous/ butyl rubber mix in a 95/ 5 proportion and a central plastic burster tube containing a burster charge of 15 grams of black powder. Shortly after launch, the burster charge ignites the red phosphorous/ butyl rubber smoke composition and ruptures the rubber grenade body.

The ignited smoke composition disperses to produce a red smoke cloud within 2 to 6 seconds after firing at approximately 98 feet (30 meters) from the launching device.

The difference between the two models is the burn time of the delay composition – the L8A1 delay burns for 3/4 second while the L8A3 delay burns for 1 second.

Capabilities/ Characteristics:

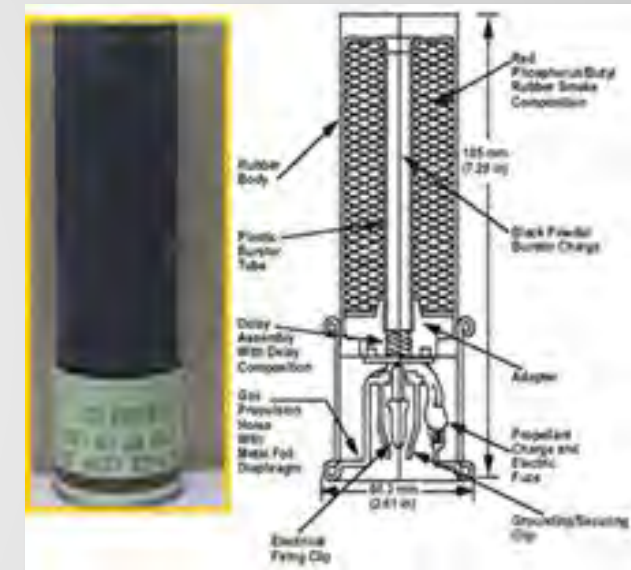
- Bursting Fan of 105-degrees
- Smoke Screen reaches 10 meters high and 20-50 meters forward
- 1-3 minutes of screening smoke (unaided or unenhanced vision only)
- Body: Rubber
- Weight: 1.5 pounds
- Filler: 360 grams of red phosphorous/ butyl rubber
- Length: 7.28 inches
- Diameter: 2.61 inches

System Integration:

- M250 Vehicle Launched Grenade Launcher
- M239 Vehicle Launched Grenade Launcher
- M243 Vehicle Launched Grenade Launcher

Configuration:

- **G815**





The M76 IR Screening Smoke Grenade is used to provide an IR and visual smoke screening capability for armored/tactical vehicles. The grenade consists of a plastic cylindrical main body that contains the IR composition, burster, booster lead, and safe and arm (S&A) mechanism.

Within 2 seconds after firing, the ignition of the burster charge ruptures the plastic grenade body and disperses the mixture which forms a smoke screen for 45 seconds.

The M76 IR Smoke Grenade is the first munition designed to defeat, threat weapon sensors operating in the visual through to far IR regions of the electromagnetic spectrum.

Capabilities/ Characteristics:

- Body: Plastic
- Weight: 4 pounds
- Filler: 3.1 pounds of IR composition
- Length: 9.3 inches
- Diameter: 2.59 inches

System Integration:

- M250 Vehicle Launched Grenade Launcher
- M239 Vehicle Launched Grenade Launcher
- M243 Vehicle Launched Grenade Launcher

Program Partners:

- PBA (Pine Bluff, AR)

Configuration:

- G826
- Suitable Substitutes:
 - G978: M82 Screening Smoke Grenade





The AN-M14 TH3 Incendiary Hand Grenade is used to destroy equipment or start fires; it can also damage, immobilize, or destroy vehicles, weapons systems, shelters and munitions. The grenade body is of thin sheet metal and is cylindrical in shape. It is filled with an incendiary mixture, Thermite-TH3, that burns from 30 to 45 seconds, generating heat to 4,000°F.

The AN-M14 utilizes the M201A1 Fuze which is a pyrotechnic-delay fuze.

Capabilities/ Characteristics:

- Incendiary mixture can burn through 1/8-inch sheet metal
- Used for intended damage, immobilization or destruction of vehicles, weapons systems, shelters, munitions or potentially start fires.
- Produces oxygen, molten iron and will burn under water
- Weighs approximately 32 ounces
- Filler: 1.65 pounds of thermite (TH3) mix
- 5.7 inches tall

System Integration:

- Hand Emplaced

Program Partners:

- Fill & LAP: PBA (Pine Bluff, AR)
- Body & Lid: Tool Masters, Inc.
- Fuze: Day & Zimmermann, Inc.

Configuration:

- **G900**





The M90 Light Vehicle Obscurant Smoke System (LVOSS) Grenade is a soft launched, non-fragmenting, pyrotechnic smoke grenade. It is compatible with presently fielded 66mm smoke grenade launchers. A salvo of four grenades conceals the host vehicle by producing an obscurant screen between the threat weapon and the host vehicle.

Capabilities/ Characteristics:

- Fielded as part of LVOSS, a HMMWV self-protection system
- Obscures in the visual and near infrared portions of the electromagnetic spectrum
- Non-fragmenting; pyrotechnically disseminated
- Low toxicity and environmentally safe
- Designed for use with the M7 Grenade Launcher/ Dispenser

System Integration:

- M7 Vehicle Launched Grenade Launcher

Configuration:

- **GG03**

Matériel Release: March 2000





The M67 Fragmentation Hand Grenade is used to supplement small arms fire against enemies in close combat. The grenade produces casualties by high velocity projection of fragments in a uniform distribution pattern.

The grenade body is a 2.5-inch diameter steel sphere which is designed to burst into numerous fragments when detonated. The grenade body contains 5.5 ounces of Composition B high explosive. Each grenade is fitted with a fuze which is a pyrotechnic delay detonating device. The delay detonating device gives the soldier 4.0 to 5.5 seconds of separation after release of the safety lever.

The M213 fuze is equipped with a steel safety pin and pull ring. The split end of the safety pin is either spread approximately 40 degrees or diamond-shaped to prevent accidental removal and arming during shipping and handling. The pull ring is provided to facilitate easy removal of the safety pin. A second safety feature is the steel safety clip. The safety clip's purpose is to prevent the safety lever from moving in the event the safety pin is accidentally dislodged from the Fuze.

Capabilities/ Characteristics:

- Can be thrown 35 meters by an average soldier
- Lethal radius is 5 meters from point of impact
- Effective casualty-producing radius is 15 meters from point of impact
- Fragments can disperse as far away as 230 meters
- Supplements small arm fire
- Uses the M213 pyrotechnic delay-detonating fuze
- 4.0-5.5 second delay
- 5.5 oz HE Composition B

System Integration:

- Hand Emplaced

Configuration:

- **G881**

Production Partners:

- Day & Zimmermann, Inc.

Materiel Release: October 1983





The M18 colored-smoke hand grenades are used for ground-to-air or ground-to-ground signaling.

The grenade body is made of thin sheet metal and may be filled with one of four smoke colors: green, yellow, red or violet. Once ignited, each grenade will emit smoke for 50 to 90 seconds.

The hand grenade fuze M201A1 is a pyrotechnic delay-igniting fuze. The fuze body contains a primer, first-fire mix, pyrotechnic delay column, and ignition mixture. Assembled to the body are a striker, striker spring, safety lever and safety pin with pull ring. The split end of the safety pin has an angular speed.

Capabilities/ Characteristics:

- Emits smoke for 50-90 seconds
- Can be thrown 40 meters by an average soldier
- Used for ground to air and ground to ground signaling
- Uses the M201A1 pyrotechnic delay-igniting fuze

System Integration:

- Hand Emplaced

Configuration:

- **G940**: Green Smoke
- **G945**: Yellow Smoke
- **G950**: Red Smoke
- **G955**: Violet Smoke

Production Partners:

- Fill & LAP: PBA (Pine Bluff, AR)
- Body & Lid: Tool Masters, Inc.
- Fuze: Day & Zimmermann, Inc.
- Dye Producer: Nation Ford Chemical





The M83 TA Practice Smoke Hand Grenade, M83 is a burning type grenade used to generate white smoke for screening activities of small units. It is also used for ground-to-air or ground-to-ground signaling. The grenade body is a cylinder of thin sheet metal and filled with TA smoke mixture. Once ignited, each grenade will emit smoke for 55 to 90 seconds. The M83 utilizes the M201A1 Fuze which is a pyrotechnic-delay fuze.

Capabilities/ Characteristics:

- Emits white smoke for 50-90 seconds
- Can be thrown 40 meters by an average soldier
- Used for ground-to-air and ground-to-ground signaling
- Uses the M201A1 Fuze

System Integration:

- Hand Emplaced

Configuration:

- **G982**
- Suitable Substitutes:
 - G930: AN-M8 HC Hand Grenade
 - **GG46**: M330 Screening Smoke Grenade

Production Partners:

- Fill & LAP: PBA (Pine Bluff, AR)
- Body & Lid: Tool Masters, Inc.
- Fuze: Day & Zimmermann, Inc.

Materiel Release: May 1997





The M106 Bursting Obscuration Hand Grenade (BOHG)) is used for personnel screening in the visible spectrum. The M106 produces an instant* obscurant cloud and is intended for use in restrictive terrain, i.e., inside urban structures, subterranean locations, and caves.

The M106 BOHG utilizes the M201A1 Mod 3 Fuze which is a pyrotechnic-delay fuze with a confidence clip. The confidence clip is an added security measure to prevent accidental arming of the grenade.

*The M106 BOHG is a bursting grenade providing smoke unlike the M18 and M83 smoke grenades which burn to release the smoke.

Capabilities/ Characteristics:

- Can be thrown 40 meters by the average soldier
- Provides 35 seconds of obscuration smoke
- Can be used in conjunction with the M83 Smoke Grenade to produce a smoke screen for a minimum of 90 seconds
- Training required before use

System Integration:

- Hand Emplaced

Configuration:

- **GG25**

Production Partners:

- Fill & LAP: PBA (Pine Bluff, AR)
- Fuze: Day & Zimmermann, Inc.

Materiel Release: September 2009





The M111 Offensive Grenade is an offensive hand grenade that incapacitates enemy personnel within closed spaces using blast overpressure. This is the designated replacement for the MK 3A2 which is restricted for use. It produces casualties during close combat while minimizing danger to friendly personnel. The grenade is also used when lethal fragments are not desired to reduce collateral damage.

Capabilities/ Characteristics:

- Provides blast overpressure effective against enemy troops in indoor areas, bunkers, trench lines and tunnels
- 4.0 to 5.5 second delay
- Weighs 12.6 ounces
- 4.41 inches in length and 2.37 inches in diameter
- Octagonal shape

System Integration:

- Hand Emplaced

Configuration:

- **GG37**
- Suitable Substitutes:
 - G911: MK 3A2 HG Offensive Grenade
 - G930: AN-M8 HC Hand Grenade
 - G982: M83 Smoke Grenade

Production Partners:

- FRP: Day & Zimmermann, Inc.
- LRIP: Battelle

Material Release: September 2025
(projected)





The M228 Practice Grenade Fuze is a pyrotechnic-delay igniting fuze. The body contains a primer and a pyrotechnic delay column.

Assembled to the body are a striker, striker spring, safety lever, safety pin with pull ring, safety clip, and igniter assembly. The M228 Fuze is used with the M69 and M112 grenade bodies for training Soldiers on offensive hand grenades.

Capabilities/ Characteristics:

- Used with M69 Grenade Body to replicate M67 Fragmenting Hand Grenade in training
- Used with M112 Grenade Body to replicate M111 Offensive Hand Grenade in training
- 4-5.5 second delay
- Emits audible signal and white smoke charge

System Integration:

- Hand Emplaced

Configuration:

- **G878**

Production Partners:

- Day & Zimmermann, Inc. (Texarkana, TX)

Materiel Release: October 1983





The M69 Practice Hand Grenade is the practice version of the M67 Fragmentation Grenade and is threaded to accept the M228 Practice Hand Grenade fuze.

Capabilities/ Characteristics:

- Used with M228 Practice Fuze to replicate M67 in a training scenario 4.0-5.5 second delay
- Can be thrown 35 meters by average soldier
- The M69 Grenade Body is designed to be reused multiple times before replacing it

System Integration:

- Hand Emplaced

Configuration:

- **G811**

Production Partners:

- L3 Harris

Materiel Release: October 1983





The M82 Simulant Smoke Grenade is used as a trainer for the Grenade, Launcher, Smoke: IR Screening, M76 (G826) and the M8 (G815). It is electrically initiated, propellant-launched and disseminates a screening cloud from the launch vehicle. The screening cloud filler material is an inert fine particulate of Titanium Dioxide.

Capabilities/ Characteristics:

- Trainer simulates the unpacking, loading and firing of the M79 and L8 tactical grenades
- Fielded to be launched with the M250, M239 and M243 but compatible with all standard metal-based 66mm launcher
- Plastic cylindrical container 9.3 inches in length and 2.6 inches in diameter weighing approximately 3.1 pounds

System Integration:

- M250 Vehicle Launched Grenade Launchers
- M239 Vehicle Launched Grenade Launchers
- M243 Vehicle Launched Grenade Launchers

Configuration:

- **G978**

Production Partners:

- PBA (Pine Bluff, AR)

Materiel Release: September 1994





The M112 Practice Offensive Hand Grenade Body with the M228 Training Fuze serve as the training system for the M111 Offensive Hand Grenade. The system duplicates the size, shape, weight, and markings of the M111. The M112 is a reloadable body and is painted blue which denotes that it is a training item.

Capabilities/ Characteristics:

- Reusable training system for the M111
- Emits a sound and smoke output through the hole in the bottom
- Weighs 12.6 oz. w/fuze
- 4.0 to 5.5 second delay
- 4.41" in length and 2.37" in diameter
- Octagonal shape

System Integration:

- Hand Emplaced

Configuration:

- **GG38**

Production Partners:

- Day & Zimmermann, Inc. (Texarkana, TX)

Materiel Release: September 2025 (projected)





The M84 Stun Hand Grenade is used as a diversionary or distraction device during building and room clearing operations when the presence of noncombatants is likely or expected and the assaulting element is attempting to achieve surprise.

The handheld device is designed to be thrown into a room where it delivers a loud bang and bright flash sufficient to temporarily disorient personnel in the room.

Capabilities/ Characteristics:

- Non-lethal, non-fragment, flash/bang
- Intense flash over 1 million candle-power
- Noise level range from 170-180 dB
- Fuze delay time range 1.5 +.8/-.5 seconds

System Integration:

- Hand Emplaced

Configuration:

- GG09

Materiel Release: September 2007





The M102 Reloadable Stun Practice Hand Grenade (RSPHG) is the practice version of the M84 Nonlethal Stun Hand Grenade (SHG). It is a pyrotechnic device for diversionary purposes that can be used to train antiterrorist squads, hostage rescue squads, riot control squads, etc.

The M102 is a low hazard, non-shrapnel producing explosive device which produces an intense light and sound display with a minimum amount of smoke. It functions the same as the M84 SHG except that the M240 Fuze Cartridge is a one-time use item, with the M102 Practice Grenade Body capable of being used up to 25 times before needing to be replaced.

Capabilities/ Characteristics:

- Cost effective trainer for M84
- Nonlethal, non-fragment, flash/bang
- Intense flash over 1 million candlepower
- Noise level range from 170-180 decibels
- Fuze delay: 1.5 seconds
- Reloadable body (min re-use = 10X; max re-use = 25X)

System Integration:

- Hand Emplaced

Configuration:

- **GG19**: M240 Practice Fuze
- **GG18**: M102 Practice Grenade Body

Matériel Release: August 2007





Ortho-Chlorobenzalmalononitrile (CS) capsule is burned to simulate CS effects during training

Capabilities/ Characteristics:

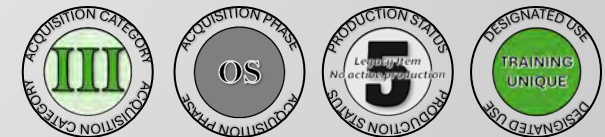
- Provides CS smoke and effects when burned to simulate effects of M7A3 CS Grenade

Configuration:

- K765

Production Partners:

- Safariland (Casper, WY)





The M1013, 12-gauge Non-Lethal area target cartridge round gives the Soldier a capability to stun or deter two to three people without penetrating their bodies, but it nevertheless delivers a strong blow to the body. The round is designed to be fired at the center mass of an adult person at ranges between 10 and 20 meters.

Capabilities/ Characteristics:

- Fired from standard issue 12-gauge shotgun
- Projectile: 18 rubber balls
- Fired out of Mossberg 500, Mossberg 590
- Engagement range: 10-20 meters

System Integration:

- Mossberg 500
- Mossberg 590

Configuration:

- AA52

Matériel Release: January 2003

Production Partners:

- Safariland (Casper, WY)





The M1006, 40mm Sponge Grenade delivers a strong, but non-penetrating, blow to the body that deters otherwise obstreperous people. This round is fired at the center mass of an adult at ranges between 10 and 50 meters.

Capabilities/ Characteristics:

- Provides Non-Lethal means of crowd control
- Launched from M203 40mm grenade launcher
- Effective Range: 10-50 meters

System Integration:

- M203 Grenade Launcher

Configuration:

- **BA06**

Materiel Release: April 2000

Production Partners:

- AMTEC Corp. (Janesville, WI)





The M1029, 40mm Crowd Dispersal Round (Area) enables the Soldier to deter two or three people without penetrating their bodies by delivering a strong blow to the body. The round is designed to be fired at the center mass of an adult at ranges between 10 and 30 meters.

Capabilities/ Characteristics:

- Provides Non-Lethal means of crowd control
- Launched from M203 40mm grenade launcher
- Effective Range: 10-30 meters

System Integration:

- M203 Grenade Launcher

Configuration:

- **BA13**

Materiel Release: November 2002

Production Partners:

- Safariland (Casper, WY)



The Taser is an electro-muscular incapacitation device that can deliver an electrical shock capable of arching up through two inches of clothing and can incapacitate a target without permanent injury or known side effects. The effective range is up to 25 feet. This item is also known as Launched Electrode Stun Device (LESD).

Currently fielded X26E model is obsolete and will be replaced by the X26P (direct replacement).

Capabilities/ Characteristics:

- Used to propel wired-probes or to conduct energy directly to affect sensory and motor functions, allowing control over a targeted individual.
- Provides electro-muscular incapacity capability
- Effective range is up to 25 feet.

Material Release:

- X26E: April 2012
- X26P: Fiscal Year 2025, 1st Quarter (projected)

Production Partners:

- Aardvark Tactical, Inc. (LaVerne, CA)
- Axon Enterprise (Scottsdale, AZ)



The cartridge is fired from the X26E Taser also known as LESD. The cartridge has tethered probes that are effective up to 25 feet and through 2 inches of clothing. The probes provides a charge that induces Electro-muscular Incapacitation (EMI) which overrides sensory and motor systems.

Capabilities/ Characteristics:

- Tethered probes that attach to target, transmitting an electrical charge
- Charge induces EMI, overriding sensory and motor systems
- Effective up to 25 feet and through up to 2 inches of clothing

System Integration:

- X26E Taser

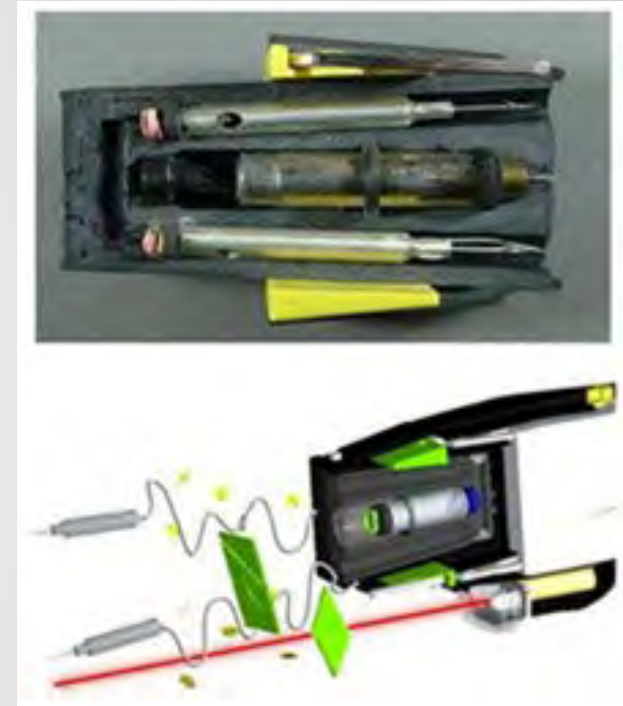
Configuration:

- JN17

Material Release: April 2012

Production Partners:

- Aardvark Tactical, Inc. (LaVerne, CA)
- Axon Enterprise (Scottsdale, AZ)





The M1116, 12 gauge non-lethal extended range point round gives the Soldier a blunt force trauma capability to stop, confuse, disorient, or deter, and mark for tracking, potential threats at extended ranges between 30 and 50 meters. This round is designed to be fired from standard Army 12-gauge shotguns, at the center of mass of an adult person.

Capabilities/ Characteristics:

- Fired from standard issue 12 Gauge Mossberg 500, Mossberg 590 and M26 MASS Shotguns
- Projectile: 40 grams of #9 shot in a fluorescent powder coated tear shaped bag
- Engagement range: 30-50 meters

System Integration:

- Mossberg 500
- Mossberg 590
- M26 MASS Shotguns

Configuration:

- **AC02**
- Suitable Substitutes:
 - AA51: 12 Gage M1012 Non-lethal Point Round Cartridge

Materiel Release: Fiscal Year 2025, 2nd Quarter (Projected)

Production Partners:

- Safariland (Casper, WY)





The L96A1 Anti-Riot Grenade is an anti-riot grenade that dispenses CS, a tear gas riot control agent. It is launched from 66mm vehicle mounted dischargers in a 4-grenade salvo. Each L96A1 contains 23 individual canisters, providing several dispersants, rather than a single plume.

Capabilities/ Characteristics:

- Provides non-lethal, riot control, stand-off capability from vehicles equipped with 66mm grenade dischargers
- Deploys 23 countermeasure resistant CS canisters
- Induces intense irritation of the eyes, mucous membranes and skin
- Range: 65-85 meters

System Integration:

- M7 Vehicle Launched Grenade Launcher

Configuration:

- FZ14

Matériel Release: January 2002





The L97A1 is a training version of the L96A1. It uses Cinnamic Acid (CA) smoke to simulate the riot control agent.

Capabilities/ Characteristics:

- Training grenade for L96A1 Anti-Riot Grenade
- Employed from any 66mm grenade discharger
- Projectile: 23 canisters filled with CA
- Range: 65-85 meters
- Length: 185 millimeters
- Total Weight: 568 grams (1.25 pounds)

System Integration:

- M7 Vehicle Launched Grenade Launcher

Configuration:

- FZ15

Materiel Release: January 2002





The M98 Non-Lethal Distraction Grenade is an area target munition fired from the standard 66mm grenade launcher. These rounds deliver a flash bang diversionary warning effect upon burst. These munitions are not precision delivered and are meant to affect large numbers of people at longer standoff ranges.

Capabilities/ Characteristics:

- Provides non-lethal, riot control, stand-off capability from vehicles equipped with 66mm grenade launchers
- Projectile: 3 ground bursting sub munitions with pyrotechnic charges for audio and visual stimuli
- Disorients individuals with intense light and sound
- Range: 50-150 meters

System Integration:

- M7 Vehicle Launched Grenade Launcher

Configuration:

- FZ16

Materiel Release: May 2011





The M99 Non-Lethal Blunt Trauma Grenade is an area target munition that can be fired from the standard 66mm grenade launcher. These rounds are designed to deliver a payload of rubber non-penetrating projectiles, upon burst, affecting a large number of people at longer standoff ranges.

Capabilities/ Characteristics:

- Provides non-lethal, riot control, stand-off capability from vehicles equipped with 66mm grenade launchers
- Projectile: 3 ground bursting submunitions containing 140 each, 32 caliber PVC balls
- Delivers strong non-penetrating blow to body
- Range: 50-150 meters

System Integration:

- M7 Vehicle Launched Grenade Launcher

Configuration:

- FZ17

Materiel Release: May 2012



The Modular Crowd Control Munition (MCCM), a non-lethal variant of the Claymore munition, is the Army's first non-lethal area coverage munition. Developed for the Military Police to provide crowd control and force protection, it temporarily incapacitates a large, hostile group without causing life-threatening consequences to the targeted individuals. This gives the field commander the option to apply non-lethal force as a first line of defense against aggressive non-combatants.

Capabilities/ Characteristics:

- Similarity in appearance to the Claymore munition
- Provides deterrence
- Contains 600 each, .32 caliber rubber balls
- Effective range of 5 to 15 meters with 60-degree coverage
- Command control initiated

System Integration:

- Hand Emplaced

Configuration:

- WA97

Materiel Release: October 2001





The M5 is a smoke pot that provides **obscuration coverage in the visual spectrum during troop movements.**

Capabilities/ Characteristics:

- Flash vented electric squibs or scratch block and match required to ignite.
- Restricted to contingency use due to the Hexachloroethane fill

System Integration:

- Flash vented electric squibs or scratch block and match required to ignite.

Configuration:

- **K866**

Production Partners:

- PBA (Pine Bluff, AR)





Legacy Tactical Floating Smoke Pot that provides Obscuration effects in the Visual Spectrum

Capabilities/ Characteristics:

- Legacy Tactical Smoke Pot that provides a dense cloud of white smoke (visual spectrum) to conceal troop movements in tactical scenarios such as river crossings.
- Restricted to contingency use due to the Hexachloroethane fill

System Integration:

- M207 fuze (no longer in production)

Configuration:

- **K867**

Production Partners:

- PBA (Pine Bluff, AR)





The M8 Practice Screening Smoke Pot is designed to provide adequate screening properties for training requirements. The M8 generates screening smoke when a floating source of smoke is required for river crossings and beach landings. It is a training device for the M4A2 Smoke Pot. The M8 utilizes the M208 fuze which is a pyrotechnic-delay igniting fuze.

Capabilities/ Characteristics:

- Floating pot
- Smoke obscuration
- Duration of the smoke screen is 280 seconds
- 25 pounds of Terephthalic Acid mix
- Total weight of 38 pounds
- Training for M4A2 Smoke Pot

System Integration:

- Hand Emplaced

Configuration:

- **K511**

Materiel Release: March 2002

Production Partners:

- Fill & LAP: PBA (Pine Bluff, AR)
- Body & Lid: Tool Masters, Inc.
- Fuze: Day & Zimmermann, Inc. (Texarkana, TX)





AT mines (M75)

Self-destruct at 4 or 48 hours

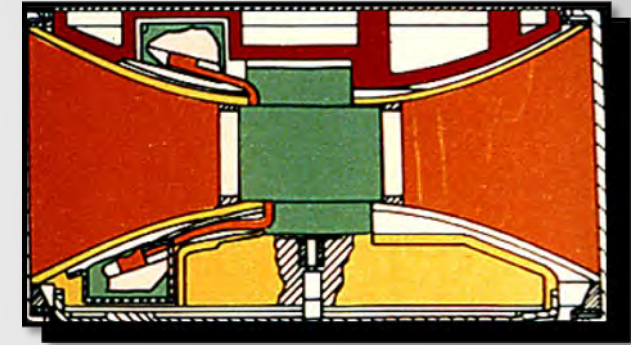
Self-deactivation backup

Capabilities/ Characteristics:

- Activated by magnetic sensor

Configuration:

- K184



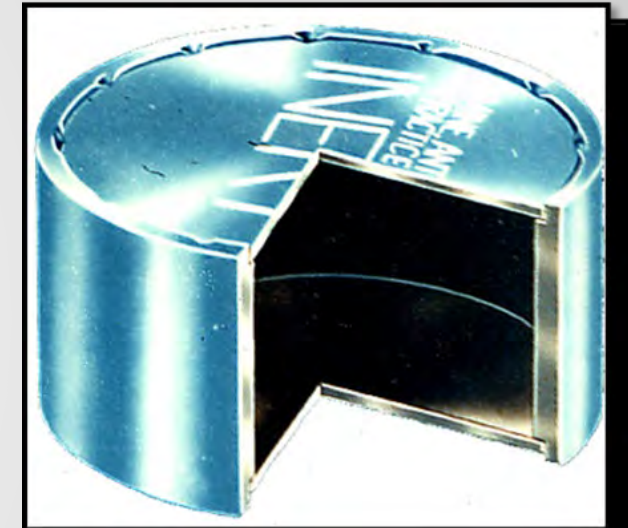
M483 projectile
36 dummy mines

Configuration:

- **K234**

Capabilities/ Characteristics:

- Uses modified M483 projectile
- 36 dummy mines





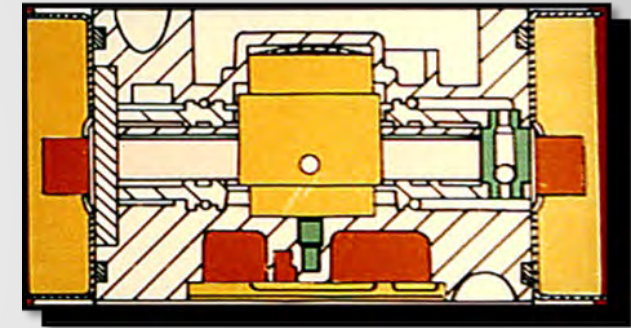
Individual Mine, within the ADAM (Area Denial Artillery Munition)
155 mm Howitzer-launched
Uses modified M483 projectile
36 Anti-personnel mines (M74/79)
Mine activated by 7 trip lines, each 20 feet long
Self-destruct at 4 or 48 hours
Self-deactivation backup

Capabilities/ Characteristics:

- Activated by four trip lines

Configuration:

- K151



Hand emplaced ADAM AP mine
All functions same as ADAM mine
Self-destructs at 4 hours
Self-deactivation backup

Configuration:

- K152





The M131 Modular Pack Mine System (MOPMS) is a man-portable, AT/ AP mine system with command detonation capability. It weighs 165 pounds and contains a mix of 17 magnetically-fuzed AT Mines and four AP Mines. It's 4-hour self-destruct command can be recycled three times or command-detonated by remote control. The M71 Remote Control Unit can control up to 15 MOPMS dispensers from 300-1,000 meters. The munition is well suited as a protective obstacle for light forces but can be used for tactical purposes as well.

Capabilities/ Characteristics:

- Mobility: Deployable by all modes and uniquely tailored for light forces
- Flexibility: Command detonation, self-destruct recycling, man-portable
- M131 Mine Dispenser: 17 AT Mines and 4 AP Mines
- M71 Remote Control Unit
- M136 Training Dispenser

System Integration:

- M131 Mine Dispenser

Configuration:

- K022

Materiel Release: September 1992





The M7 Spider Networked Munition is a hand emplaced, remotely controlled, human-in-the-loop (HITL), AP munition system. Spider provides equivalent munition field effectiveness when compared to capabilities provided by current landmines but does so without the residual life-threatening risks after hostilities end or when warring factions depart. The fielding of this system, with its sensors, communications, and munitions changed the way soldiers operate in an otherwise unpredictable battlefield. The system's design allows for safe and rapid deployment, reinforcement, and recovery as well as safe passage of friendly forces.

Capabilities/ Characteristics:

- Provides improved munition field effectiveness equivalent to current AP landmines
- Hand-emplaced modular system capable of intrusion detection and controlling lethal and non-lethal munitions
- Repeater provides extended range capability for munition control in difficult terrain
- Interoperability with the tactical internet via Mission Command communication platform
- Self-destruct/ self-deactivate
- Reusable
- Remotely controlled command fire
- Prevents fratricide

System Integration:

- Hand Emplaced

Configuration:

- **TS01:** M8 Mini-Grenade Launcher
- **TS02:** M9 Extended Range Tripwire Launcher
- **TS09:** M332 MCU

Materiel Release: September 2013



The M10 Munition Control Unit (MCU) for the Spider System contains no explosive. The MCU Kit contains 2 MCUs, 2 antennas, 6 sandbags, 6 tripwire spools, and 6 anchor stakes. Its replacement NSN is 1346-01-606-5980.

Capabilities/ Characteristics:

- Hand emplaced, remotely controlled munitions
- Detects intrusions, controls lethal and nonlethal munitions
- Contains all ancillary items for emplacement as a kit

System Integration:

- Integrates with Class VII M7 Spider

Configuration:

- TS04

Material Release: September 2013





The Volcano Mine Dispenser is a scatterable mine delivery system. It can be employed defensively to delay enemy movement, isolate the battlefield and reinforce friendly fire. The Volcano enables tactical commanders to emplace antitank/antipersonnel or pure antitank minefields with minimal personnel. Each launcher rack can hold 40 mine canisters with a 5 to 1 mix of antitank and antipersonnel mines or six antitank mines to meet commanders' situational employment requirements.

Capabilities/ Characteristics:

- Versatility: deployable from ground or air systems
- Reduces user burden to emplace minefields
- Common dispenser and ammunition
- Unique mounting kits for host platform: M985/M1120 Series Heavy Expanded Mobility Tactical Truck; 5-ton truck; Helicopter; M548 Track Vehicle
- Using a ground vehicle, a 1,000-meter minefield can be laid in 4 to 12 minutes based on terrain and vehicle speed. A helicopter can complete the mission in 20 seconds

System Integration:

- M139 Mine Dispenser

Materiel Release: June 1992

Production Partners:

- TBAD (Tobyhanna, PA)





Capabilities/ Characteristics:

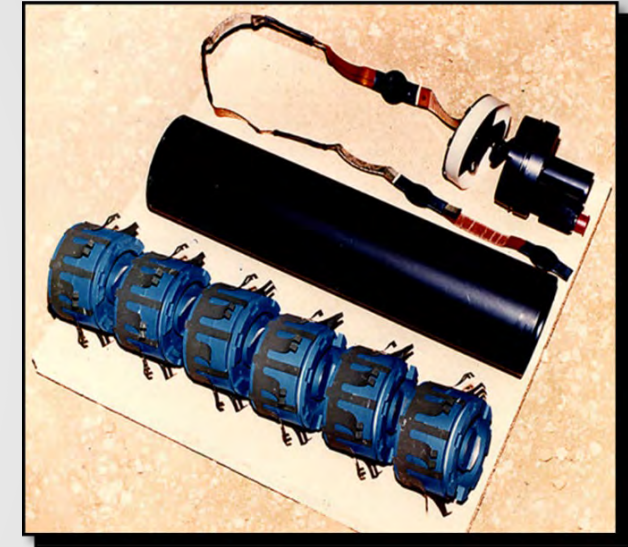
- 6 AT mines per canister
- Improved countermeasure capability
- Self-destructs at 4 hours, 48 hours or 15 days
- Self-deactivation backup

Configuration:

- **J003**
- Suitable Substitutes:
 - K045: M87 Volcano HE Canister Mine

Production Partners:

- Northrop Grumman (Plymouth, MN)





Capabilities/ Characteristics:

- 5 AT and 1 AP mine per canister
- Improved countermeasure capability
- Self-destructs at 4 hours, 48 hours or 15 days
- Self-deactivation backup

Configuration:

- **K045**
- Suitable Substitutes:
 - J003: M87A1 Volcano HE Canister Mine

Production Partners:

- Northrop Grumman (Plymouth, MN)





Air Volcano is the fastest method for emplacing large tactical minefields. Although mine placement is not as precise as it is with ground systems, Air Volcano minefields can be placed accurately enough to avoid the danger inherent in minefields delivered by artillery or jet aircraft. Air Volcano is the best form of an obstacle reserve because a minefield can be emplaced in minutes. Air Volcano minefield should not be planned or dispensed in areas under enemy observation and fire as the dispensing helicopter is extremely vulnerable to anti-aircraft fire while flying at a steady altitude, speed and flight path required to successfully emplace the minefield. Close coordination between aviation and ground units is required to ensure that Volcano-dispensed mines are emplaced accurately and quickly.

Capabilities/ Characteristics:

- When fitted to an aircraft, mines are dispensed 35 to 70 meters (115 to 230 feet) from the aircraft's flight path.
- The aircraft flies at a minimum altitude of 5 feet (1.5 meters) at speeds ranging from 20 to 120 knots (37 to 222 kilometers per hour).
- One aircraft can dispense up to 960 mines per sortie

Configuration:

- K015

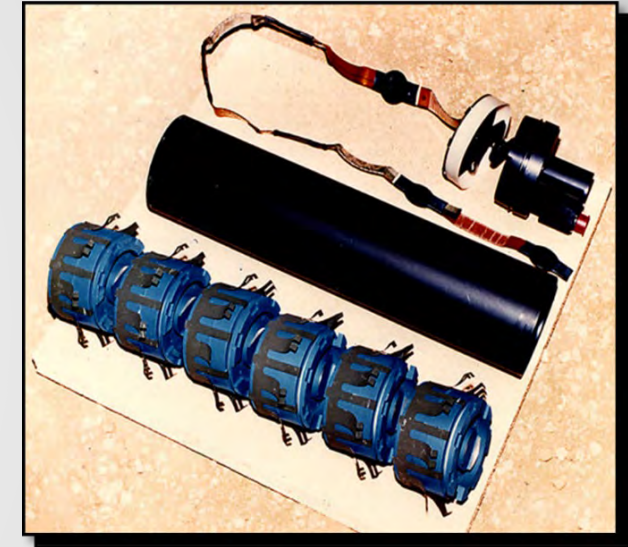




For Use with the M139 and M136 Volcano Launcher Racks.

Configuration:

- HZ02

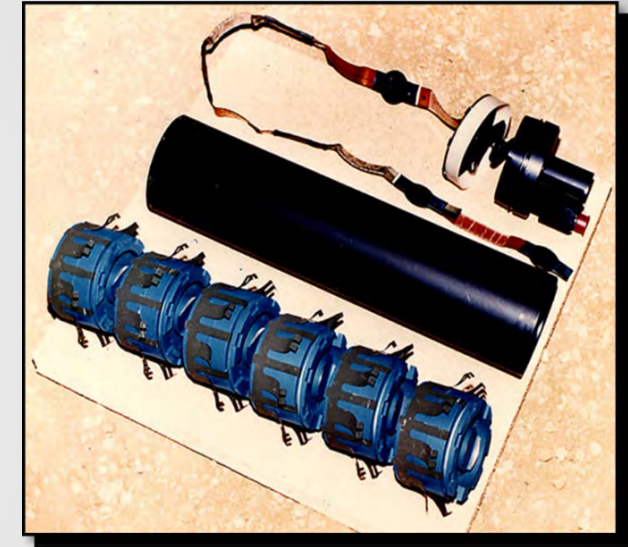




Replicates wartime canisters for training use.

Configuration:

- K042



Wide Area Munition (WAM) AV Mine

Capabilities/ Characteristics:

- 100M/360° Effective radius
- Acoustic and seismic sensors
- Autonomous arm to kill sequence
- Target prioritization, heavy and light track
- Remote control - M71
- 30 Day operational life
- Self-destructs & self-deactivates

System Integration:

- M139 Mine Dispenser

Configuration:

- **SQ20**





The XM215 is a new expendable countermeasure munition that will provide Enduring and Future Vertical Lift (FVL) Army Aircraft protection against current and advanced guided missile threats that operate in a specific Electro-Optical/ IR spectrum.

Program was put on hold following Milestone B.

Capabilities/ Characteristics:

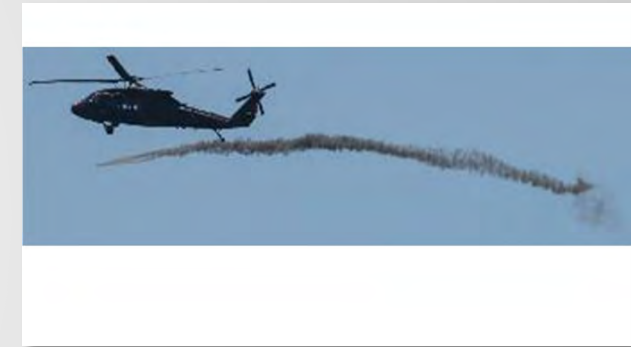
- 100M/360° Effective radius
- Acoustic and seismic sensors
- Autonomous arm to kill sequence
- Target prioritization, heavy & light track
- Remote control - M71
- 30 Day operational life
- Self-destructs & self-deactivates

Configuration:

- LA95

Production Partners:

- Kilgore Countermeasure (Toone, TN)
- Armtec (Camden, AR)





The XM20 is a next generation chaff cartridge that provides effective coverage in a specific RF range for Enduring and FVL Army Aircraft.

The XM20 chaff is a 1x1x8 cartridge which consists of aluminum coated dipoles that provides the necessary RF coverage.

Capabilities/ Characteristics:

- Improves survivability of Army rotary wing aircraft against advanced radar threats

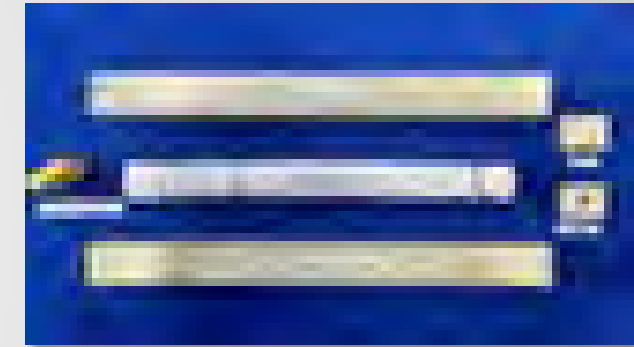
Configuration:

- LA98

Production Partners:

- Armtec (Lillington, NC)

Material Release: Fiscal Year 2027, 1st Quarter (projected)





The chaff cartridge is a decoy to provide an effective survival counter-measure for Army aircraft against radar-controlled weapon systems. It works in conjunction with the already fielded M839 or M1 Countermeasures.

Capabilities/ Characteristics:

- Ammunition cartridge consisting of a plastic outer case nominally 1-inch-wide x 1-inch-high x 8 inches long
- The cartridge item contains: a plastic end cap, plastic piston, and felt spacer
- The cartridge is fired by electrical initiation of a BBU/35-B Impulse Cartridge
- Expels the chaff payload into the air where it blooms into a radar reflecting cloud that breaks Lock On radar-controlled weapon systems

System Integration:

- Rotary Wing Aircraft
- Fixed Wing Aircraft

Configuration:

- LY07

Matériel Release: 2016





The M206 Aircraft Countermeasure (CM) Flare consists of an eight-inch aluminum rectangular case which houses a magnesium-Teflon flare pellet, piston and end cap. The flanged base cartridge has a preformed indentation for insertion of the M796 Impulse Cartridge.

Fired by electrical impulse, the impulse cartridge expels the M206 from an aircraft mounted flare dispenser. The ignited magnesium composition produces a high temperature IR signature. The IR signature serves as a heat seeking decoy for heat seeking surface-to-air missiles and air-to-air missiles fired upon the aircraft. The Army and USAF use the M206.

Capabilities/ Characteristics:

- Ammunition cartridge consisting of a plastic outer case nominally 1-inch-wide x 1-inch-high x 8 inches long
- The cartridge item contains: a plastic end cap, plastic piston, and felt spacer
- The cartridge is fired by electrical initiation of a BBU/ 35-B Impulse Cartridge
- Expels the chaff payload into the air where it blooms into a radar reflecting cloud that breaks radar-controlled weapon systems

System Integration:

- Rotary Wing Aircraft

Configuration:

- L410

Matériel Release: August 1980

Production Partners:

- Kilgore (Toone, TN)
- Armtec Defense (East Camden, AR)
- Armtec Defense (Kilgore, TN)





The M211 decoy is part of the family of advance IR CM flares/decoys designed to protect Army helicopters and fixed wing aircraft against infrared seeking missile threats. The M211 decoy is in a 1-inch x 1-inch x 8-inch form factor in an aluminum case.

The decoy consists of a piston, special material payload foils that are inserted into the aluminum case and sealed with a metal end cap. The special material is pyrophoric iron that reacts with oxygen when exposed to air when expelled by the BBU-35B/M796 impulse cartridge from the Common Missile Warning System (CMWS).

Capabilities/ Characteristics:

- Provides IR CM protection against state-of-the-art missiles
- Spectral decoy

System Integration:

- Rotary Wing Aircraft
- Fixed Wing Aircraft

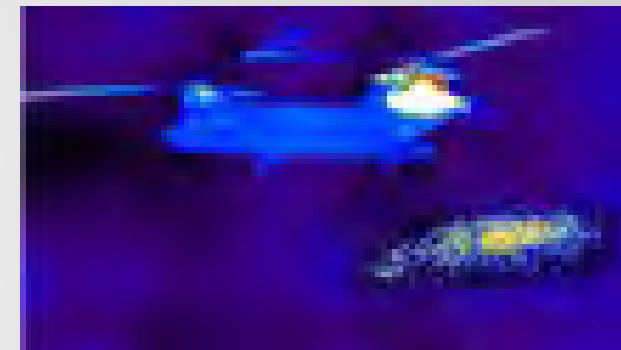
Configuration:

- LA14

Matériel Release: May 2009

Production Partners:

- Alloy Surface (Chester Township, PA)



The BBU-35/B & M796 Impulse Cartridges are used to ignite and/or eject aircraft countermeasure flares, decoys and chaff (M206, M212, M211, M1/M839 & RR170A/AL) designed to protect Army helicopters and fixed wing aircraft against seeking missile threats. The BBU-35/B replaces the M796 impulse cartridge used by the Army. The impulse cartridge produces hot gases that push the piston or flare/decoy material composition and end cap out of the aircraft when activated electrically by the CMWS

Capabilities/ Characteristics:

- Used to initiate several types of munitions (M206, M211, M212 flares and M839 decoy)
- Electrically initiated
- Main charge is HPC-1 Propellant

Configuration:

- **MD73**: Army Impulse Cartridge
- **MG62**: USAF version; completed materiel release for Army use

Materiel Release:

- MD73: September 1980
- MG62: June 2008

Production Partners:

- Capco





The Electric Match Igniter is used to remotely initiate the M27 AT Guided Missile Signature Simulator (ATGMSS). The Electric Match Igniter sits inside the tail end of the M27 ATGMSS and is initiated by the control module for the Joanel device.

The M79 electric match igniter consists of an electric match, starter composition, and igniter composition. The igniter composition burns sufficiently to ignite the M27 ATGMSS.

The M79 is a 3-inch-long polypropylene tube and cap assembly. It is ignited by a 24 direct current power source and burns for approximately 20 seconds.

Capabilities/ Characteristics:

- Used to initiate the M27 ATGMSS
- 3-inch-long polypropylene tube; cap assembly
- Burns for approximately 20 seconds

System Integration:

- ATGMSS

Configuration:

- MN60

Material Release: December 1992

Production Partners:

- MAST Technology, Inc. (LCAAP, Independence, MO)





The M125A1 HHS consists of a five-star green cluster illuminant assembly and a rocket motor propulsion assembly. The signal is activated by striking the base of the signal with the palm of the hand driving a percussion primer into the initiating charge.

The mission need of the M125A1 is primarily for signaling among ground troop emplacements and is occasionally used to signal aircraft. The M125A1 is used by all services for both training and tactical requirements.

Capabilities/ Characteristics:

- Primarily used for battlefield illumination and distress and troop placement
- Signal consists of a five-star green cluster illuminant propelled by a fin-stabilized rocket motor
- Length: 10.16 inches
- Weight: 1.2 pounds
- Primarily used for signaling among ground troops and aircraft
- Illumination: 9,000 candlepower for 6-10 seconds
- Altitude is 725 feet (average)

System Integration:

- Hand Emplaced

Configuration:

- L314

Matériel Release: December 1983

Production Partners:

- Security Signals (Cordova, TN)





The M126A1 Handheld Signal (HHS) is a parachute suspended red star illuminant propelled by a fin stabilized rocket motor propulsion assembly. The signal is activated by striking the base of the signal with the palm of the hand driving a percussion primer into the initiating charge.

The mission need of the M126A1 is for surface-to-air distress signaling, location signaling between troop emplacements, and battlefield illumination. The M126A1 is used by all services for both training and war reserve requirements.

Capabilities/ Characteristics:

- Primarily used for battlefield illumination and distress and troop placement
- Signal is a parachute suspended red star illuminant propelled by a fin stabilized rocket motor
- Length: 10.16 inches
- Weight: 1.2 pounds
- Illumination: 10,000 candlepower for 50 seconds
- Altitude is 725 feet (average)

System Integration:

- Hand Emplaced

Configuration:

- **LA80**
- Suitable Substitutes:
 - L311: M126A1 Red Star Illumination Parachute HHS

Materiel Release: June 1985

Production Partners:

- Security Signals (Cordova, TN)





The M127A1 HHS is a parachute suspended white star illuminant propelled by a fin stabilized rocket motor propulsion assembly. The signal is activated by striking the base of the signal with the palm of the hand driving a percussion primer into the initiating charge.

The mission need of the M127A1 is for surface-to-air distress signaling, location signaling between troop emplacements, and battlefield illumination. The M127A1 is used by all services for both training and war reserve requirements. The high candlepower intensity lends the M127A1 to battlefield illumination applications.

Capabilities/ Characteristics:

- Primarily used for battlefield illumination and distress and troop placement
- Signal is a parachute suspended white star illuminant propelled by a fin-stabilized rocket motor
- Length: 10.16 inches
- Weight: 1.2 pounds
- Illumination: 90,000 candlepower for 25 seconds
- Altitude is 725 feet (average)

System Integration:

- Hand Emplaced

Configuration:

- L312

Matériel Release: October 1983

Production Partners:

- Security Signals (Cordova, TN)





The A/P25S-5 Signal Kit is a distress signaling device used by downed airmen or others exposed to emergency escape or evasion situations.

The kit comes equipped with a hand fired projector and a bandoleer assembly which contains a plastic molded bandoleer holding seven red signals. Each signal consists of a small solid propellant rocket motor actuated by a percussion primer, a delay element, and a pyrotechnic candle, all contained in a metal case.

The surface of the case is dyed red, to match the color of the candle. The projector is made of black anodized aluminum and has a signal gripping device and a firing mechanism which consists of a free traveling firing pin with a smooth actuation knob and spring. The projector is connected to the bandoleer by a 30-inch lanyard.

Capabilities/ Characteristics:

- Used as a distress signal for exposed individuals for emergency escape and evasion
- Altitude: 600 feet
- Burn Time: 10 seconds
- Illumination: 10,000 candlepower
- Visible for 15-20 miles
- Part of survival kit vest type

System Integration:

- Hand Emplaced

Configuration:

- **L119**
- Suitable Substitutes:
 - L116
 - L117

Materiel Release: November 2005

Production Partners:

- Security Signals (Cordova, TN)
- Propellant: Talley Defense Systems (Mesa, AZ)





The M195 HHS is a parachute-suspended, green star illuminant propelled by a fin-stabilized rocket motor propulsion assembly. The signal is activated by striking the base of the signal with the palm of the hand driving a percussion primer into the initiating charge.

The mission need of the M195 is for surface-to-air distress signaling, location signaling between troop emplacements, and battlefield illumination. The M195 is used by all services for both training and war reserve requirements.

Capabilities/ Characteristics:

- Primarily used for battlefield illumination and distress and troop placement
- Signal is a parachute suspended green star illuminant propelled by a fin-stabilized rocket motor
- Length: 10.16 inches
- Weight: 1.2 pounds
- Illumination: 5,000 candlepower for 50 seconds
- Altitude: 725 feet (average)

System Integration:

- Hand Emplaced

Configuration:

- L305

Matériel Release: July 1985

Production Partners:

- Security Signals (Cordova, TN)





The M158 HHS consists of a five-star red cluster illuminant assembly and rocket motor propulsion assembly. The signal is activated by striking the base of the signal with the palm of the hand driving a percussion primer into the initiating charge. An attached fin assembly provides stability in flight.

The mission need of the M158 is to provide limited battlefield illumination in addition to functioning as a distress and troop emplacement signaling device. The M158 is used by all services for both training and tactical requirements.

Capabilities/ Characteristics:

- Primarily used for battlefield illumination and distress and troop placement
- Consists of a five-star red cluster illuminant assembly propelled by a fin-stabilized rocket motor
- Length: 10.16 inches
- Weight: 1.2 pounds
- Illumination: 30,000 candlepower for 6-10 seconds

System Integration:

- Hand Emplaced

Configuration:

- L306

Matériel Release: December 1983

Production Partners:

- Security Signals (Cordova, TN)





The M159 HHS consists of a five-star white cluster illuminant assembly and rocket motor propulsion assembly. The signal is activated by striking the base of the signal with the palm of the hand driving a percussion primer into the initiating charge. An attached fin assembly provides stability in flight.

The mission need of the M159 is to provide limited battlefield illumination in addition to functioning as a distress and troop emplacement signaling device. The M159 is used by all services for both training and tactical requirements.

Capabilities/ Characteristics:

- Primarily used for battlefield illumination and distress and troop placement
- Consists of a five-star white cluster illuminant assembly propelled by a fin-stabilized rocket motor
- Length: 10.16 inches
- Weight: 1.2 pounds
- Illumination: 30,000 candlepower for 6-10 seconds
- Altitude: 725 feet (average)

System Integration:

- Hand Emplaced

Configuration:

- L307

Matériel Release: April 1984

Production Partners:

- Security Signals (Cordova, TN)





Back Blast Simulator

Capabilities/ Characteristics:

- The backblast simulator produces flash and sound that resembles firing the live round.

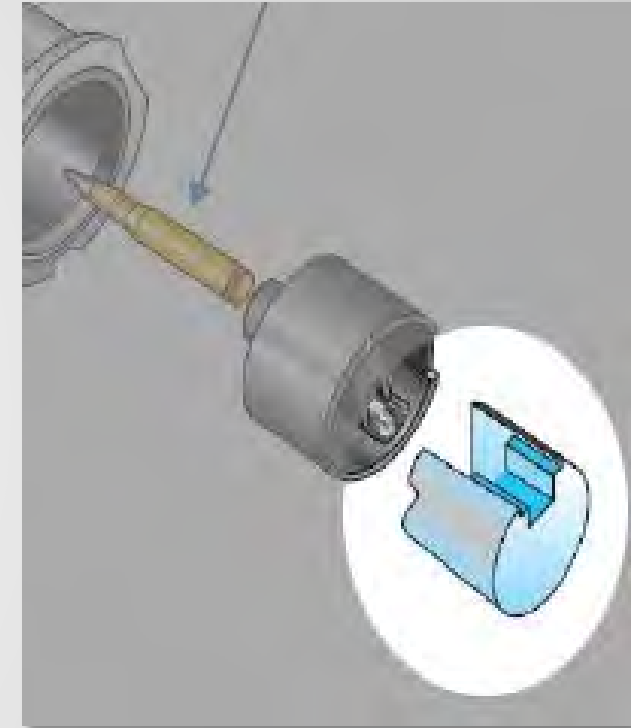
Configuration:

- L612

Materiel Release: 1990

Production Partners:

- Saab Dynamics (Karlskoga, Sweden)





The M115A2 Ground Burst Simulator consists of a cylindrical paper tube containing a photoflash charge and a whistle assembly. This simulator is a hand-thrown device with a pull cord-actuated igniter which ignites the safety fuse. After a 6 to 10 second delay, the safety fuse ignites the whistle composition which produces an audible whistle sound from 2 to 4 seconds. The final burning ignites the photoflash charge which produces a visible flash and a loud report.

This simulator is used to simulate battlefield noises and effect (shells in flight and ground burst explosions). The greatest usage is at the combined training centers and infiltration courses at troop training sites.

The M115A2 supports only training and has no application for war reserve requirements. Used by all services, this item is a staple for troop basic training maneuvers

Capabilities/ Characteristics:

- Produces a whistle followed by a flash and bang
- Used to simulate battle noise and battle effects (shells in flight & explosions)
- Training only

System Integration:

- Hand Emplaced

Configuration:

- L594

Material Release: May 1988

Production Partners:

- Pyrotechnics by Grucci, Inc.





The M116A1 Simulator consists of a cylindrical paper tube containing a photoflash charge and a whistle assembly. This simulator is a hand-thrown device which a pull-cord actuated igniter which ignites the safety fuse. After a 6 to 10 second delay, the photoflash charge will produce a visible flash and a loud report.

This simulator is used to simulate battle noises and battlefield effects. The greatest usage is at the combined training centers and infiltration courses at troop training sites.

The M116A1 supports only training and has no application for war reserve requirements. Used by all services, this item is a staple for troop basic training maneuvers.

Capabilities/ Characteristics:

- After a 6 to 10 second delay, the safety fuse ignites photoflash charge which explodes producing a flash and a loud report
- Used to simulate battle noise and battle effects
- Training only, hand thrown
- Cylindrical paper tube containing a photoflash charge
- Initiated by Omega 60 Pyro Simulator which replaced Armor Target Kill System (ATKS)

System Integration:

- Omega 60 BES

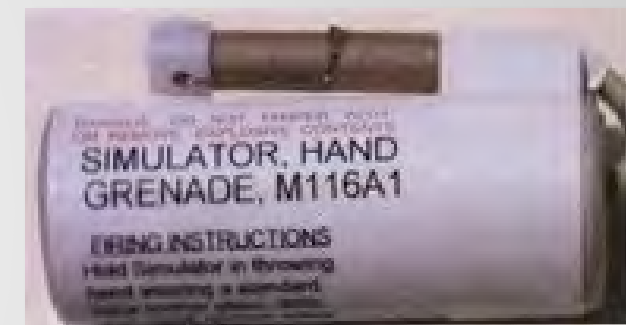
Configuration:

- L601

Materiel Release: January 1985

Production Partners:

- Pyrotechnics by Grucci, Inc.



The M30 Main Tank Gun Simulator consists of a cylindrical plastic case containing a flash and bang charge, seal with a plastic cap and an electric match in the plastic case to ignite the flash and bang charge. The M30 simulator is initiated by the Main Gun Signature Simulator (MGSS) firing device when mounted on the turret of armored vehicles and interfaced to the vehicle's main gun trigger. When the M30 is ignited, a flash bang and smoke cloud occurs. The M30 flash and smoke is visible at 3,000 meters. The report (sound) does not exceed 140 decibels at a distance of 26 meters.

The M30 Tank Gun Simulator is a pyrotechnic training device component of the U.S. Army's Multiple Integrated Laser Engagement System (MILES) 2000 Tactical Engagement Simulation System. The M30 provides tank crews visual and audible effects (flash, bang, smoke) that the main tank gun has been fired.

The M30 Simulator has been fielded at Combined Arms Centers and home stations world-wide to enhance training realism and maintain a high level of readiness through effective training.

Capabilities/ Characteristics:

- Produces a flash and smoke simulating firing of a Main Gun
- Carries a simulated unit basic load
- Flash & smoke are visible at 3,000 meters

System Integration:

- MILES 2000 Tactical Engagement Simulation System

Configuration:

- **LA06**
- Suitable Substitutes:
 - L602: M21 Artillery Flash Simulator (WESS)

Materiel Release: June 2000





The M31A1 Direct/ Indirect Fire Cue Simulator consists of a cylindrical plastic case containing an ignition, flash and bang charge and stars, a seal with plastic cap, and an electric match in the plastic case to ignite the ignition, flash and bang charge. The M31A1 Simulator is initiated by the Direct-Indirect Fire Cue (DIFCUE) Simulator firing device when mounted on armored vehicles. When the M31A1 is ignited, a flash bang and smoke cloud occurs, and the stars are ejected to a height of 45 to 60 feet. The M31A1 stars, flash and smoke are visible at 1,500 meters. The report (sound) does not exceed 140 decibels at a distance of 5 meters.

The M31A1 Simulator is a pyrotechnic training device that has been fielded for use by combat training centers and home stations as part of the fielded Multiple Integrated Laser Engagement System (MILES 2000) Tactical Engagement Simulation System.

The M31A1 produces visual and audible effects (flash, bang, smoke and stars) to cue a vehicle hit.

Capabilities/ Characteristics:

- Simulates a hit/kill by direct/indirect fire in a training environment (CTC/Home Station) with a shower of sparks
- Stars are ejected to a height of 45-60 feet
- Flash & Smoke visible at 1,500 meters

System Integration:

- MILES 2000 Tactical Engagement Simulation System

Configuration:

- LA07

Matériel Release: July 2002





The M35 Target Hit Simulator Cartridge main charge consists of 10-12 pellets which, when ignited, pop up 1,800 meters simulating a strike on an armored target hit (8-12 white burning stars).

The M35 Target Hit Simulator Cartridge is fired from ground mounted Omega 60 BES.

Capabilities/ Characteristics:

- Used in the Omega 60 BES
- Simulates a target hit signal
- Emits 8-12 white burning stars visible at 1,800 meters

System Integration:

- Omega 60 BES

Configuration:

- **LA53**
- Suitable Substitutes:
 - L709: M25 Target Hit Simulator

Materiel Release: May 2007

Production Partners:

- Martin Electronics Incorporated (Perry, FL)



The M34 Hostile Fire Simulator Cartridge simulates the acoustic (bang) and optical (orange and white smoke) signature of tank main gun firing. The M34 is fired from the Omega 60 BES which replaces the ATKS on gunnery ranges.

Capabilities/ Characteristics:

- Used in the Omega 60 BES
- Produces a flash and bang simulating the firing of a main battle tank
- Emits an orange flash and white smoke visible at 1,800 meters
- Simulates large caliber gun fire

System Integration:

- Omega 60 BES

Configuration:

- LA54

Materiel Release: May 2007

Production Partners:

- Chemring Ordnance (Perry, FL)





The M176 Surface to Air Missile Simulator is a 72mm composite plastic cartridge that houses a self-consuming pyrotechnic pellet that is electrically initiated. The cartridge is inserted into the Weapons Effect Signature Simulator (WESS) launch tube from the bottom of the magazine which ensures the chamfered section, cartridge pins, and contact plate are in alignment.

The pyrotechnic pellet burns while it is fired up to 500 ± 50 feet into the air producing a thick smoke trail that extends from the ground to its maximum altitude

Capabilities/ Characteristics:

- Produces a thick smoke train extending from ground to its maximum altitude of 500 ± 50 feet into the air
- Simulates the smoke trail of a Man-Portable Surface-to-air Missile
- Fired from WESS launcher, part of the Man-Portable Aircraft Survivability Trainer (MAST) system
- Pellet that creates the smoke trail is self consuming

System Integration:

- MAST WESS

Configuration:

- LA70

Materiel Release: February 2015

Production Partners:

- Drew Defence (Germany)





The M22 Anti-Tank Weapons Effect Signature Simulator (ATWESS) is a three-piece injection molded unit consisting of cylindrical housing with a flange on one end, a snap-in primer plate, and a snap-in closure disc for the flanged end of the unit. The primer plate has a hole in its center to accept a standard MIL-Spec primer. A preformed pellet of strontium nitrate and aluminum composition is placed in a within the simulator and provides the flash and smoke upon functioning.

The bang composition is composed of loose strontium nitrate and aluminum powder. The simulator is used to simulate rocket and missile fire backblast and is used in a variety of systems.

Capabilities/ Characteristics:

- The simulator is a part of the MILES.
- It is employed with the MILES TOW, DRAGON, and VIPER firing devices.
- It provides a credible simulation of the weapon signature including report of minimum 138 decibels, flash plume of 6-foot by 10-foot and smoke.
- The simulator is common to all three weapon simulators and is fired by a common firing device.

System Integration:

- MILES TOW
- DRAGON
- VIPER

Configuration:

- **LA77**
- Suitable Substitutes:
 - L367: M22 Antitank Launch Simulator (ATWESS)

Production Partners:

- Pyrotechnique by Grucci (Radford, VA)





The AT4 consists of an anti-armor projectile encased in a fiberglass-reinforced launch tube fitted with a firing mechanism, pop-up sights, a carrying sling, protective muzzle covers, and shock absorbing bumpers.

The projectile consists of an 84mm shaped charge warhead that provides the individual dismounted Soldier with the operational capability to engage and defeat armored/lightly armored vehicles. Detonation of the Octol explosive charge is achieved with a piezoelectric impact fuse sensitive to impact angles as low as 10 degrees.

The AT4 is no longer in production for the Army and has been replaced by the M136A1 AT4 Confined Space Reduced Sensitivity (CS RS)

Capabilities/ Characteristics:

- Effective range: 300 meters
- Penetrates: 450 millimeters Reactive Hull Armor
- Weight: 6.72 kilograms
- Length: 1.0 meter

Configuration:

- C995
- Suitable Substitutes:
 - CA30: M136 AT-4 CS RS

Materiel Release: June 2005

Production Partners:

- Saab Bofors Dynamics (Karlskoga, Sweden)





The AT4 CS RS consists of an anti-armor projectile encased in a fiberglass-reinforced launch tube fitted with a firing mechanism, pop-up sights, a carrying sling, protective muzzle covers and shock absorbing bumpers. The projectile consists of an 84mm shaped charge warhead that provides the individual dismounted Soldier with the operational capability to engage and defeat armored/ lightly armored vehicles from a confined or enclosed space.

Each launcher has an integral night vision device mount that accepts any sight or laser aiming light with rail-grabber attachment.

The AT4CS can be safely fired from an enclosure thereby significantly increasing the Soldiers' survivability in an urban environment. The AT4CS replaces the Army's combat proven AT4 M136.

Capabilities/ Characteristics:

- Weight: 7.5 kilograms
- Length: 1.04 meters
- Effective range: 15-300 meters
- Penetration capabilities up to 500mm of armor
- Fire from enclosure, air droppable, no maintenance

Configuration:

- CA30
- Suitable Substitutes:
 - C995: M136 AT-4

Materiel Release: September 2009

Production Partners:

- Saab Bofors Dynamics (Karlskoga, Sweden)





Consists of the AT4 Launcher tube and the launcher insert.

Capabilities/ Characteristics:

- Launcher that when combined with the training cartridge enables Soldiers to train for the AT4 Shoulder Launched Munitions (M136 and M136A1)

Configuration:

- HA35
- Suitable Substitutes:
 - CA30: M136 AT-4 CS RS

Materiel Release: 1990s

Production Partners:

- Saab Bofors Dynamics (Karlskoga, Sweden)





The M939 is used in place of the AT4 in training sight picture. There are two trace cartridge models. The original cartridge had a red tip and a white band on the projectile, with a half-black head; the current configuration uses a red tip with a blue stripe as tip identification. It is used in AT4 Launcher only with the M287 9mm Tracer Bullet Training Device. Both models have the head-stamp of manufacturer and year.

Capabilities/ Characteristics:

- M939 is used in place of the AT4 in training sight picture
- Fired from the TACOM-managed M287 trainer, the velocity and trajectory match that of the AT4
- The M287 launcher produces less noise and no back blast
- Length: 29.7mm
- Weight: 150 grams
- Projectile range: 1,800 meters
- Tracer range: 450 meters

System Integration:

- M287 (AT4 Trainer)

Configuration:

- **A358**

Materiel Release: March 2006

Production Partners:

- Saab Bofors Dynamics (Karlskoga, Sweden)





Trainer rocket for Bunker Defeat Munition (BDM) and M72 Light Anti-Tank Weapon (LAW) series

Capabilities/ Characteristics:

- Trainer rocket that replicates ballistic trajectories for the BDM and LAW

System Integration:

- BDM
- LAW

Configuration:

- **HA21**

Materiel Release: 1999

Production Partners:

- Nammo Defense Systems (Mesa, AZ)





The Bunker Defeat Munition (BDM) is a single shot, man-portable, disposable system able to defeat against earth and timber bunkers and masonry walls at ranges of 15-250 meters.

The round within the system shares a similar design to the shoulder-launched multipurpose assault weapon (SMAW) family of rounds and the TDP is owned by the USMC.

The BDM requirement fills the lightweight “Bunker Buster” void for U.S. Army.

Capabilities/ Characteristics:

- Provides the individual dismounted Soldier a hand-held, single-shot, disposable, stand-off munition that provides the operational capability to incapacitate personnel located within structures such as buildings, fixed facilities, earth and timber fortifications (bunkers), caves and behind masonry walls under all-weather/ visibility conditions
- Carry length: 31.9 inches
- Firing length: 54 inches
- Effective Range: 15-250 meters
- Carry weight: 15.9 pounds

System Integration:

- Shoulder Launched Munition

Configuration:

- HA08

Matériel Release: December 1999

Production Partners:

- Nammo Defense Systems (Mesa, AZ)





The TPT 141 Multi-Role Anti-Armor Anti-Personnel Weapons System (MAAWS) is intended to be used in training with the M3 recoilless rifle.

The TPT 141 Cartridge was fielded to USSOCOM in 2003.

Capabilities/ Characteristics:

- The TPT 141 projectile does not contain any fuze or explosives.
- Stabilized in flight and fitted with a tracer that is visible throughout the flight up to 400 meters.
- The tracer's burn time is approximately 2 seconds.

Configuration:

- CA10

Materiel Release: 2003

Production Partners:

- Saab Dynamics (Karlskoga, Sweden)





The 84mm HE Dual Purpose (HEDP) 502 RS Cartridge is assembled with a free-flight, fin-stabilized projectile is fired from the Carl-Gustaf weapon.

The HEDP-502 RS cartridge was fielded to USSOCOM on 2 September 2003.

Capabilities/ Characteristics:

- Contains a shaped-charge warhead with the capability for instantaneous or delayed function

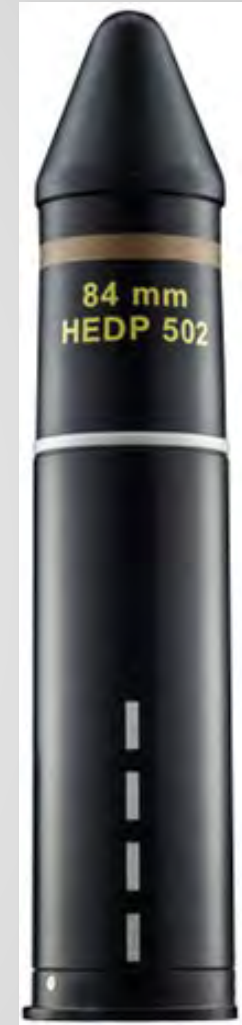
Configuration:

- CA21

Materiel Release: 2003

Production Partners:

- Saab Dynamics (Karlskoga, Sweden)





441D is an HE AP round that can be used in impact and airburst modes.

This is used with the MAAWS M3 Carl Gustaf Rifle.

Capabilities/ Characteristics:

- Contains a shaped-charge warhead with the capability for instantaneous or delayed function

System Integration:

- MAAWS M3 Carl Gustaf Rifle

Configuration:

- CA27

Materiel Release: 2004

Production Partners:

- Saab Dynamics (Karlskoga, Sweden)





The percussion primer cap ignites both the back blast simulator and 7.62mm tracer.

It was fielded to U.S. 75th Ranger Regiment in August 1990 and subsequently to all USSOCOM users in 1993.

Capabilities/ Characteristics:

- The percussion primer cap ignites both the back blast simulator and 7.62mm tracer and provides training to simulate the MAAWS ammunition fired from the Carl Gustaf Recoilless Rifle

Configuration:

- L498

Materiel Release: 1990

Production Partners:

- Saab Dynamics (Karlskoga, Sweden)





This is the tracer bullet for the 553 Subcaliber Adapter used with the MAAWS M3A1.

Capabilities/ Characteristics:

- Tracer round

Configuration:

- A254

Materiel Release: 1990

Production Partners:

- Saab Dynamics (Karlskoga, Sweden)





20mm tracer cartridge fired from the Cannon Caliber Training System (CCTS), which is a 20mm sub-caliber adapter that is loaded into the MAAWS. The velocity and trajectory of the 20mm tracer cartridge matches that of HEDP 502 round.

Capabilities/ Characteristics:

- Ballistic match to the HEDP 502
- Length: 150 mm (5.9 inches)
- Weight: 150 grams (0.33 pounds)
- Range: Up to 300 meters
- Used only by USMC and USSOCOM

System Integration:

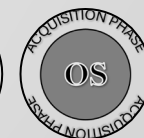
- CCTS

Configuration:

- AC05

Production Partners:

- Saab Dynamics (Karlskoga, Sweden)





AN/PSS-14 employs a state-of-the-art metal detector and ground penetrating radar, coupled with an advanced microprocessor array and software, to achieve a high probability of detection.

This man-portable system provides dismounted Soldiers with a more comprehensive mine detection capability and lower alarm rate. AN/PSS-14 is an ACAT III program that entered Full Rate Production in August 2006.

Capabilities/ Characteristics:

- Single Soldier-operable, HSTAMIDS
- Combines technologies of GPR and metal detection
- Locates both metallic and low-metallic, AP and AT landmines
- Operable in highly mineralized soils and water to depths of 4 feet
- Provides operator audio alerts to landmine detections
- Utilizes advanced algorithms to process sensor data
- Extremely low false alarm rate

Materiel Release: July 2006

Production Partners:

- Extant Aerospace (Melbourne, FL)





Handheld Detection Systems are COTS products designed for detecting mines and IEDs. They operate well in mineralized soils.

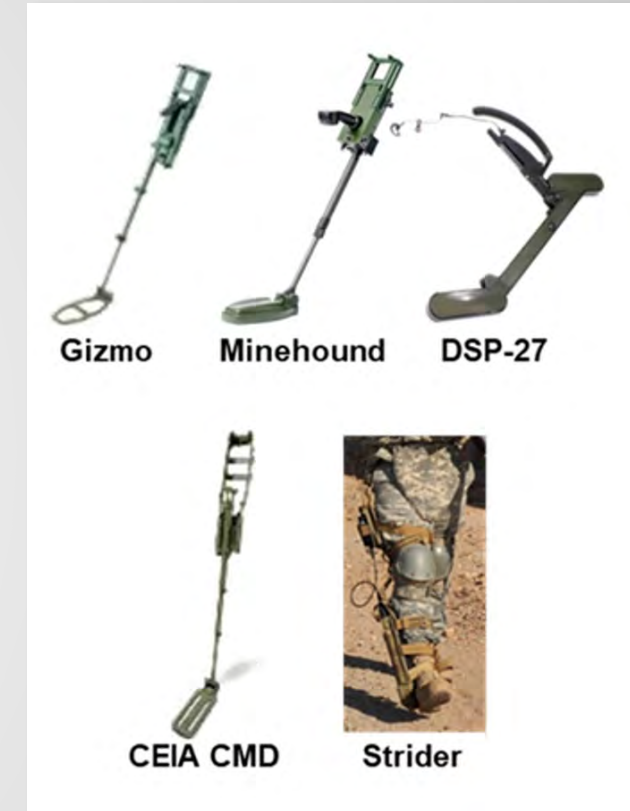
Capabilities/ Characteristics:

- **Minehound:**
 - Handheld mine and IED detection system.
 - Locates both metallic and non-metallic explosive hazards.
- **CEIA CMD & Gizmo:**
 - Handheld system detects metal and minimum-metal content targets.
- **DSP-27:**
 - A passive handheld detector that provides audible indication of target detected, and audio and visual indication of operational status.
- **Strider:**
 - Wearable hands-free IED component (wiring) detection system designed for the dismounted Soldier.

Materiel Release: July 2006

Production Partners:

- CEIA CMD
- CEIA USA Ltd.
- DSP-27 and Strider:
 - Gill Research & Development Limited (United Kingdom)
- Gizmo and Minehound:
 - Vallon GMBH (Germany)





The Acoustic Hailing Device (AHD) is a tactical communication device that provides force protection and messaging capability by transmitting directed acoustic waves. It enables forces to audibly communicate clearly and effectively at significant standoff distance, with combatant and non-combatant personnel in the area of operations.

It is fielded to Military Police, Transportation and Psychological Operation units. The AHD allows escalation of force capability as it gives the operator the ability to determine intent of approaching personnel.

Capabilities/ Characteristics:

- Projects clearly-intelligible/ discernable voice and warning tones to 300 meters and beyond over land and water
- Emits a narrow sound beam confined to a width of +/- 77.5 meters (+/-15° at 300 meters)
- Accepts audio inputs from microphone, MP3 player and other standard audio devices

Materiel Release: March 2021

Production Partners:

- Prime: Atlantic Diving Supply, Inc.
- OEM: Genasys





The XM919 Individual Assault Mmunition (IAM) is a lightweight fire from enclosure, recoilless, disposable, single shot, multi-target munition capable of defeating earth and timber bunkers, masonry structures and light armored vehicles at ranges of 30-200 meters with increased behind the wall lethality.

The IAM family of systems will include the XM922 Sub-Caliber Trainer (SCT), sub-caliber tracer ammunition, Field Handling Trainer (FHT), Synthetic Training Environment Live Training System (STE LTS) and Soldier Virtual Trainers (SVT). The XM919 IAM will combine the capabilities of the M136A1 AT4CS RS and the M141 Bunker Defeat Munition and replace them in the Army arsenal.

The XM919 IAM enables the Army's Soldier Lethality Modernization Line of Effort (LOE) by reducing Soldier load, while providing tactical innovation capable of extending overmatch against peer/ near-peer adversaries in a joint, multi-domain, high-intensity conflict.

Capabilities/ Characteristics:

- XM919 IAM will provide Anti-armor, Anti-structure, Behind the Wall Lethality Effects, Fire From Enclosure (FFE) capabilities and replaces two legacy munitions with a single system
- Effective against:
 - Brick Walls
 - Reinforced Concrete
 - Earth And Timber Bunker
 - Light Armor
- Fire From Enclosure capability
- Reduced weight < 20 pounds
- Length < 40 inches
- Range of 30-200 meters

Configuration:

- CX35

Materiel Release: Fiscal Year 2026, 4th Quarter (projected)

Production Partners:

- Saab, Inc. (East Syracuse, NY)





The M72 Light Anti-Tank Weapon (LAW) is a 66mm man-portable, lightweight, single shot, direct fire weapon.

The M72 LAW consists of several variants for both the rocket and FFE propulsion variants.

Capabilities/ Characteristics:

- Provides the individual, dismounted Soldier with an ultra- lightweight alternative to existing shoulder launched munitions for conditions where mobility is crucial
- Used to engage threat personnel in the open or behind protective barriers such as hasty fighting positions, light clad masonry walls and light vehicles
- Carry length: 30.5-32.0 inches
- Firing length: 38.5 inches
- Effective range: 25 meters - 350 meters
 - M72A7: Effective against 150mm Rolled Homogeneous Armor (RHA)
 - M72A8: FFE-capable version of M72A7
 - M72A9: Effective against Urban Structures and Light Vehicles
 - M72A10: FFE-capable version of M72A9
- Carry weight: 8-13 pounds

System Integration:

- Shoulder Launched Munitions

Configuration:

- HA29

Production Partners:

- Nammo Defense Systems (Mesa, AZ)





Training version of the M72 LAW that fires a 21mm sub-caliber tracer rocket (DODIC: HA21) in place of the tactical 66mm HEAT round.

Capabilities/ Characteristics:

- Simulation of tactical weapon effect
- Caliber – 21mm
- Type – Rocket
- Reloadable
- Used by USMC and USSOCOM

System Integration:

- Paired with 21mm trainer rocket (HA21)

Production Partners:

- Nammo Defense Systems (Mesa, AZ)





The XM204 Top Attack (TA) Dispenser Launcher Module (DLM) is a hand emplaced, U.S. Landmine Policy-compliant interim anti-vehicular capability to address the Army's directed close tactical obstacle capability gap.

The XM204 TA provides a top attack capability to serve as a point obstacle or to create complex area denial obstacles with the SAVO.

The XM204 autonomously detects, tracks and engages target vehicles using seismic & acoustic sensors and radar within the DLM, and multi-array thermal & laser detection sensors.

Capabilities/ Characteristics:

- Capable of initiating XM343 to form a complex obstacle
- Detect, track & engage threat Vehicles
- Four Top Attack submunitions per DLM
- Top Attack sub-munition launched by a rocket motor
- Affordable, easily trained and employed
- Ground-based, lethal AV obstacle with tamper and breach resistance measures
- Durable and versatile maneuver support & maneuver Missions
- Dimensions: 16.1 inches wide x 19.6 inches long x 9.6 inches high
- Weight: 84 pounds for two-Soldier carry

System Integration:

- Hand emplaced
- SAVO
- Counter Anti-Vehicular Munition (CAVM) System

Configuration:

- TS10

Materiel Release: UMR 1QFY26
(projected)

Production Partners:

- Textron Corporation (Wilmington, MA)





Provides Maneuver Commander with a U.S. Anti-Personnel Landmine Policy compliant Top Attack capability to address Army's close directed tactical obstacle capability gap as an enduring solution. XM250 Top Attack, Modular Open Systems Architecture approach taken in the first increment of capability will establish the Command-and-Control hooks for Increment 2 (Bottom Attack) and Increment 3 (Full Network Capability)

The XM250 TA DLM is a hand emplaced, U.S. Landmine Policy-compliant enduring anti-vehicular capability to address the Army's directed close tactical obstacle capability gap.

The XM250 TA provides a top attack capability to serve as a point obstacle or to create complex area denial obstacles.

The XM250 autonomously detects, tracks and engages target vehicles using seismic & acoustic sensors and radar within the DLM, and multi-array thermal & laser detection sensors.

Modular Open Systems Architecture approach will establish the Command-and-Control hooks for Increment 2 (Bottom Attack) and Increment 3 (Full Network Capability)

Capabilities/ Characteristics:

- Detect, track & engage threat Vehicles
- On-Off-On capability
- Four Top Attack submunitions per DLM
- Top Attack sub-munition launched by a rocket motor
- Affordable, easily trained and employed
- Ground-based, lethal AV obstacle with tamper and breach resistance measures
- Durable and versatile maneuver support and maneuver missions
- Dimensions: 16.1 inches wide x 19.6 inches long x 9.6 inches high
- Weight: 112 pounds for two-Soldier carry

System Integration:

- Hand emplaced

Materiel Release:

Production Partners:

- Textron (Wilmington, MA)





Provides maneuver commanders in European theater with an interim directed, tactical AV obstacle capability which denies enemy freedom of maneuver on the battlefield.

The XM343 Standoff Activated Volcano Obstacle (SAVO) is a hand emplaced, U.S. Landmine policy-compliant interim anti-vehicular munition capability to address the Army's directed close tactical obstacle capability gap.

The SAVO provides a Bottom Attack (BA) capability to serve as a point obstacle or to create complex area denial obstacles with the XM204.

Initiated by fielded wired and wireless initiation systems or XM204. SAVO initiates the currently fielded Volcano canisters to block, turn, fix and disrupt enemy formations in accordance with the commander's ground tactical plan. User recoverable for re-deployment if Volcano canisters are not deployed.

Capabilities/ Characteristics:

- Creates a self destruct AV landmine
- Base Plate is Hand emplaced, one-man portable
- Remotely initiated via fielded wired or wireless initiation systems
- Utilizes current inventory Volcano mine canisters
- Recoverable and reusable pre-launch
- Rapid emplacement
- Employed life of up to six months

System Integration:

- Hand emplaced

Material Release: UMR 4QFY26
(projected)

Production Partners:

- Northrop Grumman (Plymouth, MN)



The AP Obstacle Breaching System (APOBS) is an explosive line charge system that allows Soldiers to conduct safe breaching through enemy antipersonnel minefields and multi-strand wire obstacles.

It is light enough to be carried by two Soldiers with backpacks and can be deployed within 30 to 120 seconds. Once set in place, the APOBS rocket is fired from a 35-meter standoff position, sending the line charge with fragmentation grenades over the minefield and/or wire obstacle. The grenades neutralize or expose any hazards and sever wire, effectively clearing a footpath for troops up to 45 meters in length.

Capabilities/ Characteristics:

- 2 man-portable rocket propelled line charge 45 meters in length
- Clears a footpath through Wire Obstacles and AP Landmines
- Incorporates 108 unique fragmentation munitions along the line Charge
- Two Actuation Methods: delay and command modes
- Employed from a 35-meter Standoff from Obstacle
- Certified as an Insensitive munition

System Integration:

- Hand Emplaced

Configurations:

- MN79: MK 7 Tactical
- MN84: MK 7 Inert Trainers

Materiel Release: January 2006

Production Partners:

- Chemring Ordnance (Perry, FL)



The Next Generation Breaching Technology, XM123 Ground Obstacle Breaching Lane Neutralizer (GOBLN), directly supports the Army of 2030 Mobility by performing a critical reduction of explosive, and non-explosive obstacles in the execution of penetration, disintegration, and exploitation in the close and deep maneuver areas.

The XM123 GOBLN will be effective against enduring landmines and single impulse mines, as well as modern explosive hazards equipped with updated fuze and sensor technologies.

In the current TMRR Phase, PM CCS is evaluating various potential system architectures that may include multiple assortment of sensors for detection, and ground fired or UAS-delivered munitions for explosive hazard neutralization.

Capabilities/ Characteristics:

- Modular Mission Payload (MMP) on current and future vehicle platforms, to include manned and unmanned vehicles (i.e. RCV, ABV, OMFV)
- Reliable, scalable, and capable of breaching complex obstacles that are a mix of man-made non-explosive and explosive obstacles
- Provide near real time Common Operating Picture updates
- Provides system standoff, effectively removing Soldiers from the breach

XM123 GOBLN

System Integration:

- TBD

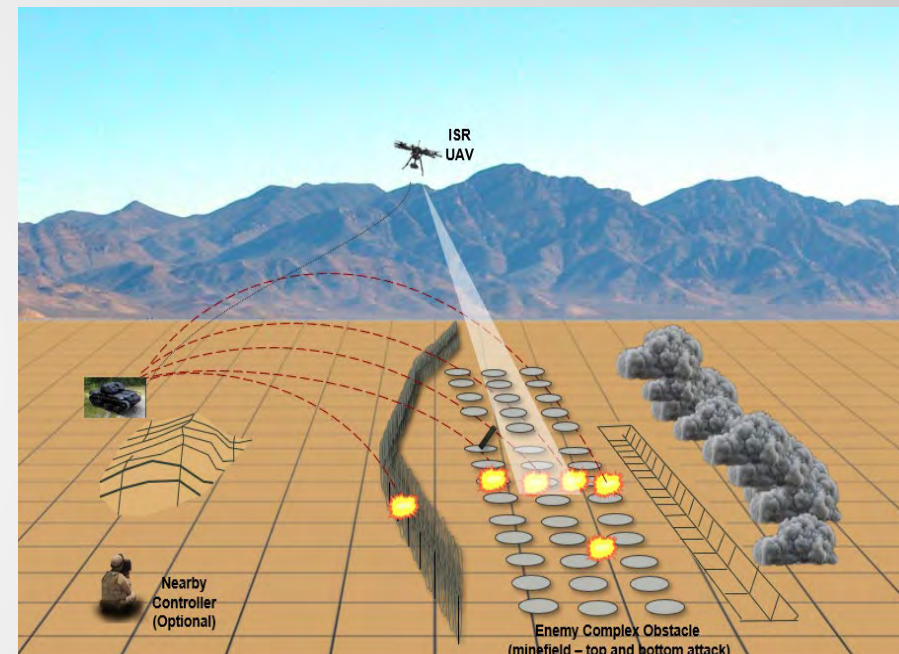
Configurations:

- TBD

Materiel Release: TBD

Production Partners:

- TBD



The M58 Mine Clearing Line Charge (MICLIC) is a rocket-propelled explosive line charge mounted on a standard military trailer. The line charge is propelled over the minefield by the rocket and detonated, clearing a one-vehicle-wide lane 100 meters long, 8 meters wide.

The MICLIC is effective against single pulse, pressure fuzed mines. The demolition charge is 350 feet long, consisting of three 100-foot and one 50-foot sections joined together with a 3/4-inch nylon rope. The charges (5-1/2 x 1-1/2 x 3-1/2 inches) are covered with nylon sleeves and tied to the rope, provide a long flexible line charge.

A rocket harness cable is attached to the front of the assembled linear charge and a fuse holder is secured to the trail end. A 205-foot nylon arresting cable is at the bottom of the coiled simulated charge.

The MICLIC can be ground launched (wherein it is used as part of the M125 demolition kit), launched from a landing craft, or launched from a vehicle-towed trailer.

Capabilities & Characteristics:

- Defeats minefield threats during tactical breaching operations
- The M58 MICLIC is used to clear paths for tanks, vehicles, and personnel through minefields or other obstacles
- Loaded with explosive charges to form a line charge
- Launched with a live rocket motor

Configurations:

- M913

Production Partners:

- AO-IAAAP (Middletown, IA)

Materiel Release: November 1986



The M68 is an inert, reusable, training version of the MICLIC. The simulated demolition charge is 350 feet long, consisting of three 100-foot and one 50-foot section joined together with a 3/4-inch nylon rope.

The simulated pellets (5-1/2 x 1-1/2 x 3-1/2 inches), covered with nylon sleeves and tied to the rope, provides a long flexible sausage effort simulated linear charge. A rocket harness cable is attached to the front of the assembled simulated charge and an inert fuse holder is secured to the rear end.

A 205-foot nylon arresting cable is at the bottom of the coiled simulated charge.

The MICLIC can be ground launched (wherein it is used as part of the M125 Demolition Kit), launched from a landing craft, or launched from a vehicle-towed trailer.

Capabilities & Characteristics:

- Training
- M68 MICLIC, is used to clear paths for tanks, vehicles, and personnel through minefield or other obstacles
- Loaded with rubber rather than explosive pellets
- Equipped with an inert fuze (Model M1147)
- Launched with a live rocket motor in the same manner as the M58

Configurations:

- M914

Production Partners:

- American Ordnance (Milan, TN)

Matériel Release: November 1986





JPEO AA

REBUILDING THE ARSENAL OF DEMOCRACY

Project Manager Maneuver Ammunition Systems (PM MAS) provides all direct fire combat and training ammunition capabilities, except non-lethal, of the highest quality and reliability to Warfighters (Army, Navy, Air Force, Marines and SOCOM) and Government Agencies to support dismounted soldiers, combat vehicles, helicopters, naval vessels, and high-performance propeller and jet aircraft as directed by JPEO AA. PM MAS routinely transitions and accepts production management of additional direct fire ammunition types from the Special Operations Command (SOCOM), Naval Sea Systems Command (NAVSEA), Naval Air Systems Command (NAVAIR), and the United States Marine Corps (USMC).



Mission: PM MAS develops, equips and sustains integrated lethal direct fire ammunition effects to enable joint and Allied warfighters overmatch in the battlefield.

Vision: Innovative and dedicated hard-working professionals ensuring our warfighters prevail in battle and return home safely.



Project Manager Maneuver Ammunition Systems

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Dummy, Drill, and Inert (DDI) cartridges are used for weapons training and maintenance. The cartridges are nickel plated and fluted to separate appearance from live and blank ammunition.

Capabilities & Characteristics:

- Brass cartridge cases, copper bullets, nickel plated
- No energetic or stored energy
- Cases are fluted, except for 9mm, which has two holes
- Primer cavity in base, but no primer inserted

System Integration:

- Use in each caliber's compatible weapon systems

Configurations:

- .50 Cal
 - **AB48**: M2A1
 - **AB36**: M2A1, Linked
- 9mm:
 - **AB45**: M917A1
 - **AC24**: XM1156 (MHS)
 - A359¹: M917
- 5.56mm:
 - **AB46**: M199A1
 - A060¹: M199
 - A076¹: M232
- 7.62mm
 - **AB47**: M63A1
 - **A159**: M172, Linked
 - **AB72**: M82A1
 - A135¹: M63
 - A162¹: M172

Materiel Release: October 2010

Production Partners:

- LCAAP (Independence, MO)
- KAK Industries (Springfield, IL) with manufacturing in Industry, CA (AB72, AB47)



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

This cartridge is used by ROTC in marksmanship competition. Cartridge consists of a solid lead projectile.

Capabilities & Characteristics:

- Velocity: At 15 feet, 1,100 feet per second
- Accuracy: 1.25 inches at 100 yards (average)
- Chamber Pressure:
 - 26,000 pounds per square inch average (maximum)
 - Maximum individual shall not exceed 30,100 pounds per square inch

System Integration:

- ROTC match grade rifles with a manually operated bolt action

Configurations:

- **A091**

Program Partners:

- Olin Winchester (Independence, MO)



The M1909 Blank cartridge is used for simulated firing in training or for saluting purposes. The cartridge is identified by the absence of a bullet and has purple lacquer applied over the crimped cartridge case mouth to keep out moisture.

Capabilities & Characteristics:

- Height: 4.90 inches
- Weight: 218 grains

System Integration:

- M1 Garand
- M1903 Springfield
- M1917 Enfield

Configurations:

- **A222**

Production Partners:

- LCAAP (Independence, MO)



The M1163 Norma Magnum (NM) round is intended for use against anti-personnel at long ranges.

Capabilities & Characteristics:

- Cartridge components are COTS
- Propellant: Retumbo (87.5 grains)
- Projectile: 215 grain Berger hybrid projectile
- Primer: Federal 215M
- Case: .300 Norma

System Integration:

- Barrett MK 22 Sniper Rifle

Configurations:

- **AC33**

Materiel Release: May 2024

Production Partners:

- WOSB – Black Hills Ammunition
- F&OC – Sig Sauer



The bullet for the MK 248 Mod 0 is a 190 grain Sierra Match King Hollow Point Boat Tail (HPBT) bullet. The bullet is lead with a jacket composed of copper or copper alloy and is a reverse drawn open tip match type. This bullet is intended for use in M2010 Enhanced Sniper Rifle or MK 13 for sniper applications.

Capabilities & Characteristics:

- Effective Range: 1,100 meters
- Height: 3.5 inches
- Weight: 190 grains
- Muzzle Velocity: 3,000 feet per second
- Accuracy: Individual shot groups ≤ 4.71 inches at 300 yards and 9.42 inches at 600 yards
- Chamber Pressure: 78,900 pounds per square inches

System Integration:

- M2010 Enhanced Sniper Rifle
- MK 13

Configurations:

- **A191**

Materiel Release: March 2013

Production Partners:

- Vista Outdoor Sales (Anoka, MN)



The M1162 NM Armor Piercing (AP) round is intended for use against personnel wearing hard body armor and for anti-materiel missions.

Capabilities & Characteristics:

- Cartridge components are COTS
- Propellant: Retumbo (91.5 grains)
- Projectile: 300 grain AP projectile
- Primer: Federal 215M
- Case: .338 Norma

System Integration:

- Barrett MK 22 Sniper Rifle

Configurations:

- **AC32**

Materiel Release: May 2024

Production Partners:

- WOSB: Black Hills Ammunition
- F&OC: Sig Sauer



Both Saboted Light Armor Penetrator (SLAP) and SLAP – Tracer (SLAP-T) cartridges in this configuration contain a Tungsten Alloy penetrator which is sabot-launched at approximately 38% higher velocity than standard rounds. The sabot releases the projectile upon exiting muzzle. The difference between the two cartridges is the addition of a tracer in the M962 that enables the shooter to follow the projectile trajectory to make aiming corrections.

Capabilities & Characteristics:

- Length: 5.45 inches
- Weight:
 - M903: 1,466 grains
 - M962: 1,576 grains
- Muzzle Velocity: 4,000 feet per second at 78 feet
- Accuracy: Average Maximum Mean Radius $\leq$ 18 inches at 600 yards
- Chamber Pressure (average): 55,000 pounds per square inch (maximum)
- Action Time: 4 milliseconds (maximum)

System Integration:

- M2A1
- M3P Machine Gun

Configurations:

- **A518**
- Suitable Substitutes:
 - A576: .50 Call 4-API/ M20 Tracer w/M9

Matériel Release: November 1996

Production Partners:

- LCAAP (Independence, MO)



Both cartridges in this configuration have Armor Piercing Incendiary (API) capability. The MK 211 API is identified by a green bullet tip with an aluminum color annulus. The M20 API-T cartridge is identified by red over gray bullet tip and is designed to perforate or penetrate hardened or bullet resistant targets. The MK 211 cartridge provides improved penetration performance against enemy personnel and light armor vehicles versus other .50 Cal API cartridges. Both cartridges are effective at starting fuel fires including heavy distillates, i.e. diesel fuel.

Capabilities & Characteristics:

- Designed to perforate or penetrate hardened or bullet resistant targets with after armor effects
- Used against armored personnel vehicles
- Weight:
 - MK 211: 1,765 grains
 - M20: 1,718 grains
- Trace: 85% minimum, visible from 100-1,600 yards
- Muzzle Velocity: 2,905 feet per second
- Accuracy: Average mean radius ≤ 12 inches at 600 yards
- Penetration: M20 core penetrates 87.5% armor at 100 yards
- Chamber Pressure (average):
 - MK 211: 65,000 pounds per square inch (maximum)
 - M20: 60,500 pounds per square inch (maximum)
- Action Time: 4 milliseconds (maximum)
- Uses M9 links

System Integration:

- M2A1
- M3P Machine Gun

Matériel Release: September 1987

Configurations:

- **A607**
- Suitable Substitutes:
 - A506: .50 Cal 4-M8 API/ 1-M20
Tracer w/M9, Linked

Production Partners:

- LCAAP (Independence, MO)



Both cartridges in this configuration have API capability. NAVSPECWARCOM initiated design in 1996 to modify the fielded, M20, .50 Caliber API-T cartridge to a Dim Trace (DT) capability.

Capabilities & Characteristics:

- Length: 5.45 inches
- Weight:
 - M8: 1,784.5 grains
 - MK 257: 1,718 grains
- Muzzle Velocity: 2,905 feet per second
- Accuracy: Average mean radius ≤ 12 inches at 600 yards
- Penetration: Core minimum penetrates 87.5% armor at 100 yards
- Chamber Pressure (average):
 - M8: 60,500 pounds per square inch
 - MK 257: 65,000 pounds per square inch
- Action Time: 4 milliseconds (maximum)

System Integration:

- M2A1
- M3P Machine Gun

Matériel Release: April 2014

Configurations:

- **AB30**

Production Partners:

- LCAAP (Independence, MO)



The M8 API cartridge is identified by gray bullet tip. It has a manganese molybdenum steel core, a point filler of incendiary composition, and a lead-antimony base seal. The cartridge combines the functions of an armor piercing bullet and an incendiary bullet and is used against flammable targets and light-armored or unarmored targets, concrete shelters, and similar bullet-resisting targets.

Capabilities & Characteristics:

- Length: 5.45 inches
- Weight: 1,784.5 grains
- Muzzle Velocity: 2,905 feet per second
- Accuracy: Average mean radius ≤ 12 inches at 600 yards
- Chamber Pressure (average): 65,000 pounds per square inch (maximum)
- Action Time: 4 milliseconds (maximum)

System Integration:

- M107 Sniper Rifle
- M82A1/ A3 Barrett

Configurations:

- **A531**

Production Partners:

- LCAAP (Independence, MO)



The .50 Caliber M33 Ball cartridge has been adopted and produced by at least 30 countries, including the U.S., Britain, Canada, France, Belgium, Israel, Netherlands, Japan, Singapore, and Taiwan. The M33 cartridge has a soft steel core bullet and can be used against personnel or unarmored targets. The M17 cartridge produces a red trace that enables the shooter to follow the projectile trajectory to make aiming correction. The cartridge has a soft steel core bullet and can be used against personnel or unarmored targets, although it is primarily used for training.

The US has NATO Qualified the Cal .50, M33 Ball Cartridge Design. Lots of M33 cartridges that have been produced by the US and contain the NATO Symbol of Interchangeability on the Outer Pack, may be considered Interchangeable with NATO Coalition forces.

Capabilities & Characteristics:

- Accuracy: Average Mean Radius ≤ 12 inches at 600 yards
- Muzzle Velocity: 2,905 feet per second
- Chamber Pressure: 65,000 pounds per square inch
- Length: 5.45 inches
- Weight:
 - A552: 1,770 grains
 - A553: 1,770.5 grains
 - A557: 1,718 grains
- Uses M9 Links

System Integration:

- M2
- M2A1
- M3P Machine Gun

Configurations:

- **A552**: M2/ M33, Linked
- **A555**: M33, Linked
- **A557**: M33/ M17, Linked

Materiel Release: March 1985

Production Partners:

- LCAAP (Independence, MO)



Both cartridges in this configuration have API capability. The M8 API is identified by gray bullet tip. The M20 API-T cartridge is identified by red over grey bullet tip. The cartridges contain a manganese molybdenum steel core, a point filler of incendiary composition, and a lead-antimony base seal.

This configuration combines the functions of an armor piercing bullet and an incendiary bullet and is used against flammable targets and light-armored or unarmored targets, concrete shelters, and similar bullet-resisting targets. The addition of a tracer in the M20 enables the shooter to follow the projectile trajectory to make aiming corrections.

Capabilities & Characteristics:

- Length: 5.45 inches
- Weight:
 - M8: 1,784.5 grains
 - M20: 1,718 grains
- Muzzle Velocity: 2,905 feet per second
- Accuracy: Average mean radius ≤ 12 inches at 600 yards
- Chamber Pressure (average):
 - M8: 65,000 pounds per square inch (maximum)
 - M20: 60,500 pounds per square inch (maximum)
- Action Time: 4 milliseconds (maximum)
- Uses M9 Links

System Integration:

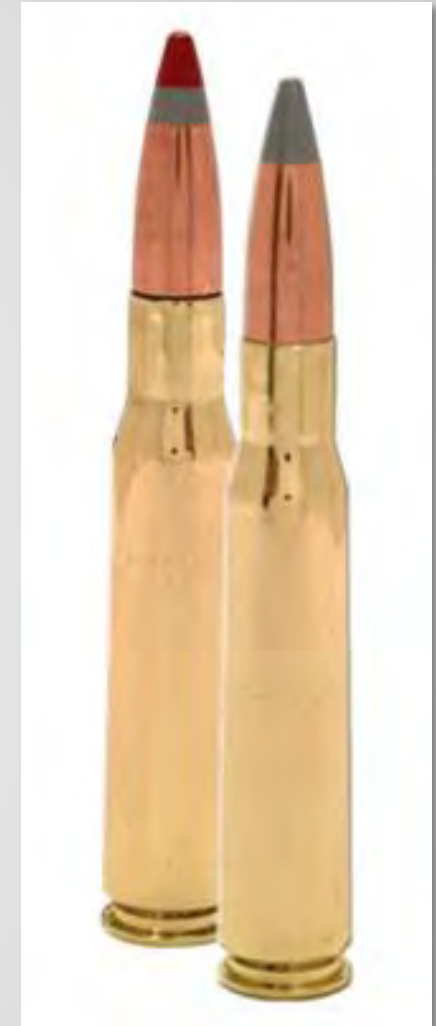
- M2A1
- M3P Machine Gun

Configurations:

- A576

Production Partners:

- LCAAP (Independence, MO)



The MK 211 API is identified by a green bullet tip with an aluminum color annulus. The MK 211 cartridge provides improved penetration performance against enemy personnel and light armor vehicles versus other .50 Cal API cartridges. The MK 211 is effective at starting fuel fires including heavy distillates, i.e. diesel fuel.

Capabilities & Characteristics:

- Designed to perforate or penetrate hardened or bullet resistant targets with after armor effects
- Used against armored personnel vehicles
- Length: 5.45 inches
- Weight: 1,765 grains
- Muzzle Velocity: 2,910 feet per second
- Accuracy: Average Mean Radius $\leq$ 6 inches at 600 yards
- Chamber Pressure (average): 65,000 pounds per square inch (maximum)
- Action Time: 4 milliseconds

.50 Caliber MK 211 Mod 0 API Cartridge

System Integration:

- M2
- M2A1
- M3P Machine Gun

Materiel Release: September 1987

Configurations:

- **A606**

Production Partners:

- LCAAP (Independence, MO)



The M20 API-T cartridge is identified by red over grey bullet tip. The cartridges contain a manganese molybdenum steel core, a point filler of incendiary composition, and a lead-antimony base seal. This configuration combines the functions of an armor piercing bullet and an incendiary bullet and is used against flammable targets and light-armored or unarmored targets, concrete shelters, and similar bullet-resisting targets. The addition of a tracer in the M20 enables the shooter to follow the projectile trajectory to make aiming corrections.

Capabilities & Characteristics:

- Length: 5.45 inches
- Weight: 1,718 grains
- Muzzle Velocity: 2,905 feet per second
- Accuracy: Average mean radius ≤ 12 inches at 600 yards
- Chamber Pressure (average): 60,500 pounds per square inch
- Action Time: 4 milliseconds (maximum)
- Uses M9 Links

System Integration:

- M2
- M2A1
- M3P Machine Gun

Configurations:

- **A541**: M20 API-T
- **A585**: M20 API-T, Linked

Production Partners:

- LCAAP (Independence, MO)



The M1A1 is the .50 Caliber training round used for simulated fire. It's primary mean of identification is the absence of bullet and a 6 fluted rosette crimp at the mouth. A purple lacquer is applied to the mouth to prevent moisture from entering the body and degrading propellant.

Capabilities & Characteristics:

- Operates with M2 MG, M19 Blank Firing Attachment (BFA)
- Weight: 940 grains
- Length: 3.91 inches (99.3 millimeters)
- Cyclic Rate: 450-600 cycles per minute
- Propellant: OBP-126 or Hi-Skor 700 X
- Uses M9 links

System Integration:

- M2
- M3P Machine Gun

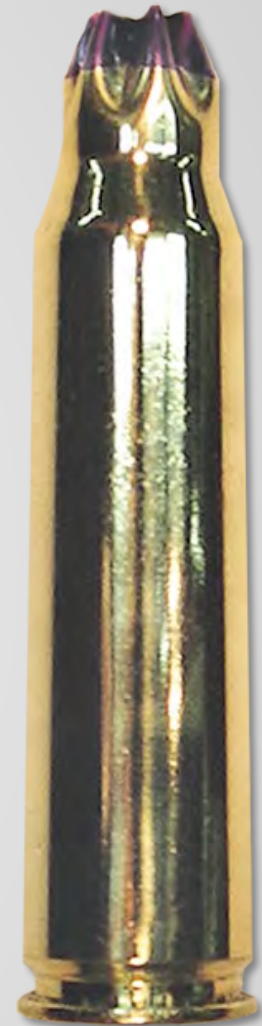
Configurations:

- **A598**

Materiel Release: August 1986

Production Partners:

- LCAAP (Independence, MO)



The .50 Caliber Short Range Training Ammunition (SRTA) cartridge is a useful tool in the instruction of the M2 Machine Gun in range restricted areas, as well as MOUT application. It has a maximum range of 500 meters allowing higher capacity of training on smaller ranges. While using the M2 in conjunction with the M3 Recoil Adapter, Caliber .50 SRTA has an accuracy match to the M33/ M17 at 150 meters making this cartridge ideal for training with the M2 both on a vehicular mount and off of a tripod.

Capabilities & Characteristics:

- Length: 5.2 inches
- Weight: 460 grains
- Muzzle Velocity: 2,790 feet per second at 78 feet from muzzle
- Cyclic Rate: 450-600 cycles per minute
- Accuracy: Average Maximum Mean Radius ≤ 35 centimeters at 150 meters
- Trace:
 - 90% minimum
 - Visible from 20-150 meters
- Chamber Pressure (average): 26,100 pounds per square inch (maximum)
- Action Time: 4 milliseconds (maximum)
- Uses M9 Links

System Integration:

- M2A1
- M3P Machine Gun with Recoil Amplifier

Configurations:

- **A602**

Matériel Release: December 1989

Production Partners:

- GDMS (Canada)



The High-Pressure Test (HPT) cartridge is intended for use in proof testing caliber .50 caliber weapons during manufacture, test or repair and other RDT&E efforts.

This demonstrates the ability of the barrel to withstand higher than normal operational pressures to assure the weapon is safe to use.

Capabilities & Characteristics:

- Length: 5.45 inches
- Weight: 2,108 grains
- Chamber Pressure: 70,000 pounds per square inch
- Action Time: 4 milliseconds (maximum)

.50 Caliber M1 HPT Cartridge

System Integration:

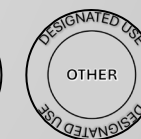
- Every new .50 caliber barrel and barrels used during RDT&E efforts

Configurations:

- **A575**

Production Partners:

- LCAAP (Independence, MO)



The MK 263 AP Cartridge is identified by a black bullet tip. It has a heavy steel core. The cartridge is used against light-armored or unarmored targets, concrete shelters, and similar bullet-resistant targets.

Capabilities & Characteristics:

- Length: 5.450 inches
- Muzzle Velocity: Must meet ballistic requirements
- Accuracy: Average mean radius up to 12 inches at 600 yards
- Chamber Pressure (average): 65,000 pounds per square inch (maximum)
- Action Time: 4 milliseconds (maximum)

System Integration:

- M107 Sniper Rifle
- M82A1/ A3 Barrett

Production Partners:

- LCAAP (Independence, MO)

Configurations:

- AA06
- AA50
- AA58



The 10 Gauge Blank cartridge is comparable to standard shotgun cartridges, but it contains no lead shot. It has a plastic cartridge case and is marked "blank" on the shell. The cartridge is designed to produce a noise when initiated and is used as a salute item in large caliber weapons. The blank is inserted either in a prepared cartridge case or in a breech block of the weapon being used. It is commonly fired in 3-inch guns, 75mm guns, 75mm howitzers, or 105mm howitzers.

Capabilities & Characteristics:

- Length: 2.88 inches (73.2 millimeters)
- Weight: 290 grains
- Propellant: OBP-124
- Propellant Weight: 8 grams

System Integration:

- 3-inch guns
- 75mm guns
- 75mm Howitzers
- 105mm Howitzers

Configurations:

- **A010**

Production Partners:

- Olin Winchester (Oxford, MS)



The 12 Gauge #00 Buckshot cartridge uses a plastic case and is loaded with smokeless powder and No. 00 commercial shot. The tube coloring has been changed from standard red to olive drab to camouflage the round. This round is commonly used for force protection and combat use in military issued shotguns.

Capabilities & Characteristics:

- Shell Length: 2.75 inches
- Velocity: 1,325 feet per second
- Propellant: Smokeless
- Weight: 12.8 grains
- Accuracy: 65% shot within a 30-inch circle at 40 yards

System Integration:

- Mossberg 590
- Remington 870
- Manual and Semi-Automatic 2.75-inch chamber military issue shotguns

Configurations:

- **A011**

Production Partners:

- Olin Winchester (Oxford, MS)



The 12 Gauge #7 1/2 Shot Cartridge is a 2.75-inch diameter round with 1 1/8 ounces of #7 1/2 shot (approximately 551 pellets, 0.094 inches in diameter). It is packed 25 cartridges to a cardboard carton; 20 cartons to a fiberboard box. The ammunition is used for training and target competitions.

Capabilities & Characteristics:

- Shell Length: 2.75 inches
- Velocity: 1,145 feet per second
- Propellant: OBP-124 Powder
- Accuracy: 70% shot within a 30-inch circle at 40 yards

System Integration:

- Mossberg 590
- Remington 870
- Manual and Semi-Automatic 2.75-inch chamber military issue shotguns
- M2A1
- M3P Machine Gun

Configurations:

- **A014**

Production Partners:

- Olin Winchester (Oxford, MS)



The 12 Gauge #9 Shot Cartridge is a 2.75-inch diameter round with 1 1/8 ounces of #9 shot (approximately 923 pellets, .079 inches in diameter). It is packed 25 cartridges in a cardboard carton, 20 cartons in a fiberboard box. The ammunition is used for training and target competition.

Capabilities & Characteristics:

- Shell Length: 2.75 inches
- Velocity: 1,145 feet per second
- Propellant: OBP-124 Powder
- Accuracy: 50% shot within a 30-inch circle at 25 yards

System Integration:

- Mossberg 590
- Remington 870
- Manual and Semi-Automatic 2.75-inch chamber military issue shotguns

Configurations:

- **A017**

Production Partners:

- Olin Winchester (Oxford, MS)



The M1030 Cartridge Breaching Round is used to counter threats located in locked/sealed buildings using active and passive countermeasures against the Soldier. Currently, there is no 12-gauge shotgun cartridge in inventory that has the capability to open a door by the destruction of the lock or hinge with a single round. This cartridge is a low-hazard, non-shrapnel-producing device that will disintegrate on impact.

Capabilities & Characteristics:

- Defeat door lock mechanisms, hinges, and padlocks on interior wooden doors
- Weight: 617 grains
- Overall Length: 62.23mm
- Diameter: 22.35mm
- Muzzle Velocity: 1,148 feet per second at 3 feet from the muzzle

System Integration:

- Mossberg 500 Shotgun
- Mossberg 590 Shotgun
- Winchester 1200 Shotgun

Configurations:

- AA54

Materiel Release: October 2007

Production Partners:

- Defence Technology Co. (DTC)
(Casper, WY)



The M855 Ball cartridge was originally designed for use in M249 Squad Automatic Weapon (SAW). Later, the M16A2 Rifle was designed to fire the M855 to achieve commonality of ammunition at a small unit level. Chamber pressures generated by the M855 and the required barrel twist make it unsuitable for use in the M16A1 Rifle. The M855's steel insert is effective against most types of fabric body armor while its three-piece construction achieves good effects against unprotected personnel targets.

Capabilities & Characteristics:

- Projectile Design: Conical steel insert and lead antimony alloy cylindrical core in a copper alloy jacket
- Projectile Mass: 62 grains
- Dispersion: Standard Deviation ≤ 6.8 inches at 600 yards

System Integration:

- M16A2 Rifle
- M4/ M4A1 Carbine
- M249 SAW

Configurations:

- **A059**: 10-round clip, military packaging
- **A062**: Linked
- **A064**: 4-M855 Ball/ 1-M856 Tracer, Linked
- Suitable Substitutes:
 - AA33: 10-round clip, commercial packaging
 - AB78: 10-round clip, bulk packaging

Materiel Release: December 1985

Production Partners:

- LCAAP (Independence, MO)



The M855 Ball cartridge was originally designed for use in M249 SAW. Because it loses mass as it travels, the M856 necessitates a 1:7 barrel twist to keep it stable in flight. The chamber pressures generated by the M856 and the required barrel twist make it unsuitable for use in the M16A1 rifle.

Capabilities & Characteristics:

- Projectile Design: Lead alloy core in a copper alloy jacket with incendiary compound fill in a hollow base
- Projectile Mass: 62 grains
- Dispersion: Standard Deviation ≤ 10.3 inches at 600 yards
- Marking: Orange Tip

System Integration:

- M16A2 Rifle
- M249 SAW

Configurations:

- **A063**: Linked
- **A064**: 4-M855 Ball/ 1-M856 Tracer, Linked

Materiel Release: March 2013

Production Partners:

- LCAAP (Independence, MO)



The M193 Ball Cartridge was designed during the original M16 Rifle development program and is suitable for use in M16A1 Rifle. It can be safely used in the M16A2 Rifle and newer weapons but will not perform at its optimal level due to the higher barrel twist rate. Like many other lead core rounds, the M193 is effective against unprotected personnel targets.

Capabilities & Characteristics:

- Projectile Design: Lead alloy core in a copper alloy jacket
- Projectile Mass: 55 grains
- Dispersion: Mean radius $\leq$ 2 inches at 300 meters (from M16A4)
- Marking: None

System Integration:

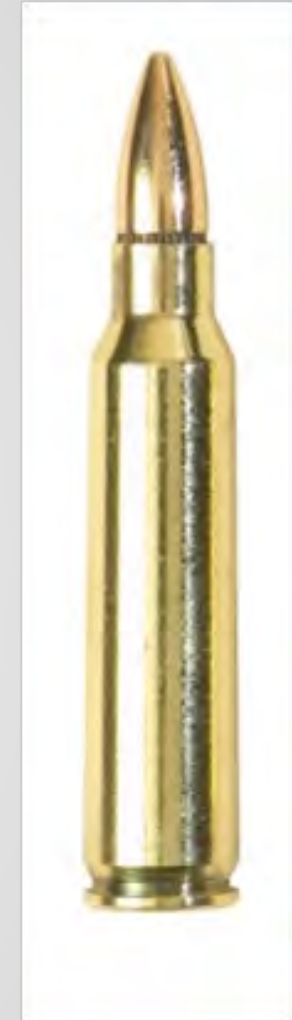
- M16A1 Rifle
- M16A2 Rifle
- M16A4 Rifle

Configurations:

- **A071**: 10-round clip
- Suitable Substitutes:
 - A066: 20-round carton

Production Partners:

- LCAAP (Independence, MO)



The M855A1 Enhanced Performance Round (EPR) Ball was designed for use in M16A2/A4, M4, M249 SAW. The chamber pressures generated by the M855A1 and the required barrel twist make it unsuitable for use in the M16A1. The M855A1's steel penetrator is effective against light armored targets while its three-piece construction maintains operational capabilities against unprotected personnel targets. The M855A1 enhances performance on hard targets/barriers and contains an improved propellant which reduces flash.

Capabilities & Characteristics:

- Projectile Design: Copper Core Steel Penetrator encapsulated in a Reverse-gilded Metal Jacket
- Projectile Mass: 62 grains
- Dispersion: Standard Deviation $\leq$ 6.8 inches at 600 yards
- Marking: Bronze tip

System Integration:

- M16A2/ A4 Rifle
- M4 Carbine
- M249 SAW

Configurations:

- **AB56**: Linked
- **AB57**: 10-round clip, military pack
- **AB73**: 4-M855A1 Ball/ 1-M856A1 Tracer, Linked
- **AB77**: Clipped, bulk pack
- Suitable Substitutes:
 - AB58: 10-round clip, commercial pack

Materiel Release: June 2010 (Engineering Change Proposal fielding)

Production Partners:

- LCAAP (Independence, MO)



M856A1 Tracer was designed as a complement to the M855A1 for use in the M249 SAW. Because it loses mass as it travels, the M856A1 necessitates a 1:7 barrel twist to keep it stable in flight. The chamber pressures generated by the M856A1 and the required barrel twist make it unsuitable for use in the M16A1.

Capabilities & Characteristics:

- Projectile Design: Copper core in copper alloy jacket with incendiary compound fill in hollow base
- Projectile Mass: 57 grains
- Dispersion: Standard Deviation: ≤ 10.3 inches at 600 yards
- Marking: Orange tip

System Integration:

- M249 SAW

Configurations:

- **AB73**: 4-M855A1 Ball/ 1-M856A1 Tracer, Linked
- **AB74**: Single round
- Suitable Substitutes:
 - AB75: 4-M995 AP/ 1-M856A1 Tracer, Linked
 - AB76: 4-M855 Ball/ 1-M856A1 Tracer, Linked

Materiel Release: April 2012
(Engineering Change Proposal fielding)

Production Partners:

- LCAAP (Independence, MO)



The M200 Blank cartridge was designed for use in all US 5.56mm weapons: M249 SAW, M16A2/A4 Rifle and M4 Carbine. It cycles the operating parts of these gas-operated weapons when used with the appropriate BFA. It also used for ceremonial purposes without a BFA by manually cycling the weapon.

Capabilities & Characteristics:

- Training use only
- Marking: Purple seal on rosette crimp

System Integration:

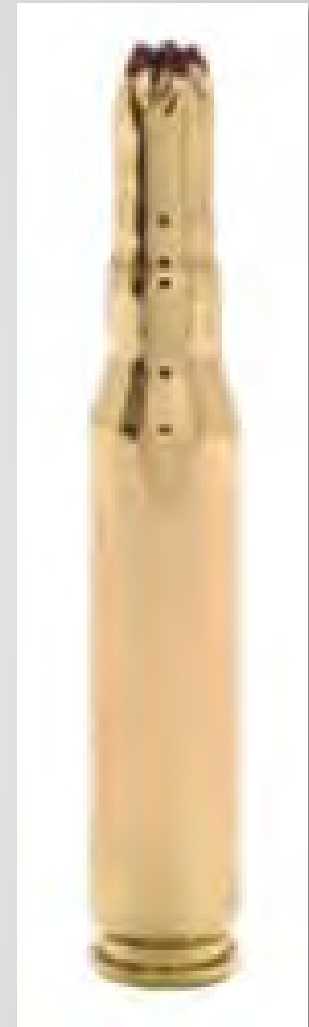
- M16A2/ A4 Rifle
- M4 Carbine
- M249 Machine Gun

Configurations:

- **A075**: Linked
- **A080**: Single round

Production Partners:

- LCAAP (Independence, MO)



The 5.56mm SRTA provides a realistic restricted range training alternative to M193/M855 service rounds. The 5.56mm SRTA has a maximum range of 250 meters with a trajectory match and round to round dispersion comparable to the service ammunition out to 25 meters and provides a functional capability when used in the M16 Rifles and M4 Carbines with the M2 Training Bolt. Because of its design, units are now able to train at nearby locations, accruing savings in terms of fuel, troop support, and billeting while increasing the opportunity to train effectively.

Capabilities & Characteristics:

- 5.56mm cartridge with plastic projectile
- Used with M2 training bolt
- Simulates standard 5.56mm ammunition out to 25 meters
- Accuracy: Average Mean Radius ≤ 0.34 inches at 25 meters
- Muzzle Velocity: 4,525 feet per second at 15 feet from muzzle
- Length: 2.03 inches
- Weight: 108 grains

System Integration:

- M16 Rifles
- M4 Carbines with M2 Training Bolt

Configurations:

- **AA68**
- Suitable Substitutes:
 - A065: 5.56mm M862 SRTA
 - AB67: 5.56mm M1037 SRTA (single round, lead-free primer)

Production Partners:

- GDMS (Canada)



The Close Combat Mission Capability Kit (CCMCK) is a user-installed weapons modification system that allows the Soldier to employ weapons at a short range for force-on-force training using low velocity marking ammunition while precluding the weapon from firing standard service ammunition.

The system provides normal environmental/weapon employment cues and immediate target feedback through force-on-force, interactive, live-fire scenario task and mission execution. Fail-safe is achieved by utilizing a 3mm offset firing pin design which will only work with the rim fire primer used in the cartridge, but not with a "live" center fire cartridge. In the event a 5.56mm "live" cartridge is chambered and the trigger is pulled, the conversion kit's offset firing pin will strike outside the primer pocket of the 5.56mm "live" round, making it impossible to initiate the primer in the "live" cartridge in the converted weapon.

Capabilities & Characteristics:

- The M4 Carbine/ M16 Rifle Conversion Adapter installs with a simple bolt exchange. It adapts the host weapon to fire unlinked 5.56mm M1042 ammunition.
- The M249 SAW Conversion Kit adapts the host weapon to fire linked 5.56mm M1071 ammunition. Incapable of firing live standard ammunition.

Capabilities & Characteristics (continued):

- Muzzle Velocity:
 - M1042: 375 feet per second (when fired from M16); 375 feet per second (when fired from M4)
 - M1071: 375 feet per second (when fired from M249)
- Weight:
 - M1042: 94.86 grains (cartridge); 6.9 grains (projectile)
 - M1071: 147.8 grains (cartridge); 6.9 grains (projectile)

System Integration:

- M16A2/ A4 Rifles
- M4 Carbine
- M249 SAW

Configurations:

- **AB09:** M1042 blue marking, single round
- **AB10:** M1042 red marking, single round
- **AB16:** M1071 blue marking, linked
- **AB17:** M1071 red marking, linked
- Suitable Substitutes:
 - AB11: M1042 yellow marking, single round
 - AB15: M1071 yellow marking, linked

Materiel Release: June 2009

Production Partners:

- Ultimate Training Munitions



The M1037 SRTA provides the capability to conduct training with a reduced Surface Danger Zone with the M16A1/A2 Rifle, M4 Carbine, and M249 SAW systems.

The M1037 will replace the M862 SRTA round and will not require weapon modification during training. (The existing M862 SRTA round was not designed for use with the M249 SAW; use of the round also required the user to replace the M16A2/M4 service bolt with the M2 training bolt.)

Capabilities & Characteristics:

- 5.56mm cartridge with copper nylon projectile
- Simulates standard 5.56mm ammunition out to 100 meters
- Height: 2.2 inches
- Weight: 33 grains (bullet)
- Muzzle Velocity: 3,848 feet per second
- Accuracy: Average Mean Radius $\leq$ 3.54 inches at 100 yards
- Penetration: None, frangible
- Chamber Pressure: 40,000 pounds per square inch
- Action Time: 1.26 milliseconds (maximum)

System Integration:

- M16A1/ A2 Rifle
- M4 Carbine
- M249 SAW

Configurations:

- **AB66**: Linked
- **AB67**: Single round

Production Partners:

- GDMS (Canada)



The 5.56mm M1037 SRTA Clipped, functions without the need of a special training bolt or modification to the weapon systems. The 5.56mm M1037 SRTA, Clipped, is used with the M16A4 Rifle and M4 Carbine.

Capabilities & Characteristics:

- Lead-free primer
- Height: 2.2 inches
- Weight: 33 grains (bullet)
- Muzzle Velocity: 3,848 feet per second
- Accuracy: Average Mean Radius $\leq$ 3.54 inches at 100 yards
- Penetration: None, frangible
- Chamber Pressure: 40,000 pounds per square inch
- Action Time: 1.26 milliseconds (maximum)

System Integration:

- M16A2/ A4 Rifles
- M4 Carbine

Configurations:

- **AC10**
- Suitable Substitutes:
 - AB66: 5.56mm M1037 SRTA, Linked (Lead Primer)

Production Partners:

- GDMS (Canada)



The M1042 Clipped Marking Cartridge (Lead-free Primer) is used in the CCMCK which is a user-installed weapons modification system that allows the Soldier to employ weapons at a short range for force-on-force training using low velocity marking ammunition while precluding the weapon from firing standard service ammunition.

The system provides normal environmental/weapon employment cues and immediate target feedback through force-on-force, interactive, live-fire scenario task and mission execution. Fail-safe is achieved by utilizing a 3mm offset firing pin design which will only work with the rim fire primer used in the cartridge, but not with a "live" center fire cartridge. In the event a 5.56mm "live" cartridge is chambered and the trigger is pulled, the conversion kit's offset firing pin will strike outside the primer pocket of the 5.56mm "live" round, making it impossible to initiate the primer in the "live" cartridge in the converted weapon.

Capabilities & Characteristics:

- The M4 Carbine/ M16 Rifle Conversion Adapter installs with a simple bolt exchange. It adapts the host weapon to fire unlinked 5.56mm M1042 ammunition.
- The M249 SAW Conversion Kit adapts the host weapon to fire linked 5.56mm M1071 ammunition. Incapable of firing live standard ammunition.

Capabilities & Characteristics (continued):

- Muzzle Velocity:
 - M1042: 375 feet per second (when fired from M16); 375 feet per second (when fired from M4)
 - M1071: 375 feet per second (when fired from M249)
- Weight:
 - M1042: 94.86 grains (cartridge); 6.9 grains (projectile)
 - M1071: 147.8 grains (cartridge); 6.9 grains (projectile)

System Integration:

- M16A2/ A4 Rifles
- M4 Carbine
- M249 SAW

Configurations:

- **AC39**: M1042 Blue Clipped Marking Cartridge (Lead-free primer)
- **AC40**: M1042 Red Clipped Marking Cartridge (Lead-free primer)

Materiel Release: June 2009

Production Partners:

- Ultimate Training Munitions



The 5.56mm Jacketed Frangible, MK 311 is required for use against soft targets, close quarter battles without collateral damage, and for training. The cartridge utilizes a frangible projectile designed to disintegrate into small fragments upon impact, minimizing over-penetration and ricochet hazards.

Capabilities & Characteristics:

- Projectile Design: Reverse drawn; copper jacket filled with a frangible copper/ polymer matrix core/ tip
- Projectile Mass: 50 grains
- Dispersion: Extreme spread ≤ 6 inches at 100 yards

System Integration:

- M4A1
- Functional across 5.56mm weapon platforms

Configurations:

- AA40

Materiel Release: August 2023 through USMC Materiel Release Process

Production Partners:

- Vista Outdoor Sales, LLC (Anoka, MN)



The Hige Pressure Test (HPT) cartridge is intended for use in proof testing caliber 5.56mm weapons during manufacture, test or repair and other RDT&E efforts.

This demonstrates the ability of the barrel to withstand higher than normal operational pressures to assure the weapon is safe to use.

Capabilities & Characteristics:

- Length: 2.280 inches
- Weight: 207 grains
- Chamber Pressure: 73,000 pounds per square inch
- Action Time: 4 milliseconds (maximum)

System Integration:

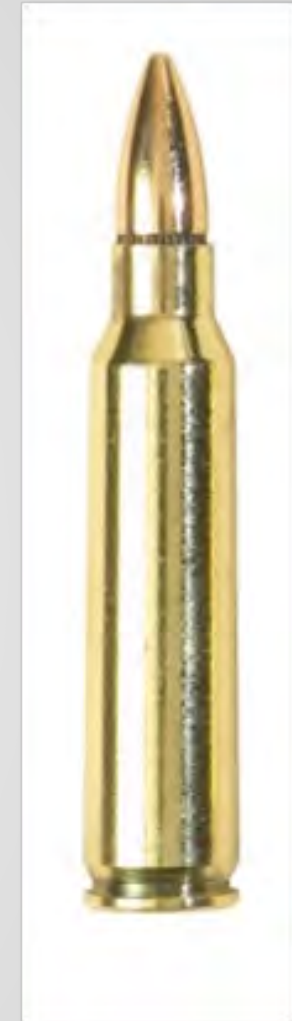
- Every new 5.56mm barrel used during RDT&E efforts

Configurations:

- **AC04**

Production Partners:

- LCAAP (Independence, MO)



Intended for training use and weapon familiarization. Cartridge case consists of brass body and steel head with no projectile.

The XM1192 cartridge requires users to change the service bolt to the training bolt and install a blank firing adapter, both of which are issued with each weapon as part of the Blank Firing Modification Kit (BFMK). The service and blank bolts will only fire their respective cartridges.

Capabilities & Characteristics:

- Height: 2.550 inches
- Weight: 204 grains

System Integration:

- XM7 with BFMK (AC82)
- XM250 with BFMK (AC83)

Configurations:

- **AC82**: Single round
- **AC83**: Linked

Materiel Release: Fiscal Year 2024, 2nd Quarter Urgent Materiel Release (projected)

Production Partners:

- DEVCOM-AC (Picatinny Arsenal, NJ)
- Sig Sauer
- Olin Winchester



The 6.8mm XM1186 GP cartridge provides advanced performance against personnel and light materiel targets.

Bullet consists of gilded metal jacket with a copper core and exposed steel penetrator. Cartridge case consists of brass body and steel head.

Capabilities & Characteristics:

- Height: 2.825 inches
- Weight: 335 grains
- Velocity: 3,159 feet per second at 78 feet
- Dispersion: ≤ 2.61 inches at 200 yards

System Integration:

- XM7 (AC84)
- XM250 (AC85)

Configurations:

- **AC84**: GP Ball
- **AC85**: GP Linked

Materiel Release: Fiscal Year 2024, 2nd Quarter Urgent Materiel Release (projected)

Production Partners:

- DEVCOM-AC (Picatinny Arsenal, NJ)
- DEVCOM-ARL
- Project Manager Soldier Lethality (PM SL)
- U.S. Army Test and Evaluation Center (ATEC)
- Sig Sauer
- LCAAP (Independence, MO)



The 6.8mm Reduced Range Ammunition (RRA) cartridge is a training cartridge for ranges with limited surface danger zone to support the NGSW System Rifle.

Bullet is solid copper. Cartridge case consists of brass body and steel head.

Capabilities & Characteristics:

- Height: 2.795 inches
- Weight: 328 grains
- Velocity: 3,135 feet per second
- Dispersion: ≤ 2.61 inches at 200 yards

System Integration:

- XM250 (AC87)
- XM7 (AC86)

Configurations:

- **AC87**: Linked
- **AC86**: Single round

Materiel Release: Fiscal Year 2024, 2nd Quarter Urgent Materiel Release (projected)

Production Partners:

- DEVCOM-AC (Picatinny Arsenal, NJ)
- Sig Sauer
- LCAAP (Independence, MO)



NGSW CCMCK is a user installed weapons modification system that allows the Soldier to employ their individual weapon (NGSW-R and NGSW-AR) at short-range using low velocity marking ammunition while precluding the weapon from firing standard service ammunition.

This round will mark with a blue color.

System Integration:

- XM7 with CCMCK

Configurations:

- **AXX5**

Materiel Release: Fiscal Year 2026, 2nd Quarter Full Materiel Release (projected)

Production Partners:

- DEVCOM-AC (Picatinny Arsenal, NJ)
- Sig Sauer



The M993 AP cartridge was designed for use in 7.62mm weapons: M24 Rifle, M14 Rifle, M240/ 240B Machine Gun. The M993 AP cartridge, marked with a black tip, is linked with Tracer and DT cartridges for machine gun use.

The projectile consists of a tungsten carbide penetrator contained in an aluminum cup and jacketed by copper clad steel. Use of a shaped tungsten core provides enhanced armor penetration and effective means of suppression, representing a key improvement versus the current 7.62mm Ball service round. It will penetrate 7 millimeters of High Hardness Armor (HHA) at 500 meters

Capabilities & Characteristics:

- Projectile Design: Tungsten-cobalt core centered by aluminum cup
- Accuracy: Average Mean Radius $\leq$ 6.0 inches at 600 yards
- Muzzle Velocity: 2,986 feet per second at 78 feet
- Action Time: 4 milliseconds (maximum)
- Height: 2.8 inches
- Weight: 362.6 grains
- Projectile Mass: 128 grains
- Berdan primer and copper alloy jacket
- Penetration: 7mm HHA at 500 meters

System Integration:

- M24 Rifle
- M14 Rifle
- M240/ B Machine Gun

Configurations:

- **AA04**: 4-M993 AP/ 1-M62 Tracer, Linked
- Suitable Substitutes:
 - AA03: Single round
 - AA34: 9-M993 AP/ 1-M276 DT, Linked
 - AA35: 4-M993 AP/ 1-M276 DT, Linked
 - AA36: 9-M993 AP/ 1-M62 Tracer, Linked

Materiel Release: October 1999

Production Partners:

- Nordic Ammunition Group (Nammo)
(Raufoss, Norway)



The M1158 is designed with Advanced Armor Piercing (ADVAP) technology which is meant to close the emerging capability gap versus relevant threats, especially for peer/ near peer engagements.

Capabilities & Characteristics:

- Provides significant defeat capabilities versus various protected, unprotected, and barrier targets

System Integration:

- M240B Machine Gun
- Also safe for use in other 7.62mm U.S. weapon systems

Configurations:

- **AC09**: 4-M1158/ 1-M62A1 Tracer, Linked
- Suitable Substitutes:
 - AC35: M1158, 10-round clip

Materiel Release: December 2019

Production Partners:

- Nordic Ammunition Group (Nammo) (Raufoss, Norway)



M80 Cartridge is for combat and training. These cartridges are for use primarily in the GAU-2B1A MG but also can be used in M240 MGs and M14 Rifles. Both copper alloy and copper alloy clad steel jackets are permissible for the M80.

Capabilities & Characteristics:

- Accuracy: Average Mean Radius ≤ 7.5 inches at 600 yards
- Muzzle Velocity: 2,750 feet per second at 78 feet from muzzle
- Action Time: 4 milliseconds (maximum)
- Height: 2.80 inches
- Weight: 392 grains

System Integration:

- GAU-2B1A Machine Gun
- M134 Machine Gun
- M240 series Machine Guns
- M14 Rifles

Configurations:

- **A164**: M80, Linked (GAU-2B1A MG, M134 MG, M240 series MG)
- **A130**: M80, clip (M14 Rifles)
- **A143**: M80, Linked (M240 MG)

Production Partners:

- LCAAP (Independence, MO)



This configuration of M80 and M62 cartridges is the primary 7.62mm combat cartridge; the A165 configuration can be used for both combat and training.

These cartridges are for use in MG Series M240 and M73. The 4-M80 Ball/ 1-M62 Trace configuration is linked 800 rounds per belt (A131) (750 rounds per belt for A165) and is packed into M19A1 cans. The A168 configuration is linked in a 9:1 ratio at 1,500 cartridges per belt.

Both copper alloy and copper alloy clad steel jackets are permissible for the M80 and M62 bullets. The tracer in the M62 enables the shooter to follow the projectile trajectory to make aiming corrections.

Capabilities & Characteristics:

- Accuracy:
 - M80: Average Mean Radius ≤ 7.5 inches at 600 yards
 - M62: Average Mean Radius ≤ 15 inches at 600 yards
- Muzzle Velocity:
 - M80: 2,750 feet per second at 78 feet
 - M62: 2,670 feet per second at 78 feet
- Action Time: 4 milliseconds (maximum)
- Height: 2.80 inches
- Weight:
 - M80: 392 grains
 - M62: 383 grains

System Integration:

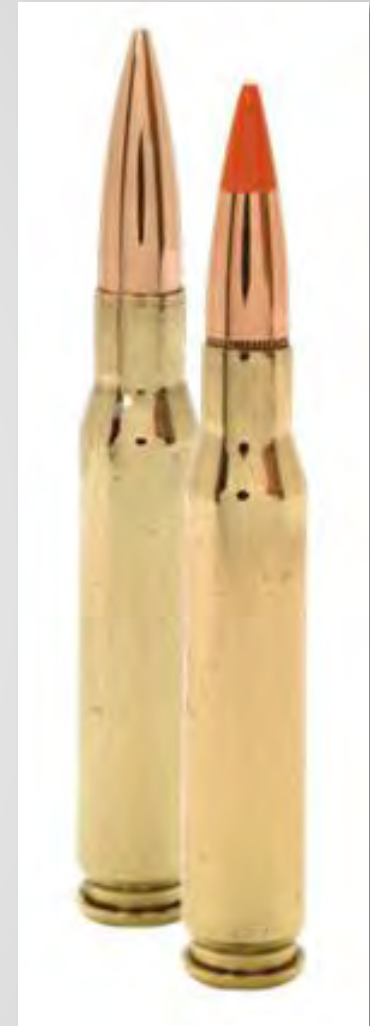
- M240 Series Machine Guns (A131, A165)
- M73 Machine Gun (A131)
- GAU-2B1A Machine Gun (A165, A168)
- M240 series Machine Guns (A165, A168)
- M134 Mini-gun (A165, A168)

Configurations:

- **A131**: 4-M80/ 1-M62, Linked, 800 rounds per belt
- **A165**: 4-M80/ 1-M62, Linked, 750 rounds per belt
- **A168**: 9-M80/ 1-M62, Linked, 1,500 rounds per belt

Production Partners:

- LCAAP (Independence, MO)



This configuration of M80 and M276 cartridges can be used for both combat and training. These cartridges are for use primarily in the GAU-2B1A MG but also can be used in M240 Series MGs. The 9:1 ratio configuration can be used in the M134 Mini-gun.

The signature produced by the M276 DT cartridge is only visible with Night Vision Goggles, significantly reducing the potential for detection of US Troops by the enemy. The cartridges are linked in 4:1 ratio at 100 cartridges per belt (A255) or in a 9:1 ratio at 750 cartridges per belt (A257).

Both copper alloy and copper alloy clad steel jackets are permissible for the M80 and M276 bullets.

Capabilities & Characteristics:

- Accuracy:
 - M80: Average Mean Radius ≤ 7.5 inches at 600 yards
 - M276: Average Mean Radius ≤ 15 inches at 600 yards
- Muzzle Velocity:
 - M80: 2,750 feet per second at 78 feet
 - M276: 2,670 feet per second at 78 feet
- Action Time: 4 milliseconds (maximum)
- Height: 2.80 inches
- Weight:
 - M80: 392 grains
 - M276: 381 grains

System Integration:

- M240 series Machine Gun (A255/ A257)
- GAU-2B1A Machine Gun (A255/ A257)
- M134 Mini-Gun (A257)
- M240 series Machine Guns (A257)

Configurations:

- **A255**: 4-M80/ 1-M276, Linked
- **A257**: 9-M80/ 1-M276, Linked

Materiel Release: May 2012

Production Partners:

- LCAAP (Independence, MO)



The 7.62mm M118 Special Ball Long Range cartridge is intended and specifically prepared for use in weapons designated as competition or sniper rifles such as M24, M110, M14 and M21 Sniper Weapon Systems. The M118 cartridge has a plain bullet tip, does not have a bullet cannelure and its case mouth is not crimped.

Capabilities & Characteristics:

- Provided improved accuracy at extended ranges
- Accuracy:
 - Average Horizontal Spread ≤ 10.3 inches at 1,000 meters
 - Average Vertical Spread ≤ 14 inches at 1,000 meters
- Muzzle Velocity: 2,575 feet per second at 78 feet
- Average Chamber Pressure: $\leq 60,000$ pounds per square inch at 70°F
- Action Time: 4 milliseconds (maximum)
- Height: 2.83 inches
- Weight: 390 grains

System Integration:

- M24
- M110
- M14
- M21 Sniper Weapon Systems

Configurations:

- AA11

Production Partners:

- LCAAP (Independence, MO)



The M80A1 is used in both combat and training. The cartridge is for use primarily in the M240, M134 Minigun, and GAU-2B/A MGs but also can be fired from the M14 Rifle. The bullet consists of copper alloy jacket with an exposed steel penetrator to improve performance against hard and soft targets. The link configuration used in machine guns consists of 100 cartridges per belt.

Capabilities & Characteristics:

- Accuracy: Average Mean Radius ≤ 7.5 inches at 600 yards
- Muzzle Velocity: 3,050 feet per second at 78 feet from muzzle
- Action Time: 4 milliseconds (maximum)
- Height: 2.80 inches
- Weight: 372 grains

System Integration:

- M240 Machine Gun
- GAU-2B1A Machine Gun

Configurations:

- **AB79**: M80A1 Ball, Linked
- **AB82**: Carton pack
- Suitable Substitutes:
 - AB80: 5-round clip
 - AB81: 750 rounds per belt, minigun



Production Partners:

- LCAAP (Independence, MO)



The M80A1 Ball/ M62 Tracer configuration can be fired from all 7.62mm Machine Gun Series weapons M240 MG family, and M73. The round can be used in both combat and training. The cartridges are linked 100 rounds per belt in a ratio of 4-M80A1/ 1-M62A1 and are packed into M19A1 cans.

The M80A1 bullet consists of copper alloy jacket with an exposed steel penetrator to improve performance against hard and soft targets. The M62A1 bullet contains a copper alloy jacket and copper slug. The tracer in the M62A1 enables the shooter to follow the projectile trajectory to make aiming corrections.

Capabilities & Characteristics:

- Accuracy: Average Mean Radius $\leq$ 6.5 inches at 600 yards
- Muzzle Velocity: 2,925 feet per second at 78 feet from muzzle
- Action Time: 4 milliseconds (maximum)
- Height: 2.80 inches
- Weight: 372 grains

System Integration:

- M240 series Machine Gun

Configurations:

- AB86

Production Partners:

- LCAAP (Independence, MO)



The M82 Blank cartridge is a training unique round, not used in combat. Used in 7.62mm rifles and machine guns with a BFA, this round is used to simulate live firing in training exercises.

Capabilities & Characteristics:

- Muzzle Flash: Visible 100 yards from weapon in darkness
- Screen Perforation: 1-inch diameter at 15 feet from muzzle
- Height: 2.595 inches
- Weight: 234.5 grains
- Uses M13 links

System Integration:

- M240 series Machine Guns

Configurations:

- **A111**

Production Partners:

- LCAAP (Independence, MO)



This configuration of M80 and M62 cartridges is training unique and used in weapons for firing over the heads of troops being trained in field exercises. These cartridges are used in M240 Series MGs and are accepted at higher performance standards to ensure the safety of personnel operating immediately below the trajectory of the fired bullets.

The cartridges are linked in a 4:1 ratio at 800 rounds per belt. The bullet consists of a copper alloy jacket with a lead antimony slug. The tracer in the M62 enables the shooter to follow the projectile trajectory to make aiming corrections.

Capabilities & Characteristics:

- Accuracy:
 - M80: Average Mean Radius ≤ 7.5 inches at 600 yards
 - M62: Average Mean Radius ≤ 9 inches at 600 yards
 - The extreme spread of each target of the sample cartridges shall not be greater than 45 inches
- Action Time: 4 milliseconds (maximum)
- Height: 2.80 inches
- Weight: 392 grains

System Integration:

- M240 series Machine Guns

Configurations:

- **A151**: 4-M80/ 1-M62, linked for overhead fire

Production Partners:

- LCAAP (Independence, MO)



M973 SRTA Ball and M974 SRTA-T cartridge consist of standard cartridge cases, propellant and special projectile.

Due to unique aerodynamic design, the projectile exhibits substantially reduced effective and maximum range while simulating short range trajectory characteristics of its service grade counterpart. The result is ballistic match of 7.62mm M80 Ball/ M62 Tracer out to 100 meters with a maximum range of 600 meters, providing realistic training alternative on restricted ranges.

These cartridges are intended for use in M240 machine guns with no ancillary hardware or adapters. The tracer produces a visual daylight out to 100 meters. The projectiles are also frangible, which minimizes damage to MOUT training facilities.

Capabilities & Characteristics:

- Ballistic match to tactical ammunition out to 100 meters
- Suitable for restricted ranges
- Does not damage MOUT training facilities
- Accuracy: Average Maximum Mead Radius $\leq 78\text{mm}$ at 100 meters
- Height: 2.625 inches
- Weight: 300 grains

System Integration:

- M240 series Machine Guns

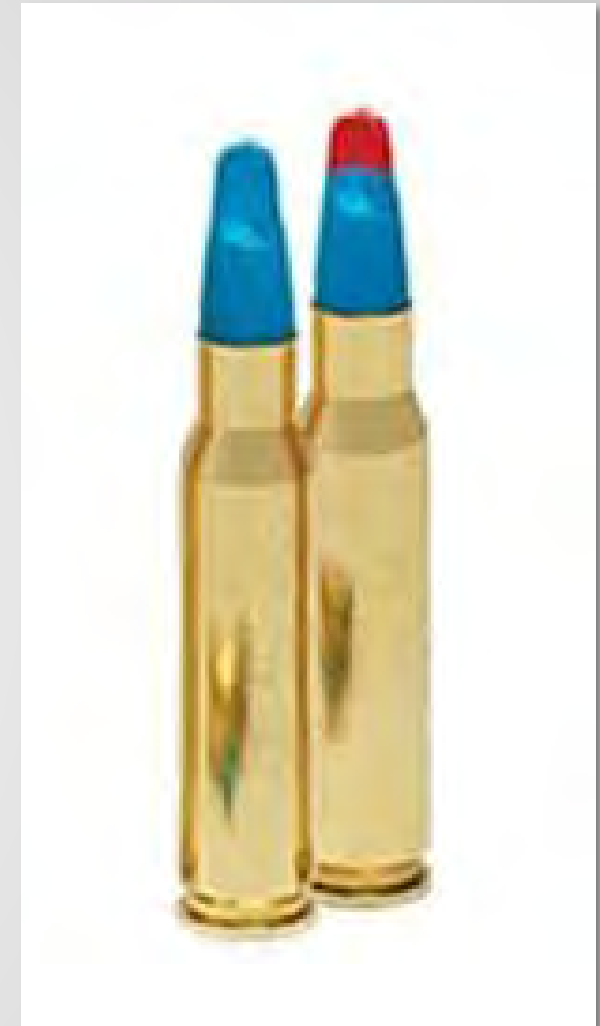
Configurations:

- AA37

Materiel Release: January 2011

Production Partners:

- GDMS (Canada)



The M82A1 blank cartridge is a training unique round, used for ceremonial applications and sniper training. The cartridge is used in the M14 rifle without a BFA.

Capabilities & Characteristics:

- Muzzle Flash: Visible 100 yards from weapon in darkness
- Screen Perforation: 1 inch diameter at 15 feet from muzzle (maximum)
- Height: 2.595 inches (maximum)
- Weight: 234.5 grains

System Integration:

- M14 Rifle

Configurations:

- **AB72**

Materiel Release: December 1985

Production Partners:

- LCAAP (Independence, MO)



The M1152 Ball Cartridge is used for training, force protection, and combat. The only difference between the two DODICs is the packaging.

The AC20 utilizes military-grade packaging that allows it to be transported to troops overseas. The AC22 utilizes commercial packaging and can be shipped only within CONUS.

Capabilities & Characteristics:

- Cartridge Length: 1.130 inches
- Powder: WPR-289
- Powder Weight: 6.0 grains
- Bullet Weight: 115 grains
- Bullet Length: 0.610 inches
- Bullet Velocity: 1,300 feet per second measured at 15 feet
- Accuracy: Average maximum mean radius ≤ 1.1 inches at 50 meters

System Integration:

- M17 Pistol
- M18 Pistol

Configurations:

- **AC20**: Military pack
- **AC22**: Commercial pack
- Suitable Substitutes:
 - A363: 9mm M882 Ball
 - AA49: 9mm M882 Ball (commercial pack)
 - AC22: 9mm M1152 Ball (commercial pack)

Materiel Release: June 2019

Production Partners:

- Olin Winchester (Alton, IL)



The M1153 Special Purpose (SP) Cartridge, designed for the Modular Handgun System (MHS), is required for use in situations where high lethality and limited target over-penetration are necessary to meet mission profile. Ammunition is designed to expand and incapacitate more effectively than issued ball ammunition.

Capabilities & Characteristics:

- Cartridge Overall Length: 1.130 inches
- Powder: SMP226
- Powder Weight: 5.0 grains (average)
- Bullet Weight: 147 grains
- Bullet Length: 0.659 inches
- Velocity: 990 feet per second at 16.4 yards
- Accuracy: Average maximum mean radius ≤ 1.1 inches at 50 meters

System Integration:

- M17 Pistol
- M18 Pistol
- 9mm ACP9K Submachine Gun

Configurations:

- **AC23**: Commercial pack
- **AC21**: Military pack

Matériel Release: June 2019

Production Partners:

- MHS Contractor: Sign Sauer
- M1153 Manufacturer: Olin-Winchester (Oxford, MS)



Dummy, Drill, and Inert (DDI) Modular Handgun System (MHS) cartridges are used for weapons training and maintenance. The cartridges are nickel plated and drilled to separate appearance from live and blank ammunition.

Capabilities & Characteristics:

- Brass cartridge cases, copper bullets, nickel plated
- No energetic or stored energy
- The 9mm has two holes
- Primer cavity chamfered; no primer inserted

System Integration:

- M17 Pistol
- M18 Pistol

Configurations:

- **AC24**

Materiel Release: June 2019

Production Partners:

- Olin Winchester (Oxford, MS)



Close Combat Mission Capability Kit (CCMCK) is a user installed weapons modification system that allows the soldier to employ weapons at a short range for force-on-force training using low velocity marking ammunition while precluding the weapon from firing standard service ammunition. The system will provide normal environmental/weapon employment cues and immediate target feedback through force-on-force, interactive live fire scenario task, and mission execution.

The 9mm conversion kit utilizes a smaller bore diameter and chamber shape to preclude the weapon from firing a combat cartridge. Live round lockout is achieved by using a chamber design that has insufficient head space for the weapon's standard caliber "live" round to fully chamber.

Capabilities & Characteristics:

- The M9 and M11 Pistol Adaptors are designed for firing 9mm M1041 cartridges
- Incapable of firing live standard ammunition
- Dispersion: ≤ 4 inches at 39 feet from muzzle

System Integration:

- M9 Pistol
- M11 Pistol
- M4 Pistol (AC37)

Configurations:

- **AC36**: M1041 blue marking
- **AB37**: M1041 red marking
- **AC37**: M1041 red marking (lead free primer)
- Suitable Substitutes:
 - AB13: 9mm M1040 Marking (Blue)
 - AB14: 9mm M1040 Marking (Red)

Materiel Release: June 2009

Production Partners:

- GDMS (Canada)



**Mimics the sound of the 9mm M1153
Special Purpose to familiarize MWDs
during training to the sound of gun fire.
Used in soldier training.**

Capabilities & Characteristics:

- Requires use of the MHS Blank Firing Kit

System Integration:

- M17 Pistol
- M18 Pistol

Configurations:

- **AC60**

Materiel Release: February 2024

Production Partners:

- UTM (Sub-vendor to Olin Winchester)



The M882 Ball Cartridge is used for training, force protection, and combat and is compatible with all NATO 9mm weapons. The only difference between the two DODICs is the packaging.

The A363 utilizes military-grade packaging that allows it to be transported to troops overseas. The AA49 utilizes commercial packaging and can be shipped only within CONUS.

Capabilities & Characteristics:

- Cartridge Length: 1.165 inches
- Powder: WPR-289
- Powder Weight: 6.0 grains
- Bullet Weight: 124 grains
- Bullet Length: 0.610 inches
- Velocity: 1,260 feet per second at 16.4 yards
- Accuracy: Average maximum mean radius ≤ 1.5 inches at 50 meters

System Integration:

- M9 Pistol
- M11 Pistol

Configurations:

- **A363**: Military pack
- **AA49**: Commercial pack
- Suitable Substitutes:
 - AC20: 9mm M1152 Ball (military pack)
 - AC22: 9mm M1152 Ball (commercial pack)

Materiel Release: January 1987

Production Partners:

- Olin Winchester (Oxford, MS)



The 9mm Jacketed Hollow Point (JHP) cartridge is required for use in situations where high lethality and limited over-penetration of target are necessary to meet mission profile. This ammunition is critical for providing enforcement agents with means to rapidly incapacitate dangerous criminals in situations warranting the use of deadly force. The ammunition is designed to expand and incapacitate more effectively than presently issued ball ammunition. It also reduces risk of injury to innocent bystanders from over penetration of target.

Capabilities & Characteristics:

- Increased lethality, reduced over penetration of personnel targets, restricted to Law Enforcement use (Hollow Point ammunition banned by International Treaties for Military Conflict)
- 147 grain JHP ammunition
- 25 percent lower velocity than M882 Ball
- All U.S. Army stocks placed in ammunition condition code B (restricting use to U.S. Army law enforcement in CONUS, Hawaii, Alaska, and the U.S. Territories)

System Integration:

- M9 Pistol
- MP5N Submachine Gun

Configurations:

- **A260**

Materiel Release: April 2006

Production Partners:

- M1153 Manufacturer: Olin-Winchester (Oxford, MS)



MK 254 Mod Frangible Cartridge is used for pistol training. The frangible nature allows the user to train with little risk of collateral damage to surrounding structures like a shoot house.

Capabilities & Characteristics:

- Cartridge Length: 1.130 inches
- Powder: WPR-289
- Powder Weight: 6.07 grains
- Bullet Weight: 90 grains
- Bullet Length: 0.610 inches
- Bullet Velocity: 1,300 feet per second measured at 15 feet
- Bullet Accuracy: Average maximum mean radius ≤ 1.1 inches at 50 meters

System Integration:

- M9 Pistol
- M11 Pistol
- M18 Pistol
- Glock 19
- Glock 26
- APC9K
- MP5

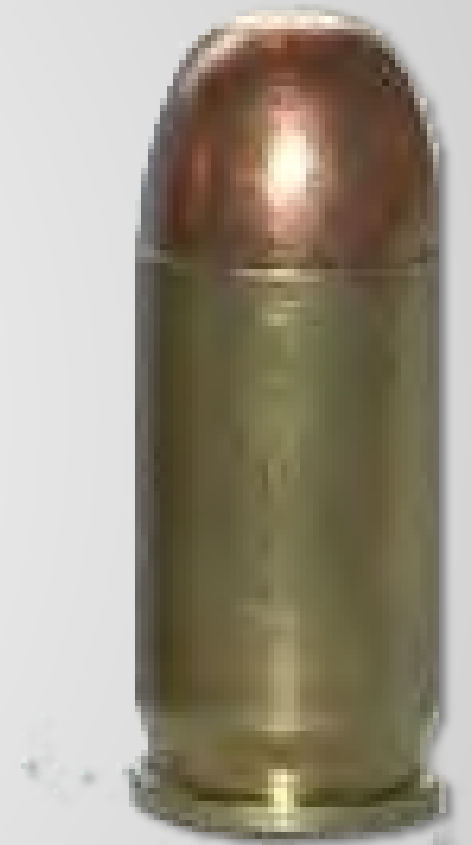
Configurations:

- **AA16**

Materiel Release: April 2003

Production Partners:

- Olin Winchester (Oxford, MS)



The M940 Multipurpose Tracer - Self Destruct (MPT-SD) cartridge has a delayed reaction after impact that results in large fragments and incendiary effects inside a threat. Enhanced projectile contains tungsten penetrators to increase lethality.

The traced projectile has a self-destruct capability that minimizes collateral surface damage from engagement of airborne threats. The M940 cartridge was originally developed for the U.S. Army's extinct Vulcan Air Defense System (VADS). The M940 was resurrected by the U.S. Army Counter-Rocket, Artillery, and Mortar (C-RAM) program. The M940 is employed against rockets, artillery shells, and mortar rounds.

Capabilities & Characteristics:

- Originally designed to defeat aircraft at ranges up to 2,000 meters
- Land-based Phalanx Weapon System (C-RAM) to employ M940 against rockets, artillery shells, and mortar rounds
- Tracer, Multi-purpose cartridge with self-destruct
- Pyrotechnic initiated explosive (PIE)
- Steel projectile body filled with HE and incendiary mix
- Overall Cartridge Length: 156.6mm
- Propellant Type: WC 866
- Primer: M52A3B1 Electric
- Effective Range: 2,000 meters
- Length: 156.6mm

System Integration:

- Land-based Phalanx Weapon System with M61A Gatling Gun

Configurations:

- **AB07**
- **AC34**: with MK 7 Link
- Suitable Substitutes:
 - AC18: 20mm M55A2 TP w/ MK 7 Link

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The M55A2 Target Practice (TP) with MK7 Link cartridge is ballistically matched to the M56 HEI cartridge. The C-RAM platform has ability to adjust ballistics to utilize the M55A2 as a training cartridge in lieu of the M940 tactical cartridge.

Capabilities & Characteristics:

- Effective Range: 2,000 meters
- Length: 168mm
- Velocity: 1,030 meters per second
- Primer: Electric
- MK 7 Link

System Integration:

- Land-based Phalanx Weapon System with M61A Gatling Gun

Configurations:

- **AC18**
- Suitable Substitutes:
 - AB07: 20mm M940/ MK 7 MP-T-SD, Linked
 - AC18: 20mm M55A2 TP w/MK 7 Link

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The 20mm Projectile Gun Unit (PGU)-series Semi-Armor Piercing High Explosive Incendiary (SAPHEI) munitions are an improvement over M50 series cartridges. The projectiles in this family have an optimized aeroballistics shape that reduces time of flight and increases velocity at range for increased probability of hit. The PGU-28 A/B is used in both air-to-air and air-to-ground applications due to its armor penetrating capability.

Capabilities & Characteristics:

- Effective against soft and light armored targets
- Penetration: Probable ballistic limit of 2,786 feet per second against 0.375-inch armor at 0°
- Overall Length: 168mm
- Propellant: WC 868 Ball Powder
- Primer: M52A3B1 Electric
- Incendiary:
 - Nose: RS 41
 - Body: RS 40
- Body Explosive: Composition A4
- Muzzle Velocity: 3,410 feet per second
- Case Mouth Pressure: 61,500 pounds per square inch
- Action Time: 4.0 milliseconds
- Accuracy: Average mean radius = 15 inches at 500 yards

System Integration:

- M61 series aircraft gun systems (linked and link-less)
- M197 series aircraft gun systems (linked and link-less)

Configurations:

- AA23: Linked
- AA22: Single round

Production Partners:

- GD-OTS (St. Petersburg, FL)
- OATK (Minneapolis, MN)



The 20mm PGU-series munitions are an improvement over M50 series cartridges. The projectiles in this family have an optimized aeroballistics shape that reduces time of flight and increases velocity at range for increased probability of hit. PGU-27A/B TP is the cost-effective training cartridge that is ballistically matched to the PGU-28 A/B.

Capabilities & Characteristics:

- PGU-27 A/B used as training cartridge for PGU-28 A/B SAPHEI round
- Overall Length: 6.615 inches
- Propellant: WC 868 Ball Powder
- Primer: M52A3B1 Electric
- Type classified and fielded in F14, F15, F16, F/A-18, and AH-1 aircraft
- Muzzle Velocity: 3,410 feet per second
- Case Mouth Pressure: 61,500 pounds per square inch (maximum)
- Action Time: 4.0 milliseconds
- Accuracy: Average mean radius = 15 inches at 500 yards

System Integration:

- 20mm x 102mm Gun Systems

Configurations:

- AA24: PGU-27A/B, Single round
- AA25: PGU-27A/B, Linked
- AA27: PGU-27A/B TP/ PGU-30A/B TP-T, Linked

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The round was developed for the improved MK 15 Phalanx Block 1B and is designed for use only in the Optimized Gun Barrels (OGB). The MK 244 Armor Piercing Discarding Sabot-Enhanced Lethality Cartridge (APDS-EHC) uses an optimized tungsten penetrator that produces a higher kinetic energy on target, extending the effective range against high-speed anti-ship missile threats as well as surface threats. The round is currently being fielded by the U.S. Navy and is available for international Navies upgrading to the MK 15 Block 1B Phalanx.

Capabilities & Characteristics:

- The MK 44 projectile dispersion is 40% less than MK 149, producing lower CEP with increased probability of hit
- Overall Length: 6.615 inches (168mm) (maximum)
- Cartridge Weight: ~4,640 grains
- Projectile Weight: ~1,950 grains
- Propellant Weight: ~815 grains
- Propellant Type: Double Base Ball/ OBP-888
- Cartridge Case Material: Brass
- Primer: M52A3B1 Electric
- Muzzle Velocity: 3,610 feet per second at 78 feet from muzzle
- Chamber Pressure: $\leq 61,400$ pounds per square inch (ambient)
- Dispersion: Average mean radius ≤ 0.75 milliradians at 78 feet
- MK 7 Link

System Integration:

- All 20mm x 102mm gun systems
- MK 15 Phalanx Block 1B (OGB)

Configurations:

- AA61

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The M792 High Explosive Incendiary with Tracer HEI-T cartridge was developed as part of the original Bradley Fighting Vehicle System (BFVS) to engage enemy personnel, lightly armored vehicles to include Soviet type personnel carriers, weapon emplacements, and to conduct reconnaissance by fire. It is fired from M242 auto gun mounted on US Army M2/M3 BFVS or US Marine Corps Light Armored Vehicle (LAV)-25

Capabilities & Characteristics:

- Effective against personnel
- Effective against light structures
- Effective against light vehicles
- Typical Dispersion: 0.50 mils x 0.50 mils
- Muzzle Velocity: 1,100 meters per second
- Chamber Pressure: 496 MegaPascals (maximum)
- Self-destructs at 6.2 seconds

System Integration:

- M242, KBA, M811, GAU-12A Cannons
- Mounted on U.S. Army BFV and USMC LAV-25

Configurations:

- **A975**

Matériel Release: March 1989

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The 25mm M919 Armor Piercing, Fin Stabilized, Discarding Sabot- Training (APFSDS-T) cartridge was developed to counter the growing light armor vehicle threat. It is the primary medium caliber service round for armor piercing for the US Army and provides a significant increase in lethality compared to the 25mm M791 APDS-T cartridge.

It is used in M242 automatic cannon which is turret mounted on M2 or M3 Bradley Fighting Vehicles and the USMC LAV-25. The cartridge has a steel case crimped to a projectile assembly. The projectile assembly consists of a depleted-uranium penetrator, steel fin, nylon obturator, aluminum wind screen, aluminum sabot, plastic nose cap, and tracer pellets. The steel cartridge case contains a percussion primer, flash tube, and propellant.

Capabilities & Characteristics:

- Enhances overall performance and survivability of Bradley Fighting Vehicle System
- Provides capability against known light armor systems

System Integration:

- M242 cannon mounted on the Army Bradley Fighting Vehicle
- USMC LAV-25

Configurations:

- **A986**
- Suitable Substitutes:
 - A974: 25mm APDS-T M791, Linked

Material Release: June 2001

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



25mm M910 Target Practice Discarding Sabot with Trace (TPDS-T) was developed as a low-cost range limited target practice cartridge to simulate the M791. It also is used to simulate the M919. It is fired from M242 auto gun mounted on US Army M2/M3 BFVS or the USMC LAV-25.

Capabilities & Characteristics:

- Simulates the M791 and M919 cartridges
- Typical Dispersion: 0.40 mils x 0.40 mils
- Muzzle Velocity: 1,520 meters per second
- Trace Time: 2.0 seconds (minimum)
- Time of Flight: 1.90 seconds to 2,000-meter target

System Integration:

- M242, KBA, M811, GAU-12A Cannons
- Mounted on USAF AC-130 Gunship or USMC AV-8B Harrier

Configurations:

- **A940**
- Suitable Substitutes:
 - A974: 25mm M791 APDS-T, Linked

Materiel Release: December 1990

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The 25mm M793 TP-T cartridge was developed as part of original BFVS as a low-cost target practice cartridge to simulate the M792. It is fired from M242 auto gun mounted on US Army M2/ M3 BFVS, USMC LAV-25, or the MK38 Weapon Station aboard Navy ships.

Capabilities & Characteristics:

- Simulates the ballistic trajectories of M792 and MK 210
- Typical Dispersion: .50 mils x .50 mils
- Muzzle Velocity: 1,100 meters per second
- Chamber Pressure: 496 MegaPascals (maximum)
- Trace Time: 3.5 seconds (minimum)
- Time of Flight: 3.6 seconds to 2,000-meter target
- The M793 is NATO certified per STANAG 4173 (NATO design AC/255-161A)

System Integration:

- M242, KBA, M811, GAU-12A Cannons
- Mounted on USAF AC-130 Gunship or USMC AV-8B Harrier

Configurations:

- **A976**
- Suitable Substitutes:
 - A975: 25mm M792 HEI-T, Linked

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



25mm DDI M794 cartridge is used for training of proper handling and loading of ammunition and for non-firing system training and checkout of the 25mm Cannons

Capabilities & Characteristics:

- Inert training device
- Simulates size, shape, and mass of M792, MK 210, PGU-23, PGU-25, and PGU-32 cartridges

System Integration:

- M242, KBA, M811, GAU-12A Cannons
- Mounted on USAF AC-130 Gunship or USMC AV-8B Harrier

Configurations:

- **A967**

Material Release: June 2010
(Engineering Change Proposal fielding)

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The 25mm PGU-23/U TP is a low cost, untraced target practice cartridge that is ballistically matched to the PGU-25/U High Explosive Incendiary cartridge and the PGU-32/U SAPHEI-T cartridge.

Capabilities & Characteristics:

- Target practice round used to simulate PGU-25/U and PGU-32/U
- Cartridge Weight: 499 grams
- Overall Length: 8.63 inches
- Cartridge Case: Steel
- Propellant: WC 890 Ball Powder
- Primer: M115 Percussion with IB-52 Booster Pellet
- Muzzle Velocity: 1,100 meters per second
- Dispersion: 0.77 mils x 0.77 mils

System Integration:

- M242, KBA, M811, GAU-12A Cannons
- Mounted on USAF AC-130 Gunship or USMC AV-8B Harrier

Configurations:

- A978

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The PGU-25/U and PGU-25A/U High Explosive Incendiary (HEI) cartridges were designed to provide aerial gun platforms capability with effectiveness against aircraft and light materiel targets.

Capabilities & Characteristics:

- Effective against aircraft and light materiel targets
- Cartridge Weight: 499 grams
- Overall Length: 8.63 inches
- Fuze: M505 PD
- Cartridge Case: Steel
- Propellant: WC 890 Ball Powder
- Primer: M115 Percussion with IB-52 Booster Pellet
- Muzzle Velocity: 1,100 meters per second
- Dispersion: 0.77 mils x 0.77 mils

System Integration:

- M242, KBA, M811, GAU-12A Cannons
- Mounted on USAF AC-130 Gunship or USMC AV-8B Harrier

Configurations:

- A982

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The PGU 32/U Semi-Armor Piercing (SAP)HEI-T cartridge was designed to provide aerial and surface gun platforms with improved effectiveness against soft and light armored targets. It incorporates the basic multipurpose technology providing inherent detonation delay, improved graze sensitivity, and light armor capability.

Capabilities & Characteristics:

- Effective against light structures
- Effective against light vehicles
- Provides improved effectiveness against soft and light armored targets
- Ballistic match to PGU-20/U API, PGU-33/TPF-T, and conventional 25mm ammunition
- Muzzle Velocity: 1,100 meters per second
- Chamber Pressure: 425 MegaPascals

System Integration:

- M242, KBA, M811, GAU-12A Cannons
- Mounted on USAF AC-130 Gunship or USMC AV-8B Harrier

Configurations:

- A990

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The 30mm MK 238 HEI-T single cartridge was fielded in support of the Stryker Lethality ONS. The MK 238 utilizes the M758 Low Drag (LD) Point Initiating, Base Detonating (PIBD) fuze which has a self-destruct feature.

Capabilities & Characteristics:

- Effective Range: 1,800 meters
- Length: 290mm
- Weight: 670 grams
- Rate of Fire: 200 shots per minute

System Integration:

- XM914 Weapon System Platforms
 - Mobile Low, Slow Unmanned Aerial Vehicle Integrated Defense System (MLIDS) Vehicles
 - Mobile Short-Range Air Defense (M-SHORAD) Vehicles
 - USMC Marine Air Defense Integrated System (MADIS) Vehicles

Configurations:

- AC27
- AB01 (USN linked configuration)
- Suitable Substitutes:
 - AC47: 30mm MK 310 PABM-T
 - AC73: 30mm XM1182 HEAB-T

Materiel Release:

- Initial Urgent Materiel Release: Fiscal Year 2021, 3rd Quarter
- Follow-on Urgent Materiel Release: April 2024

Production Partners:

- NGDS (Plymouth, MN)



The XM1198 High Explosive Dual Purpose-Self-Destruct (HEDP-SD) cartridge is being fielded as an UMR in support of a JUONS for C-UAS capabilities, as well as a direct fire munition against personnel and light armored targets. The XM1198 HEDP-SD cartridge consists of a percussion primer, aluminum cartridge case, a modified M759 fuze that has a self-destruct feature, a steel warhead encased with PBXN-5 explosive, and a shape charge liner. The XM1198 HEDP-SD cartridges are linked and used by the XM914 Weapon System.

Capabilities & Characteristics:

- Effective against personnel and light armor
- Can be employed against UAS
- Muzzle Velocity: 805 meters per second
- Utilizes modified M759 PD Fuze with a self destruct feature and spin-compensated shape charge liner
- Primer: Percussion
- Packaging: Linked

System Integration:

- XM914 Weapon System Platforms
 - MLIDS Vehicles
 - M-SHORAD Vehicles
 - USMC MADIS Vehicles

Configurations:

- AC55

Materiel Release:

- Initial Urgent Materiel Release:
Fiscal Year 2021, 3rd Quarter
- Follow-on Urgent Materiel Release:
April 2024

Production Partners:

- NGDS (Plymouth, MN)



The XM1182 High Explosive Air Burst – Trace (HEAB-T) provides increased lethality against personnel in the open, counter defilade, anti-tank guided missile teams and troops in urban structures.

Capabilities & Characteristics:

- Effective Range: 2,000 meters
- Cartridge Case: USAF Drawing 200610319
- Propellant: AFP-001
- Primer: USAF Drawing 200610332
- Packed in M529 container: 32 cartridges per container

System Integration:

- Stryker Infantry Carrier Vehicle Double V Hull (ICVVA1) equipped with 30mm XM813 Weapon System

Configurations:

- **AC73**
- Suitable Substitutes:
 - AC47:
 - AC27:

Production Partners:

- NGDS (Plymouth, MN)



The 30mm XM1170 APFSDS-T ammunition is a 30x173mm kinetic energy round with a live percussion primer, flashtube assembly, and high-performance propellant. The projectile consists of a depleted uranium (DU) penetrator housed in a sabot with a rotating band, a fin assembly with tracer material, and an aluminum nose tip. It provides increased lethal overmatch against near-peer light-armored vehicles.

Capabilities & Characteristics:

- Effective Range: 2,000 meters
- Cartridge Case: Steel
- Penetrator: DU
- Propellant: WC891
- Primer: FA-956
- Packed in M529 container: 32 cartridges per container

System Integration:

- ICVVA1 equipped with 30mm XM813 Weapon System

Configurations:

- **AC78**
- Suitable Substitutes:
 - AC26:

Materiel Release: Fiscal Year 2027, 4th Quarter (projected)

Production Partners:

- GD-OTS (Marion, IL)



The MK258 MOD 1 APFSDS-T cartridge is a tactical, anti-materiel cartridge used to defeat armored threats. It utilizes a tungsten nickel cobalt penetrator which is held in place by aluminum sabot pedals prior to firing. The MK 258 Mod 1 APFSDS-T was fielded as an UMR to the Army 2nd Cavalry Regiment in response to an ONS for increased lethality on Stryker Brigade Combat Vehicles. The USN also uses this cartridge (AB51) on ships, but that configuration does not belong to the PM MAS portfolio.

Capabilities & Characteristics:

- Overall Length: 281mm
- Cartridge Case: Steel
- Cartridge Mass: 706 grams
- Range: 2,000 meters (maximum)
- Case Mouth Pressure: 345 MegaPascals
- Muzzle Velocity: 1,430 meters per second
- Accuracy: 0.4 mils x 0.4 mils at 1,000 meters
- Penetrator: Tungsten nickel cobalt
- Packaging: Link-less (AC26), Linked (AB51 MK 258 Mod 0)
- Platform: Army Up-gunned Strykers

System Integration:

- ICVVA1 equipped with 30mm XM813 or MK 44 Bushmaster Chain Gun

Configurations:

- AC26: MK 258 Mod 1, Link-less
- AB51: MK 258 Mod 0, Linked (USN configuration)

Materiel Release: July 2018 (Urgent Materiel Release)

Production Partners:

- GD-OTS (Marion, IL)



The 30mm MK 310 Mod 0 Programmable Air Burst with Trace (PABM-T) single cartridge was fielded in support of the Stryker Lethality ONS. The MK 310 Mod 0 cartridge consists of a steel projectile filled with PBXN-5 HEI mix, and a programmable, inductively set fuze.

Capabilities & Characteristics:

- Effective Range: 2,000 meters
- Length: 168mm
- Velocity: 1,030 meters per second

System Integration:

- ICVVA1 equipped with 30mm XM813 Weapon System

Configurations:

- **AC47**
- Suitable Substitutes:
 - AC73: 30mm XM1182 HEAB-T
 - AC27: 30mm MK 238 HEI-T

Production Partners:

- NGDS (Plymouth, MN)



The XM1173 TP-T cartridge is a ballistically-matched cartridge for the XM1182 HEAB-T cartridge.

Capabilities & Characteristics:

- Effective Range: 2,000 meters
- Cartridge Case: USAF Drawing 200610319
- Propellant: AFP-001
- Primer: USAF Drawing 200610332
- Packed in M529 container: 32 cartridges per container

System Integration:

- ICVVA1 equipped with 30mm XM813 Weapon System

Configurations:

- **AC72**
- Suitable Substitutes:
 - AC25:

Production Partners:

- NGDS (Plymouth, MN)



The XM1172 TPDS-T is a trainer cartridge and provides training capability that is ballistically matched to the tactical XM1170 APFSDS-T cartridge.

Capabilities & Characteristics:

- Ballistic match to XM1170 APFSDS-T
- Cartridge Case: Steel
- Projectile Core: Steel
- Propellant: WC891
- Primer: FA-956
- Packed in M529 container: 32 cartridges per container

System Integration:

- ICVVA1 equipped with 30mm XM813

Configurations:

- **AC79**
- Suitable Substitutes:
 - AC28:

Material Release: Fiscal Year 2027, 2nd Quarter (projected)

Production Partners:

- GD-OTS (Marion, IL)



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

The M788 TP cartridge was developed as part of the Apache Attack Helicopter System as a low-cost target practice cartridge to simulate the M789 HEDP cartridge. It is the only training round qualified for use by the US Forces in the M230 Chain Gun.

The M230 Chain Gun is mounted on the AH-64 Apache and Army Special Operations Forces Blackhawk Helicopters. The M788 cartridge consists of a steel projectile body and an aluminum nose. The projectile is mated to the cartridge case assembly which is composed of an aluminum case, PA520 electric primer, flash tube assembly and propellant.

Capabilities & Characteristics:

- Lightweight 30mm TP
- Simulates ballistic trajectory of the M789 HEDP cartridge
- Muzzle Velocity: 805 meters per second
- Case Mouth Pressure: 430 MegaPascals (maximum) (elevated temperature mean peak pressure)

System Integration:

- M230 Chain Gun mounted on AH-64 Apache Helicopter and Blackhawk Helicopter

Configurations:

- **B118**

Materiel Release: October 1995

Production Partners:

- GD-OTS (St. Petersburg, FL)
- NGDS (Plymouth, MN)



30mm M789 High Explosive Dual-Purpose (HEDP) was developed as part of the Apache Attack Helicopter System. The only tactical round qualified for use by US forces in the M230 Chain Gun.

The M230 Chain Gun is mounted on the AH-64 Apache Helicopter and Army Special Operations Forces Blackhawk helicopter. The M789 cartridge consists of a hollow steel projectile body containing high explosive and a spin compensated copper shaped charge liner. The projectile body is mated to a M759 point detonating fuze. The cartridge case assembly is composed of an aluminum case, PA520 electric primer, flash tube assembly and propellant. The M789 cartridge provides both armor-piercing capability and fragmentation for use against armored targets and troops, respectively.

Capabilities & Characteristics:

- Effective against personnel
- Effective against light armor
- Muzzle Velocity: 805 meters per second
- Case Mouth Pressure: 430 MegaPascals (maximum) (elevated temperature mean peak pressure)
- Utilizes M759 PD fuze and Spin Compensated Shape Charge Liner

System Integration:

- M230 Chain Gun mounted on AH-64 Apache Helicopter and Blackhawk Helicopter

Configurations:

- **B129**

Matériel Release: October 1996

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The XM950 TP cartridge is a low-cost training cartridge that is a ballistic match to the XM1198 HEDP-SD cartridge. The XM950 TP is being fielded as an UMR in support of a JUONS for c-UAS capabilities, as the primary training cartridge. The XM950 cartridge consists of a percussion primer, a steel projectile, and an aluminum cartridge case. XM950 TP cartridges are linked and used by the XM914 Weapon System.

Capabilities & Characteristics:

- Ballistic match to the XM1198 HEDP-SD cartridge
- Muzzle Velocity: 805 meters per second
- Primer: Percussion
- Packaging: Linked

System Integration:

- XM914 Weapon System Platforms
 - MLIDS Vehicles
 - M-SHORAD Vehicles
 - USMC MADIS Vehicles

Configurations:

- **B139**

Materiel Release:

- Initial Urgent Materiel Release:
Fiscal Year 2021, 3rd Quarter
- Follow-on Urgent Materiel Release:
April 2024

Production Partners:

- NGDS (Plymouth, MN)



The 30x173mm MK 239 TP-T is a low-cost training cartridge with a steel projectile.

Capabilities & Characteristics:

- Overall Length: 290mm
- Cartridge Case: Extruded aluminum
- Propellant: Single base granular
- Primer: M36A2 Percussion
- Muzzle Velocity: 1,080 meters per second
- Projectile: Steel
- Accuracy: 1.0 mils x 1.0 mils at 1,000 meters
- Platform: Used by USN on LPD and LCS

System Integration:

- ICVVA1 equipped with 30mm XM813 or MK 44 Bushmaster Chain Gun

Configurations:

- AC25

Production Partners:

- NGDS (Plymouth, MN)



The M848 cartridge is used in drills of the weapon mechanism, to test link/ de-link functions, and as an inert training device.

Capabilities & Characteristics:

- Inert training device
- Simulates M789 size, shape, and mass distribution

System Integration:

- M230 Chain Gun mounted on AH-64 Apache Helicopter and Blackhawk Helicopter

Configurations:

- **B133**
- AA90 (USN configuration)

Materiel Release: October 1987

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The PGU-15A/B TP cartridge is a low-cost target practice round ballistically matched to the PGU-13 HEI Cartridge. It is used in the USAF's GAU-8A AGS mounted on the A-10 aircraft. It can be put into a linked configuration which is used on the AC-130 GAU-23 Weapon System to support USSOCOM operations.

Capabilities & Characteristics:

- Overall Length: 290mm
- Cartridge Case: Extruded aluminum
- Propellant: Single-base granular
- Primer: M36A2 Percussion
- Muzzle Velocity: 1,021 meters per second
- Case Mouth Pressure: 61,400 pounds per square inch
- Action Time: 5.3 milliseconds
- Accuracy: 1.0 mils x 1.0 mils at 1,000 meters

System Integration:

- GAU-8A AGS used on the A-10 Aircraft (USAF)
- GAU-23 Weapon System used on the AC-130 Aircraft (SOCOM), linked only

Configurations:

- AA94: Linked

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The PGU-14C/B API cartridge has the kinetic energy needed to defeat armor and is used in the US Air Force GAU-8A AGS.

Capabilities & Characteristics:

- Overall Length: 290mm
- Cartridge Case: Extruded aluminum
- Propellant: Single-base granular
- Primer: M36A2 Percussion
- Muzzle Velocity: 1,013 meters per second
- Case Mouth Pressure: 61,400 pounds per square inch
- Action Time: 5.3 milliseconds
- Accuracy: 1.0 mils x 1.0 mils at 1,000 meters
- Not ballistically matched to PGU-15A/B cartridge

System Integration:

- GAU-8A AGS used on the A-10 Aircraft (USAF)

Configurations:

- B103
- AB20: PGU-14C/B
- AB20: 5:1 ratio, PGU-14A/B API or PGU-14B/B API and PGU-13/B HEI or PGU-13A/B HEI

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The MK 266 Mod 1 HEI-T cartridge utilizes a non-self-destruct fuze and is effective against small watercraft and light armored naval platforms.

Capabilities & Characteristics:

- Overall Length: 290mm
- Cartridge Case: Extruded aluminum
- Propellant: Single base granular
- Primer: M36A2 Percussion
- Muzzle Velocity: 1,080 meters per second
- Fuze: PD
- Projectile Explosive: PBXN-5
- Accuracy: 0.5 mils x 0.5 mils at 1,000 meters

System Integration:

- LPD (USN)
- LCS (USN)
- MK 44 Bushmaster Chain Gun in the MK 46 Gun Weapon System (USN)

Configurations:

- AB44

Production Partners:

- NGDS (Plymouth, MN)



Also known as Urban Mix, is a mix pack-out comprised of 2-PGU-13 D/B HEI and 1-PGU-15 TP cartridge for use in urban environments. It is used in the USAF's GAU-8A AGS mounted on the A-10 Aircraft.

Capabilities & Characteristics:

- Linked configuration: 2:1
- Overall Length: 290mm
- Cartridge Case: Extruded aluminum
- Propellant: Single-base granular
- Primer: M36A2 Percussion
- Fuze: M505 PD
- Muzzle Velocity: 1,021 meters per second
- Case Mouth Pressure: 61,400 pounds per square inch
- Action Time: 5.3 milliseconds
- Accuracy: 1.0 mils x 1.0 mils at 1,000 meters

System Integration:

- GAU-8A AGS used on the A-10 Aircraft (USAF)
- GAU-23 Weapon System used on the AC-130 Aircraft (USSOCOM), linked only

Configurations:

- AC29

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The PGU-13 D/B HEI cartridge's primary role is to defeat light armor targets. It is used in the USAF's GAU-8A Avenger Gun System (AGS) mounted on the A-10 aircraft. It can be put into a linked configuration which is used on the AC-130 GAU-23 Weapon System to support SOCOM operations.

Capabilities & Characteristics:

- Overall Length: 290mm
- Cartridge Case: Extruded aluminum
- Propellant: Single-based granular
- Primer: M36A2 Percussion
- Fuze: M505 PD
- Muzzle Velocity: 1,021 meters per second
- Case Mouth Pressure: 61,400 pounds per square inch
- Action Time: 5.3 milliseconds
- Accuracy: 1.0 mils x 1.0 mils at 1,000 meters

System Integration:

- GAU-8A AGS used on A-10 Aircraft (USAF)
- GAU-23 Weapon System used on AC-130 Aircraft (USSOCOM), linked only

Configurations:

- B104
- AB18: Linked

Production Partners:

- GD-OTS (Marion, IL)
- NGDS (Plymouth, MN)



The 40mm M101 High Velocity (HV) Canister Cartridge is a fixed round of ammunition consisting of a projectile assembly and a cartridge case assembly.

The projectile has an aluminum sabot body with 113 steel flechettes, an aluminum nose cap, pusher cap, valve plate, spring, bore rider retaining disk, rubber pad, obturator, and an expulsion charge. The cartridge case is aluminum with a high pressure and a low-pressure chamber and a percussion primer.

Capabilities & Characteristics:

- Used against personnel out to 100 meters from the weapon
- Fired from the MK 19 Grenade Machine Gun (GMG)
- Range: 100 meters (maximum)
- Muzzle Velocity: 790 feet per second
- Packaging: PA120 container (32 rounds, linked)

System Integration:

- MK 19 GMG

Configurations:

- **BA11**



The M81A1 API cartridge is used by the USAF Special Operations Command in the M2A1 L60 Gun System found on the AC-130 Gunship. It is an untraced projectile crimped to a brass case and is the current training substitute for the PGU-9 HEI, PGU-49/B, and PGU-50/B. The incendiary tip provides impact signature which aids in training as a spotter round. This round is also effective against tanks and light armored vehicles.

Capabilities & Characteristics:

- Overall Length: 447mm (nominal)
- Cartridge Case: Brass
- Propellant: M1 Single base granular
- Muzzle Velocity: 880 meters per second
- Penetrator: Steel slug
- Packed in MK 1 can: 4 clips of 4 cartridges each (16 cartridges per can)

System Integration:

- M2A1 L60 Gun System

Configurations:

- BA36



The 40mm M661 LV Green Star Parachute cartridge is a fixed round of ammunition consisting of a projectile assembly and a cartridge case assembly. The projectile has a one-piece, hollow aluminum body with a metal rotating band. A plastic ogive, embossed with a raised letter for night identification of payload, is snapped into an O-ring in the front opening of the projectile cavity. The cavity contains a pyrotechnic flare candle assembly, and an integral ignition/ ejection charge attached to a 20-inch diameter parachute.

Once fired and upon reaching the burst altitude, the ejection charge ignites the candle and blows the candle assembly out through the top of the projectile body. The attached parachute deploys upon ejection to lower the candle at 7 feet per second, resulting in a burn time of approximately 40 seconds. The candle functions at an altitude of 500-700 feet when fired vertically and is visible to an air observer at a slant range of at least 3 miles from an altitude of 3,000 feet.

Capabilities & Characteristics:

- Illumination and signaling round designed for less weight, bulk and greater accuracy than comparable handheld signals
- Burst Height: 150-215 meters
- Muzzle Velocity: 76 meters per second
- Candlepower: 8,000 candela
- Burn Time: 30 seconds

System Integration:

- M79 Grenade Launchers
- M203 Grenade Launchers
- M320 Grenade Launchers

Configurations:

- **B504**

Materiel Release: December 1989

Production Partners:

- Amtec, Corp. (Janesville, WI)



The 40mm M662 LV Red Star Parachute Cartridge is a fixed round of ammunition consisting of a projectile assembly and a cartridge case assembly. The projectile has a one-piece, hollow aluminum body with a metal rotating band. A plastic ogive, embossed with a raised letter for night identification of payload, is snapped into an O-ring in the front opening of the projectile cavity. The cavity contains a pyrotechnic flare candle assembly, and an integral ignition/ejection charge attached to a 20-inch diameter parachute.

Once fired and upon reaching the burst altitude, the ejection charge ignites the candle and blows the candle assembly out through the top of the projectile body. The attached parachute deploys upon ejection to lower the candle at 7 feet per second, resulting in a burn time of approximately 40 seconds. The candle functions at an altitude of 500-700 feet when fired vertically and is visible to an air observer at a slant range of at least 3 miles from an altitude of 3,000 feet.

Capabilities & Characteristics:

- Illumination and signaling round designed for less weight and bulk; greater accuracy than comparable handheld signals
- Burst Height: 150-215 meters
- Muzzle Velocity: 76 meters per second
- Candlepower: 20,000 candela
- Burn Time: 30 seconds

System Integration:

- M79 Grenade Launchers
- M203 Grenade Launchers
- M320 Grenade Launchers

Configurations:

- **B505**



The 40mm Low Velocity (LV) Smoke cartridges consist of a cartridge case, a projectile with pyrotechnic smoke payload, and a pyrotechnic impact fuze.

The cartridge case is aluminum with a high pressure and a low-pressure chamber and a percussion primer. The projectiles utilize a one-piece aluminum body/ogive and a steel base.

The payload consists of a pyrotechnic smoke mixture with a fuze that is designed to arm at a minimum of 15 meters and a maximum of 45 meters from the muzzle of the weapon.

Capabilities & Characteristics:

- Used to provide aerial identification and location of troops on the ground
- Fired from 40mm M79, M203, and M320 SSGLs
- Range: 400 meters (maximum)
- Muzzle Velocity: 250 feet per second
- Packaging: 22 rounds per metal box; 2 metal boxes per wire-bound wooden box

System Integration:

- M79 Single Shot Grenade Launcher (SSGL)
- M203 SSGL
- M320 SSGL

Materiel Release: October 2010

Configurations:

- **B506:** M713 Red Smoke
- **B508:** M715 Green Smoke
- **B509:** M716 Yellow Smoke



The 40mm M576 LV Multi-Purpose (MP) cartridge is a fixed round of ammunition consisting a projectile assembly with multiple metal pellets and a cartridge case assembly.

The projectile assembly includes a polyethylene sabot carrier, and a plastic pellet cup filled with 20 metal pellets secured by a snap-on cap. The projectile assembly is crimped into the cartridge case. The cartridge case is aluminum with a high- and low-pressure chamber and a percussion primer.

Capabilities & Characteristics:

- Cartridge is intended for use in counter-insurgency and conventional operations to defeat personnel targets at short distances
- Fired from 40mm M79, M203, and M320 SSGLs
- Effective Range: 30 meters
- Muzzle Velocity: 885 feet per second
- Packaging: 2 rounds per metal box; 2 metal boxes per wire-bound wooden box

System Integration:

- M79 SSGL
- M203 SSGL
- M320 SSGL

Configurations:

- **B534**



The 40mm M583A1 LV White Star Parachute cartridge is a fixed round of ammunition consisting of a projectile assembly and a cartridge case assembly.

The projectile has a one-piece, hollow aluminum body with a metal rotating band. A plastic ogive, embossed with a raised letter for night identification of payload, is snapped into an O-ring in the front opening of the projectile cavity. The cavity contains a pyrotechnic flare candle assembly, and an integral ignition/ ejection charge attached to a 20-inch diameter parachute.

Once fired and upon reaching the burst altitude, the ejection charge ignites the candle and blows the candle assembly out through the top of the projectile body. The attached parachute deploys upon ejection to lower the candle at 7 feet per second, resulting in a burn time of approximately 40 seconds. The candle functions at an altitude of 500-700 feet when fired vertically and is visible to an air observer at a slant range of at least 3 miles from an altitude of 3,000 feet.

Capabilities & Characteristics:

- Illumination and signaling round designed for less weight and bulk and greater accuracy than comparable handheld signals
- Burst Height: 183 meters
- Muzzle Velocity: 76 meters per second
- Candlepower: 90,000 candela
- Burn Time: 30 seconds

System Integration:

- M79 Grenade Launcher
- M203 Grenade Launcher
- M320 Grenade Launcher

Materiel Release: March 1988

Configurations:

- **B535**

Production Partners:

- AMTEC, Corp. (Janesville, WI)



The 40mm M585 LV White Star Cluster cartridge is a fixed round of ammunition consisting of a projectile assembly and a cartridge case assembly.

The projectile has a one-piece, hollow aluminum body with a rotating band. A plastic ogive, embossed with a raised "W" for night identification of payload color and five raised dots to identify a cluster round, is snapped into an O-ring in the front opening of the projectile cavity. The cavity contains an illuminant candle assembly of five white star charges and a black powder ejection charge.

The projectile assembly is fitted into the cartridge case. The case is a hollow bi-chambered cylinder that contains the propellant. Upon ignition of the propellant, the expanding gases propel the projectile through the launcher tube to a burst altitude of 550 feet (at a quadrant elevation of 85 degrees). The burning propellant also ignites the delay element in the base of the projectile. Within 4 to 5 seconds after firing, the delay element ignites the ejection charge. The ejection charge ignites the star charges and blows the candle assembly out through the top of the projectile body.

The individual stars burn for approximately 7 seconds during free fall and produce 55,000 candlepower.

Capabilities & Characteristics:

- Illumination and signaling round designed for less weight and bulk and greater accuracy than comparable handheld signals
- Burst Height: 167 meters
- Muzzle Velocity: 76 meters per second
- Candlepower: 55,000 candela
- Burn Time: 5.5 seconds per pellet (minimum)

System Integration:

- M79 SSGL
- M203 SSGL
- M320 SSGL

Configurations:

- **B536**



The 40mm M430A1 HV HEDP cartridge is a fixed round of ammunition with internally embossed steel projectile body containing Composition A5 HE and a copper, shaped-charge liner. A PIBD fuze is threaded into body to form the complete projectile. The cartridge case is a hollow, bi-chambered aluminum cylinder with vents between chambers. The propellant chamber is sealed at rear with a base plug and a percussion primer is crimped into center of base plug.

Upon impact with the target, detonation of the main charge provides both the armor piercing effect of the shaped charge and fragmentation of the steel body.

Capabilities & Characteristics:

- Overall Length: 447mm (nominal)
- Cartridge Case: Brass
- Propellant: M1 Single base granular
- Muzzle Velocity: 880 meters per second
- Penetrator: Steel slug
- Packed in MK 1 can: 4 clips of 4 cartridges each (16 cartridges per can)

System Integration:

- MK 19 GMG

Configurations:

- **B542**
- Suitable Substitutes:
 - B571: 40mm M383 HE, Linked

Materiel Release: October 1996

Production Partners:

- AMTEC, Corp. (Janesville, WI)



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

The 40mm M433 LV HEDP cartridge is fixed round of ammunition consisting of a projectile assembly and cartridge case assembly.

The projectile consists of a hollow steel cup and aluminum skirt with metal rotating band. A PIBD fuze assembly and copper liner are fitted to opening of projectile cavity. The cavity is filled with high explosive, shaped charge. Projectile assembly is crimped into cartridge case. The cartridge case is a hollow, bi-chambered aluminum cylinder with vents between chambers. The propellant chamber is sealed at rear with a base plug and a percussion primer is crimped into center of base plug.

Upon impact with the target, detonation of the main charge provides both the armor piercing effect of the shaped charge and fragmentation of the steel body.

Capabilities & Characteristics:

- Dual-purpose impact round designed to penetrate, at least 2.5 inches of steel armor, and inflict personnel casualties in target area
- Range: 400 meters (maximum)
- Muzzle Velocity: 76 meters per second
- Packaging: 6 rounds per bandoleer

System Integration:

- M79 SSGL
- M203 SSGL
- M320 SSGL

Configurations:

- **B546**
- Suitable Substitutes:
 - BA51: 40mm M433A1 HEDP
 - B568: 40mm M406 HE
 - B574: 40mm M386 HE



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

The 40mm M992 LV IR Illuminating Cartridge is used to enhance night visibility of enemy troops while using NVDs.

The projectile has a one-piece, hollow aluminum body with a metal rotating band. A plastic ogive, embossed with a raised letter for night identification of payload, is snapped into an O-ring in the front opening of the projectile cavity. The cavity contains a pyrotechnic flare candle assembly, and an integral ignition/ejection charge attached to a 20-inch diameter parachute.

Once fired and upon reaching the burst altitude of 500-700 feet, the ejection charge ignites the candle and blows the candle assembly out through the top of the projectile body. The attached parachute deploys upon ejection to lower the candle at 7 feet per second, resulting in a burn time of approximately 40 seconds.

Capabilities & Characteristics:

- Provides minimal visual signature outside of IR bound
- Provides IR illumination to enhance nighttime operational capabilities for troops engaged using night vision equipment
- Fired from M79, M203, and M320 SSGLs
- Burst Height: 150-215 meters
- Muzzle Velocity: 76 meters per second
- Burn Time: 40 seconds
- IR Illumination: 26 watts per steradian (minimum)
- Less than 300 candlepower (candela) of VL

System Integration:

- M79 SSGL
- M203 SSGL
- M320 SSGL

Materiel Release: October 2010

Configurations:

- **BA03**

Production Partners:

- AMTEC, Corp. (Janesville, WI)



40mm M433A1 HEDP Cartridge



The 40mm M433A1 LV HEDP cartridge is fixed round of ammunition consisting of a projectile assembly and cartridge case assembly.

The projectile consists of copper shaped charge in an explosive-filled steel cup covered with tungsten spherical fragments over molded with plastic aerodynamic body. A PIBD fuze assembly is attached to the warhead body and the projectile assembly is crimped into the cartridge case. The cartridge case is aluminum with a high- and low-pressure chamber and a percussion primer.

Upon impact with the target, detonation of the main charge provides both the armor piercing effect of the shaped charge and fragmentation of the steel body with tungsten fragments.

Capabilities & Characteristics:

- Upgraded version of the legacy M433 HEDP
- Cartridge designed to have dual-purpose capability for lightly armored vehicle penetration and anti-personnel capability
- Fired from 40mm M79, M203, and M320 SSGLs
- Range: TBD (maximum)
- Muzzle Velocity: 250 feet per second
- Packaging: 22 rounds per M2A2 ammunition can; 2 ammunition cans per wire-bound wooden box

System Integration:

- M79 SSGL
- M203 SSGL
- M320 SSGL

Configurations:

- **BA51**
- Suitable Substitutes:
 - B546: 40mm M433 HEDP

Production Partners:

- AMTEC, Corp. (Janesville, WI)



The 40mm XM1176 HV HEDP-AB cartridge is fixed round of ammunition with internally embossed steel projectile body containing Composition A5 HE and a copper, shaped-charge liner. The electronic AB fuze is threaded into the body to form the complete projectile. The cartridge case is aluminum with a high pressure and a low-pressure chamber and a percussion primer.

A weapon-mounted XM101 Fuze Programmer is mounted to the MK 19 and programs the fired projectile through IR communication to achieve AB at the desired range. Upon AB or impact with the target, detonation of the main charge provides both the armor piercing and anti-personnel effect of the shaped charge and fragmentation of the steel body.

Capabilities & Characteristics:

- Cartridge retains warhead and propulsion system from M430A1 and adds a programmable AB fuze. Fuze is programmed once the projectile exits the muzzle.
- Fired from the MK 19 GMG
- Provides MK 19 gunner with a counter defilade capability while retaining the ability to defeat personnel and lightly armored vehicles in the open with the dual-purpose warhead
- Range: 2,000 meters (maximum)
- Muzzle Velocity: 790 feet per second
- Packaging: 32 rounds linked in PA120 container

System Integration:

- MK 19 GMG

Configurations:

- BA58

Production Partners:

- RDZM (Middletown, IA)



The 40mm XM1166 LV HEAB cartridge is a fixed round of ammunition with a steel and tungsten fragment projectile body containing HE.

The electronic AB fuze is threaded into the body to form the complete projectile. The cartridge case is aluminum with a high- and low-pressure chamber and a percussion primer.

A weapon-mounted XM100 Fuze Programmer is mounted to the M320 and programs the fired projectile through IR communication to achieve AB at the desired range.

Upon AB or impact with the target, detonation of the main charge provides anti-personnel effects from the fragmentation of the steel body.

Capabilities & Characteristics:

- Cartridge is used to defeat personnel in defilade
- Programmable fuze is programmed once the projectile exits the muzzle
- Fired from the M320 SSGL
- Provides the M320 grenadier with a counter-defilade capability
- Range: 400 meters (maximum)
- Muzzle Velocity: 250 feet per second
- Packaging: TBD

System Integration:

- M320 SSGL

Configurations:

- BZ16

Production Partners:

- Day & Zimmermann, Inc. (Philadelphia, PA)



The 40mm M781 LV Practice cartridge is a fixed round of ammunition consisting of a metal projectile body with a rotating band and a cartridge case assembly. A hollow plastic ogive is filled with a high visibility yellow-orange dye.

The projectile assembly is attached to a cartridge case with an attached adhesive substance. The case is a hollow bi-chambered plastic cylinder. A .38 caliber blank cartridge is press-fitted into the base of the cartridge case and provides the gas pressure needed to propel the projectile through the launcher barrel.

Upon impact with the target, the frangible ogive ruptures and releases the dye causing a puff of yellow-orange smoke which simulates explosive impact.

Capabilities & Characteristics:

- Used for gunnery training
- Target practice round designed to ballistically simulate the M433 HEDP cartridge
- Emits bright orange dye upon target impact
- Range: 400 meters (maximum)
- Muzzle Velocity: 75 meters per second
- Packaging: 100 rounds per wooden box

1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

System Integration:

- M79 Grenade Launchers
- M203 Grenade Launchers
- M320 Grenade Launchers

Configurations:

- **B519**
- Suitable Substitutes:
 - BA54: 40mm M781A1 LV DNT Practice

Materiel Release: October 1983

Production Partners:

- Amtec, Corp. (Janesville, WI)



The 40mm M385A1 HV Practice Cartridge is a fixed round of ammunition designed only for practice or proof testing of weapons. It consists of a one-piece solid inert aluminum projectile body together with a metal rotating band which is press-fitted into an aluminum bi-chambered cartridge. The case contains the propelling charge and percussion primer.

Capabilities & Characteristics:

- Used primarily for proof-testing weapons
- Fired from MK 19 GMG
- Range: 2,200 meters (maximum)
- Muzzle Velocity: 241 meters per second
- Packaging: PA120 container

System Integration:

- MK 19 GMG

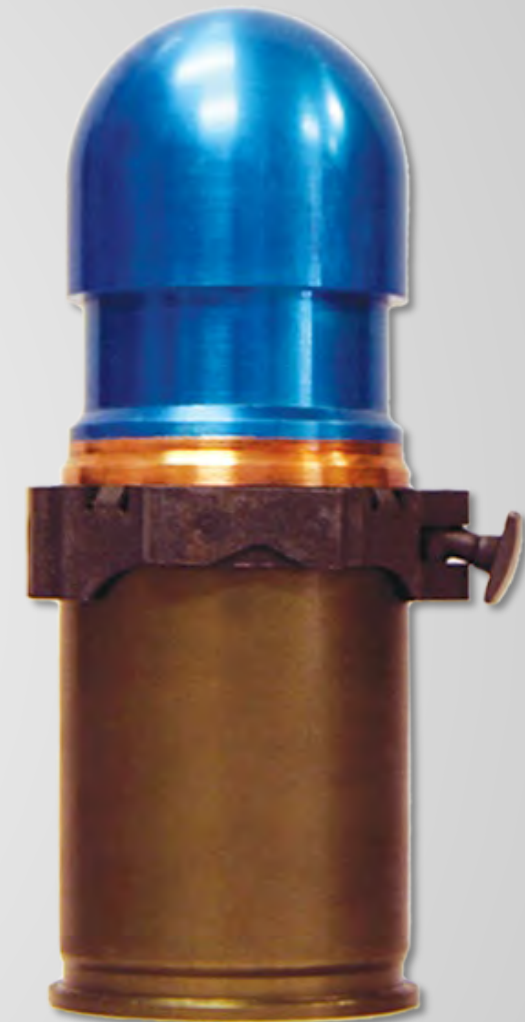
Configurations:

- B576

Materiel Release: October 1990

Production Partners:

- AMTEC, Corp. (Janesville, WI)



The 40mm M918 HV TP Cartridge is a target practice round designed to simulate the M430A1 Cartridge in appearance and ballistics. The cartridge consists of a one-piece steel body with an aluminum insert fitted to cartridge case assembly. An aluminum ogive contains a firing pin, a rubber anti-creep spring, and an M550 fuze escapement assembly, threaded to projectile body. An aluminum insert contains the flash charge mixture, while the cartridge case is a bi-chambered aluminum cylinder with vents between chambers. The propellant chamber is sealed at rear with a base plug and a percussion primer is crimped into the center of base plug.

Upon impact with the target, gases generated by the burning flash powder are concentrated upon the base of the projectile body causing it to rupture and produce a flash, smoke, and a loud report.

Capabilities & Characteristics:

- Used in gunnery training
- Target practice round designed to simulate M430A1 HEDP in appearance and ballistics
- Range: 2,200 meters (maximum)
- Muzzle Velocity: 241 meters per second
- Packaging: PA120 container

System Integration:

- MK 19 GMG

Configurations:

- B584

Materiel Release: October 1989

Production Partners:

- AMTEC, Corp. (Janesville, WI)



The 40mm M918/ M385A1 HV Mixed Belt consists of a 2:1 mix of M918 and M385A1 cartridges.

The M918 cartridge is fixed round of ammunition consisting of a one-piece steel body with an aluminum insert, fitted to a cartridge case assembly. The aluminum ogive contains a firing pin, a rubber anti-creep spring, and an M550 fuze escapement assembly, threaded to projectile body. The aluminum insert contains a flash charge mixture.

The M385A1 cartridge is a fixed round of ammunition consisting of one-piece solid aluminum projectile body with copper rotating band.

Capabilities & Characteristics:

- Used in gunnery training
- M918 TP round designed to simulate the M430A1 HEDP cartridge in appearance and ballistics
- M385A1 is a TP or proof-testing round
- Range: 2,200 meters (maximum)
- Muzzle Velocity: 241 meters per second
- Packaging: PA120 container
- Linked 22-M918/ 10-M385A1, configured in a 2:1 mix

System Integration:

- MK 19 GMG

Configurations:

- **BA30**
- Suitable Substitutes:
 - B584: 40mm M918 TP, Linked
 - BA12: 40mm MK 81 Mod 0 Practice, Linked
 - BA55: 40mm M918A1 TP-DNT

Matériel Release: October 1989

Production Partners:

- AMTEC, Corp. (Janesville, WI)



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

The 40mm M781E1 TP Day/ Night/ Thermal (TP-DNT) does not have a fuze or any energetics, eliminating unexploded ordnance risks. It allows the Warfighters to "train as they fight" by delivering a non-dud producing LV grenade training cartridge whose impact signature can be seen day or night by the unaided eye and through current and future thermal vision sights.

Capabilities & Characteristics:

- Used in gunnery training
- This cartridge is designed to simulate the M433 HEDP cartridge in appearance and ballistics
- Range: 400 meters (maximum)
- Muzzle Velocity: 76 meters per second
- Packaging: 100 rounds per wooden box
- Impact signature seen day or night by unaided eye and through current or future thermal and night vision sights

System Integration:

- M203 Grenade Launchers
- M320 Grenade Launchers

Configurations:

- **BA54**
- Suitable Substitutes:
 - B519: 40mm M781 Practice

Materiel Release: Fiscal Year 2028, 2nd Quarter (projected)

Production Partners:

- Amtec, Corp. (Janesville, WI)



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

The 40mm M918E2 HV TP-DNT cartridge does not have a fuze or energetics. This eliminates unexploded ordnance risks and enables vehicle maneuver training, allowing Soldiers to "train as they fight" by delivering a non-dud-producing, HV grenade training cartridge whose impact signature can be seen day or night by the unaided eye and through current and future thermal vision sights.

Capabilities & Characteristics:

- Used in gunnery training
- TP round designed to simulate the M430A1 HEDP cartridge in appearance and ballistics
- Packed into PA120 container
- Impact signature seen day or night by unaided eye through current and future thermal and night vision sights

System Integration:

- MK 19 GMG

Material Release: Low-Rate Initial Production - Fiscal Year 2021, 3rd Quarter (projected)

Configurations:

- **BA67**
- Suitable Substitutes:
 - B584: 40mm M918 TP, Linked
 - BA12: 40mm MK 281 Mod 0 Practice, Linked
 - BA30: 40mm M918/ M385A1, Linked 2/ 1

Production Partners:

- Prime: AMTEC, Corp. (Janesville, WI)
- LAP: American Ordnance - IAAAP



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

The 40mm M922A1 dummy cartridge is completely inert and simulates a loaded 40mm HV HE round in size, shape, and weight.

The M992 is a fixed round consisting of a one-piece solid aluminum projectile body together with a copper rotating band and the cartridge case is crimped around the projectile body.

The M922A1 is a one-piece solid aluminum cartridge. There are four thru-holes drilled through the cartridge for positive identification. The rotating band and cartridge body are modified for repositioning of the links after cycling in an MK 19 GMG.

Capabilities & Characteristics:

- Dummy round used as a drill round to train users in handling ammunition for the MK 19 GMG
- Packaging: PA120 container (32 rounds, linked)

System Integration:

- MK 19 GMG

Configurations:

- B472
- 092458

Production Partners:

- AMTEC, Corp. (Janesville, WI)



The M456A2 is an HE Anti-Tank (HEAT) MP-T cartridge for use in the M68, 105mm cannon of the M10 Booker.

The M456A2 is designed for use against armored targets and consists of Composition B explosive and a copper Shaped Charge Liner inside a steel body. A point-initiating, PD (PIPD) fuze is initiated by an impact switch in an aluminum standoff spike.

Upon initiation, the explosive collapses the copper liner and creates a high velocity jet of metal particles that penetrates the target.

Capabilities & Characteristics:

- Improved performance on irregular surfaces and graze functioning
- Provides anti-tank capability to M10 Booker

System Integration:

- 105mm Gun on M10 Booker

Configurations:

- **C508**

Materiel Release: March 1984



The 105mm M900 is an Armor Piercing, Fin Stabilized Discarding Sabot with Tracer (APFSDS-T) cartridge.

The projectile portion of the round consists of a sub-projectile and a sabot. The sub-projectile is made up of a monolithic depleted uranium core fitted with an aluminum windshield, a steel tip, and an aluminum fin assembly. The sabot is comprised of three 120° aluminum sections which are assembled around the sub-projectile.

Upon leaving the gun, aerodynamic forces cause the sabot to separate from the sub-projectile allowing the sub-projectile to continue a true course to target while the sabot segments fall quickly to earth. Target penetration is affected strictly by the high kinetic energy (KE) of the sub-projectile impacting the target.

Capabilities & Characteristics:

- Antitank round intended for use with the 105mm in the M10 Booker against armored targets
- DU penetrator

System Integration:

- 105mm Gun on M10 Booker

Configurations:

- **C543**
- Suitable Substitutes:
 - C521: 105mm M735 APFSDS-T

Materiel Release: June 1992



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

The 105mm M393A3 HE Plastic with Tracer (HEP-T) Cartridge satisfies the M10 Booker primary armament requirement to defeat standard infantry bunkers and create openings in double reinforced concrete walls through which infantry can pass through.

Capabilities & Characteristics:

- Creates 8-inch holes in double rebar concrete walls so infantry can pass through
- Utilizes dual-safe fuze
- Defeats bunkers, light armored vehicles, trucks, cards, and sniper positions

System Integration:

- 105mm Gun on M10 Booker

Configurations:

- CA32
- Suitable Substitutes:
 - C518: 105mm M393A2 HEP-T

Materiel Release: September 2005



1. Suitable Substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

Satisfies the M10 Booker primary armament requirement to defeat dismounted infantry squad in the open.

The canister cartridge is used against ground troops at short range. Upon muzzle exit, the projectile breaks apart and releases over 2,000 tungsten spheres, like a shotgun shell.

The M1040's unique design provides lethality across temperature extremes.

Capabilities & Characteristics:

- Provides anti-personnel capability for the M10 Booker
- Required to provide 50% incapacitation to 5 persons out of a 10-person squad from 100-300 meters (threshold); 50-500 meters (objective)

System Integration:

- 105mm Gun on M10 Booker

Configurations:

- **CA40**
- Replaces C519

Materiel Release: February 2007



105mm M490A1 TP-T cartridge is for use in 105mm tank cannon M68 for marksmanship training.

The cartridge is similar in external appearance and ballistically like the M456 series HEAT-T cartridge.

The projectile consists of a steel body and steel standoff spike. It also has no fin assembly and is static stabilized. The cartridge case is filled with loosely packed propellant and is fitted with an electric primer.

Capabilities & Characteristics:

- Trainer for tactical M456A2 HE cartridge
- Static stabilized

System Integration:

- 105mm Gun on M10 Booker

Configurations:

- **C511**

Materiel Release: August 1986



The 105mm M467A1 HEP-TP-T Cartridge is an inert round of ammunition fitted with a tracer for use by Army's M10 Booker in gunnery training and qualification.

Physically and ballistically, the M467A1 is matched to 105mm M393A3 HEP-T utilized with the M10 Booker.

Capabilities & Characteristics:

- Replaced M86 primer with the M125 type thick wall primer
- Training round for M393A3 HEP-T
- Dimensional, weight, and ballistic match to M393A3 HEP-T

System Integration:

- 105mm Gun on M10 Booker

Configurations:

- **CA37**
- Suitable Substitutes:
 - C503: 105mm M393A1 TP-T
 - C510: 105mm M467 TP-T

Materiel Release: September 2005



The 105mm M724A2 TPDS-T cartridge will support live fire training in the M10 Booker.

The cartridge will be like the 105mm, M900 tactical cartridge in weight and physical appearance.

The M724A2 will be range limited to 7,000 meters maximum when fired @ a 10° gun elevation.

Capabilities & Characteristics:

- Range: Not to exceed 7 kilometers when firing at 10° gun elevation (maximum)
- Provide crews with a training round that has the look and feel of the current M900 tactical KE cartridge

System Integration:

- 105mm Gun on M10 Booker

Materiel Release: Fiscal Year 2018, 3rd Quarter

Configurations:

- **CA58**
- Suitable Substitutes:
 - C520: 105mm M724A1 TPDS-T
 - C543: 105mm M900 APFSDS-T
 - C521: 105mm M735 APFSDS-T

Production Partners:

- GD-OTS



The 105mm M724A1 TPDS-T discarding sabot practice cartridge is similar in external appearance and is ballistically like the M393A2 APDS-T cartridge out to 2,000 meters.

A plastic band encircles the sabot at the forward end while a fiber rotating band and rubber obturating band are mounted toward the base of the sabot. The igniter tube of the electric primer extends almost the entire length of the propellant, which is packed loosely in the cartridge case. The electrically initiated primer ignites the propelling charge and tracer.

Gases produced by the burning propellant propel the projectile from the gun. The sabot is discarded after leaving the muzzle of the weapon because of setback, centrifugal, and air pressure forces and the solid core of the projectile continues to the target. Since it is a practice round, the projectile lacks the penetrating capability of a service round.

Capabilities & Characteristics:

- Trainer for tactical M392A2 HE cartridge
- Spin-stabilized steel core

System Integration:

- 105mm Gun on M10 Booker

Configurations:

- C520



The 120mm M829A4 APFSDS-T cartridge is the follow on to the M829A3 APFSDS-T cartridge.

The M829A4 is the most effective anti-armor KE cartridge fired from the M256 120mm smoothbore cannon mounted on the Abrams MBT.

The M829A4 provides the ABCT overmatch against current and anticipated enemy tanks equipped with ERA and APS.

Capabilities & Characteristics:

- Lethality: Up to 2 kilometers (threshold); 4 kilometers (objective)
- Uses an advanced DU penetrator and ACS cartridge case
- Utilizes new high energy temperature insensitive propellant

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- **CA64**
- Suitable Substitutes:
 - C792: 120mm M829A2 APFSDS-T
 - CA26: 120mm M829A3 APFSDS-T

Materiel Release: May 2016

Production Partners:

- GD-OTS (St. Petersburg, FL)
- NGDS (Plymouth, MN)



The 120mm M1147 Advanced Multi Purpose (AMP), HEMP-T is a full-bore, MP HE cartridge developed for the Abrams MBT.

AMP provides new capabilities for Anti-Tank Guided Missile (ATGM) Team defeat at extended range and Double Reinforced Concrete Wall (DRCW) breach while also consolidating the capabilities of four legacy munitions including the M830A1 HEAT-MP-T, M830 HEAT-MP-T, M1028 Canister, and M908 HE-OR-T.

Capabilities & Characteristics:

- AMP is programmed for the required mode of operation (PD, PD/D, or AB) via the Abrams FCS on a platform equipped with an ADL
- AMP provides the means for defeating ATGM teams, DRCW, light armor, bunkers, massed infantry, and obstacles with a single munition using a multi-mode programmable fuze

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- **CA71**
- Suitable Substitutes (for individual capabilities):
 - C791: 120mm M830A1 HEAT-MP-T
 - C787: 120mm M830 HEAT-MP-T
 - CA05: 120mm M908 HE-OR-T
 - CA38: 120mm M1028 Canister

Materiel Release: December 2024



¹ Suitable substitutes: 2024 Suitability and Interchangeability List (U.S. Army JMC)

LARGE CALIBER AMMUNITION: 120mm

The 120mm M830 HEAT-MP-T is a HE round having both anti-armor and anti-personnel capabilities.

The round consists of a steel body loaded with explosives surrounding a copper shaped charge liner and wave shaper. The projectile embodies a steel spike with a shoulder and nose switching mechanism for full frontal area functioning and graze impact which initiates a base detonating fuze.

The fuze is located at the rear of the projectile body. The projectile body has a copper obturator, boom and fin assembly for flight stabilization. The fin contains a tracer for projectile to target visual tracking.

120mm M830 HEAT-MP-T Cartridge

Capabilities & Characteristics:

- Anti-armor and anti-personnel capabilities

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- C787

Materiel Release: August 1986



The M830A1 HEAT-MP-T is an HE antitank, MP, tactical service round for U.S. MBTs.

It is designed with a tracer, discarding sabot, and RF proximity sensor mounted on the nose to provide capability against helicopters, and improved capabilities against reactive applique armor.

Capabilities & Characteristics:

- Multi-purpose capability beyond that of the M830 HEAT-MP-T cartridge

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- C791

Materiel Release: June 1994



The 120mm M908 HE Obstacle Reduction (OR) with Tracer (HE-OR-T) is an HE cartridge for use in the 120mm M256 smooth bore cannon.

It consists of an 80mm, HE-filled, flight projectile with discarding sabot. The M908 is identical to the 120mm M830A1, except for the steel nose that is used in place of a proximity switch.

The M908 cartridge provides similar capability as the M830A1 against buildings, bunkers and light armor, as well as enhanced performance against concrete obstacles.

Capabilities & Characteristics:

- Same aeroballistics as the M830A1 HEAT-MP-T tactical cartridge
- Effective against buildings, bunkers, and light armor
- Enhanced performance against concrete obstacles

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- CA05

Materiel Release: March 2003



The 120mm M829A3 KE, AP, FS, DS-T cartridge is the most advanced anti-tank cartridge currently in production in the world today. It employs a "Super DU" Penetrator manufactured via a process that enhances the DU properties, and a revolutionary DS manufactured from a lightweight composite material.

The M829A3 employs an enhanced high density conventional propulsion system utilizing RPD-380 Propellant. It is capable of defeating tanks equipped with Explosive Reactive Armor (ERA), when fired from the existing 120mm series Abrams tank fleet.

Capabilities & Characteristics:

- 120mm KE cartridge
- Designed to defeat modern tanks with ERA
- Incorporates improved penetrator, sabot, and propulsion system

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- CA26

Materiel Release: September 2004



The M1028 Canister Cartridge is used against ground troops at short range (<700 meters). It utilizes a payload of ~1100 tungsten balls that are dispersed from a projectile casing upon muzzle exit, like how a shotgun shell exits the muzzle.

Capabilities & Characteristics:

- Provides effective anti-personnel capability
- Developed to defeat 50% of advancing squads and platoons from 200-500 meters (threshold); 100-700 meters (objective)

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- CA38

Materiel Release: November 2006



LARGE CALIBER AMMUNITION: 120mm

The 120mm M1002 TPMP-T is a training cartridge for the M830A1 HEAT-MP-T and M908 HE-OR-T tactical cartridges.

This target practice cartridge contains a propulsion system consisting of a stub metal case with combustible sidewall, granular, single base, M14 propellant, and an electric primer, while the projectile consists of a multi-piece sub-projectile (nose, body, tail cone) and sabots.

The nose has an air/ ground mode selector switch simulator to provide for loader training familiarization with switch setting operations on the tactical cartridge. After ignition, the stub metal case and primer are ejected into the tank turret, when the projectile exits the gun, the sabot segments separate, and the sub-projectile continues to target. There is a red burning tracer in the tail cone to aid in following the sub-projectile to target.

120mm M1002 TPMP-T Cartridge

Capabilities & Characteristics:

- Training cartridge simulates the M830A1 HEAT-MP-T and M908 HE-OR-T tactical cartridges

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- **CA31**
- Suitable Substitutes:
 - C784: 120mm M1002 TP-T
 - CA68: 120mmM1002 TPMT-T Frangible

Materiel Release: May 2008

Production Partners:

- NGDS (Plymouth, MN)
- GD-OTS (St. Petersburg, FL)



The 120mm M831A1 TP-T contains a propulsion system consisting of a stub metal case with combustible sidewall, granular single base M14 propellant, and an electric primer.

The projectile consists of a steel spike (nose), aluminum body, and ring stabilizer with slots that impart spin.

After ignition, the stub metal case and primer are ejected into the tank turret, the projectile continues to target. There is a red burning tracer in the stabilizer to aid in following the projectile to target.

Capabilities & Characteristics:

- Training cartridge simulates the M830 HEAT-T tactical cartridge

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- C784

Materiel Release: September 1994



The 120mm M865 is a TPCSDS-T cartridge.

It contains a propulsion system consisting of a stub metal case with combustible side wall, granular, single base, M14 propellant, and an electric primer.

The projectile consists of a two-piece sub-projectile (steel core with a slotted tail cone/fin) and aluminum sabots. After ignition, the stub metal case and primer are ejected into the tank turret; when the projectile exits the gun, the sabot segments separate, and the sub-projectile continues to target. There is a yellow/orange burning tracer in the tail cone (fin) to aid in following the sub-projectile to target.

Capabilities & Characteristics:

- Training cartridge simulates the M82 series tactical cartridges

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- C785

Materiel Release: August 1986



The 120mm M865A1 is a Target Practice, Cone Stabilized, Discarding Sabot – Tracer (TPCSDS-T) cartridge. It contains a propulsion system consisting of the ACS with combustible sidewall, granular, double base, RPD-596 propellant, and an electric Hazards of Electromagnetic Radiation to Ordnance (HERO)-compliant primer, while the projectile consists of a two-piece sub-projectile (steel core with a slotted tail cone/fin) and aluminum sabots.

After ignition, the stub metal case and primer are ejected from the tank breech; when the projectile exits the gun, the sabot segments separate, and the sub-projectile continues to target. There is a yellow/ orange burning tracer in the tail cone (fin) to aid in following the sub-projectile to target.

Capabilities & Characteristics:

- Training cartridge simulates the M829 series tactical cartridges

System Integration:

- 120mm cannon on M1A1/ A2 series Abrams MBTs

Configurations:

- **CA69**
- Suitable Substitutes:
 - C785: 120mm M865 TPCSDS-T

Materiel Release: August 1986;
Engineering Change Proposal in January 2020

Production Partners:

- NGDS (Plymouth, MN)
- GD-OTS (St. Petersburg, FL)



Acronyms & Abbreviations



A
AAP - Army Ammunition Plant
AB - Air Burst
ABV - Assault Breaching Vehicle
ACAT - Acquisition Category
ACF - Active Contingency Force
ACS - Automated Cartridge System
ADAM - Area Denial Artillery Munition
ADL - Ammunition Data Link
ADVAP - Advanced Armor Piercing
AEODU - Approved for EOD Use
AFATDS - Advanced Field Artillery Tactical Data System
AGS - Avenger Gun System
AHD - Acoustic Hailing Device
AMP - Advanced Multipurpose
AO - American Ordnance
AP - Anti-personnel
AP - Armor Piercing
APDS - Armor Piercing, Discarding Sabot
APFSDS - Armor Piercing, Fin Stabilized, Discarding Sabot
API - Armor Piercing Incendiary
APMI - Accelerated Precision Munition Initiative
APOBS - Anti-Personnel Obstacle Breaching System
ARMS - Armament Retooling and Manufacturing Support
ASM - Advanced Submunition
AT - Anti-Tank
ATEC - U.S. Army Test and Evaluation Center
ATGM - Anti-Tank Guided Missile
ATGMSS - AT Guided Missile Signature Simulator
ATKS - Armor Target Kill System
ATWESS – Anti-Tank Weapons Effect Signature Simulator
AV - Anti-Vehicular

B
BA - Bottom Attack
BAE - British Aerospace Engineering
BB - Base Bleed
BCTs - Brigade Combat Teams
BDM - Bunker Defeat Munition
BES - Battlefield Effects Simulator
BFA - Blank Firing Attachment
BFMK - Blank Firing Modification Kit
BFVS - Bradley Fighting Vehicle System
BLU – Bomb Live Unit
BOHG - Bursting Obscuration Hand Grenade

C
C3 - Command, Control, and Communications
CA - Cinnamic Acid
CAAA - Crane Army Ammunition Activity
CAD - Cartridge Actuated Device
CAVM - Counter Anti-Vehicular Munition
CCMCK - Close Combat Mission Capability Kit
CCTS - Cannon Caliber Training System
CD - Compact Disc
C-DAEM - Cannon-Delivered Area Effects Munition
CEP - Circular Error Probable
CESK - Canine Explosive Scent Kit

CFT - Cross-Functional Team
CM - Countermeasure
CMWS - Common Missile Warning System
CONUS - Continental United States
COTS - Commercial-off-the-Shelf
C-RAM - Counter-Rocket, Artillery, and Mortar
CS - Cone Stabilized
CS - Ortho-Chlorobenzalmalononitrile
CS RS - Confined Space, Reduced Sensitivity
CTC - Combined Training Center

D
DAM - Demolition Attack Munition
DDI - Dummy, Drill, and Inert
DEVCOM-AC - U.S. Army Development Command - Armaments Center
DEVCOM-ARL - U.S. Army Development Command - Army Research Laboratory
DFCS - Digital Fire Control System
DIFCUE - Direct-Indirect Fire Cue
DNT - Day, Night, Thermal
DoD - Department of Defense
DoDD - DoD Directive
DoDI - DoD Instruction
DODIC - DoD Identification Code
DP - Dual Purpose
DPICM - Dual Purpose Improved Conventional Munition
DRCW - Double Reinforced Concrete Wall
DSS - Decision Support System
DT - Dim Trace
DU - Depleted Uranium

E
EF - Enhanced Fragmentation
EFP - Explosively Formed Penetrator
EH - Explosive Hazard
EHC - Enhanced Lethality Cartridge
EMD - Engineering & Manufacturing Development
EMI - Electro-muscular Incapacitation
EO - Explosive Ordnance
EOD - Explosive Ordnance Disposal
EPIAFS - Enhanced Portable Inductive Artillery Fuze Setter
EPR - Enhanced Performance Round
ER - Extended Range
ERA - Explosive Reactive Armor
ERK - EOD Response Kit
e-SDF - Electronic Self Destruct Fuze
EST - Excalibur Shaped Trajectory
ET - Electronic Time
ETEK - EOD Tool and Equipment Kit
ETSQ - Electronic Time Super Quick

F
FCC - Fire Control Computer
FDC - Fire Direction Center
FFE - Fire From Enclosure
FHT - Field Handling Trainer
FMR - Full Materiel Release
FMWD - Family of Military Working Dogs
FOS - Forward Observer System

FRPC - Full Range Practice Cartridge
FVL - Future Vertical Lift

G
GAMS - Gas Adsorbent Modules
GDMS - General Dynamics Mission Systems
GD-OTS - General Dynamics - Ordnance and Tactical Systems
GEMSS – Ground Emplaced Mine Scattering System
GMG - Grenade Machine Gun
GOBLN - Ground Obstacle Breaching Lane Neutralizer
GOTS - Government-off-the-Shelf
GP - General Purpose
GPR - Ground Penetrating Radar
GPS - Global Positioning System
GRF - Global Reaction Force

H
HBX-1 - High Blast Explosive Type 1
HC - Hexachloroethane
HE - High Explosive
HEAT - High Explosive, Anti-Tank
HEDP - HE Dual Purpose
HEI - High Explosive, Incendiary
HEP - High Explosive Plastic
HERA - High Explosive, Rocket-Assisted
HERO - Hazards of Electromagnetic Radiation to Ordnance
HF-1 - High Fragmentation Steel
HHA - High Hardness Armor
HHS - Handheld Signal
HITL - Human-in-the-Loop
HME - Homemade Explosive
HMMWV - High Mobility Multipurpose Wheeled Vehicle
HoB - Height of Burst
HPBT - Hollow Point Boat Tail
HPT - High-Pressure Test
HSAAP - Holston Army Ammunition Plant
HSTAMIDS - Handheld Standoff Mine Detection System
HTK - Hit-to-Kill
HV - High Velocity

I
IAAAP - Iowa Army Ammunition Plant
IAM - Individual Assault Munition
IB - Industrial Base
IBSP - Industrial Base Strategic Plan
ICVVA1 - Stryker Infantry Carrier Vehicle Double V Hull
IDM - Impact Delay Module
IECCM - Improved Electronic Counter Countermeasures
IED - Improvised Explosive Device
IM - Insensitive Munition
IMU - Inertial Measurement Unit
IPADS - Improved Positioning Azimuth Determining System
IPADS-G - IPADS-GPS
IPT - Integrated Product Team
IR - Infrared
IT - Information Technology

Acronyms & Abbreviations



J

- JBMOU - Joint Ballistic Memorandum of Understanding
- JHP - Jacketed Hollow Point
- JIEDDO - Joint Improvised Explosive Device Defeat Organization
- JMC - U.S. Army Joint Munitions Command
- JPEO A&A - Joint Program Executive Office Armaments & Ammunition
- JSEOD - Joint Service EOD
- JUONS - Joint Urgent Operational Need Statement

K

- KE - Kinetic Energy

L

- LADS - Lightweight Area Determination System
- LAP - Load, Assemble, and Pack
- LAV - Light Armored Vehicle
- LAW - Light Anti-Tank Weapon
- LCAAP - Lake City Army Ammunition Plant
- LCP - Liquid Crystal Polymer
- LCPP - Life Cycle Pilot Process
- LCS - Littoral Combat Ship
- LD - Low Drag
- LED - Light-emitting Diode
- LEEFI - Low Energy Exploding Foil Initiator
- LESD - Launched Electrode Stun Device
- LHMBC - Lightweight Handheld Ballistic Computer
- LIED - Large IED
- LIN - Line-Item Number
- LOE - Line of Effort
- LoS - Line of Sight
- LPD - Landing Platform, Dock
- LRPF - Long-Range Precision Fires
- LR-PGK - Long Range-PGK
- LTS - Live Training System
- LV - Low Velocity
- LVOSS - Light Vehicle Obscurant Smoke System
- LWCMS - Lightweight Company Mortar System

M

- MAAWS – Multi-role, Anti-Armor, Anti-personnel Weapons System
- MACS - Modular Artillery Charge System
- MADIS - USMC Marine Air Defense Integrated System
- MAST - Man-Portable Aircraft Survivability Trainer
- MBT - Main Battle Tank
- MCA - Major Capability Acquisition
- MCCM - Modular Crowd Control Munition
- MCS - Mission Command System
- MCU - Munition Control Unit
- MDD - Mine Detection Dog
- MDET - Medium Directional Energy Tool
- MDI - Modern Demolition Initiators
- MDO - Multi-Domain Operations
- MFCS - Mortar Fire Control System
- MFCS-D - MFCS-Dismounted
- MFCS-M - MFCS-Mounted
- MFK - Mobile Field Kit
- MG - Machine Gun
- MGSS - Main Gun Signature Simulator

- MHS - Modular Handgun System
- MICLIC - Mine Clearing Line Charge
- MILES - Multiple Integrated Laser Engagement System
- MLIDS - Mobile Low, Slow Unmanned Aerial Vehicle Integrated Defense System
- MMP - Modular Mission Payload
- MOFA - Multi-Option Fuze, Artillery
- MOPMS - Modular Pack Mine System
- MOS - Military Occupation Specialty
- MOUT - Military Operation in Urban Terrain
- MP - Multipurpose
- MPT - Multipurpose Tracer
- MSA - Materiel Solution Analysis
- M-SHORAD - Mobile Short-Range Air Defense
- MSK - Mortar Stowage Kit
- MTA - Middle Tier Acquisition
- MTBF - Mean Time Between Failures
- MTF - Mechanical Time Fuze
- MTRS - Man Transportable Robotic System
- MVS - Muzzle Velocity Sensor
- MWD - Military Working Dog

N

- NABK - NATO Ballistic Kernel
- NATO - North Atlantic Treaty Organization
- NAVSPECWARCOM - U.S. Naval Special Warfare Command
- NC - Nitrocellulose
- NGAAW - Next Generation Area Attack Weapon
- NGRAP - Next Generation Rocket-Assisted Projectile
- NGSW-AR - Next Generation Squad Weapon-Automatic Rifle
- NGSW-R - Next Generation Squad Weapon-Rifle
- NM - Norma Magnum
- NSN - National Stock Number
- NTIB - National Technology & Industrial Base
- NVD - Night Vision Device

O

- OATK - Orbital ATK
- OCONUS - Outside the Continental United States
- OGB - Optimized Gun Barrels
- OMFV - Optionally Manned Fighting Vehicle
- ONS - Operational Need Statement
- OR - Obstacle Reduction
- OS - Operations & Sustainment

P

- PABM - Programmable Air Burst
- PAD - Propellant Actuated Device
- PADS - Positioning Azimuth Determining System
- PAP - Picatinny Arsenal™ Propellant
- PBA - Pine Bluff Arsenal
- PD - Point Detonating
- PD - Production & Deployment
- PD/D - Point Detonating/ Delay
- PE - Program Element
- PEDD - Patrol Explosive Detection Dog
- PEO Ammo - Program Executive Office Ammunition
- PFF - Pre-formed Fragments
- PFM - Primer Feed Mechanism

- PGK - Precision Guidance Kit
- PGU - Projectile Gun Unit
- PIBD - Point Initiating, Base Detonating
- PIE - Pyrotechnic Initiated Explosive
- PIK - Platform Integration Kit
- PIPD - Point Initiating, Point Detonating
- PIR - Passive IR
- PL - Public Law
- PL JS - Project Lead Joint Services
- PM CAS - Project Manager Combat Ammunition Systems
- PM CCS - Project Manager Close Combat Systems
- PM LS - Project Manager Soldier Lethality
- PNDD - Patrol Narcotics Detection Dog
- POL - Petroleum, Oil, and Lubrication
- PoR - Program of Record
- PSK - Platoon Supplemental Kit

R

- R&D - Research & Development
- RAAMS - Remote Anti-Armor Mine System
- RAP - Rocket-Assisted Projectile
- RCU - Remote Control Unit
- RCV - Riot Control Vehicle
- RDM - Rheinmetall Denel Munition (Pty), Ltd.
- RDT&E - Research, Development, Technology & Engineering
- RFAAP - Radford Army Ammunition Plant
- RF-RAMS - Radio Frequency-Remote Activation Munition System
- RHA - Rolled Homogeneous Armor
- ROTC - Reserve Officer Training Corps
- RP - Red Phosphorous
- R-PDA - Rugged-Portable Digital Assistant
- RRA - Reduced Range Ammunition
- RS SKO - Render Safe Kits and Outfits
- RSPHG - Reloadable Stun Practice Hand Grenade

Acronyms & Abbreviations



S

- SAPHEI - Semi-Armor Piercing, High Explosive, Incendiary
- SAR - Sympathetic Aperture Radar
- SAVO - Standoff Activated Volcano Obstacle
- SAW - Squad Automatic Rifle
- SCAAP - Scranton Army Ammunition Plant
- SCD - Small Caliber De-armer
- SCJ - Shaped Charge Jet
- SCT - Sub-Caliber Trainer
- SD - Self Destruct
- SDD - Specialized Search Dog
- SFM - Sensor-Fuzed Munitions
- SHG - Stun Hand Grenade
- SI1 - Spider Increment 1
- SI1A - Spider Increment 1A
- SLAM - Selectable Lightweight Attack Munition
- SLAP - Sabot Light Armor Penetrator
- Sltv MB - Solvent Multi-Base
- Sltv SB - Solvent Single Base
- SltvIs DB - Solventless Double Base
- SMAW - Shoulder-Launched Multipurpose Assault Weapon
- SMCA - Single Manager for Conventional Ammunition
- SOA - Service-Oriented Architecture
- SOF - US Special Operations Forces
- SP - Special Purpose
- SPARK - Self Protective Adaptive Roller Kit
- SPF - Single Point Failure
- SPH - Self-Propelled Howitzer
- SQ - Super Quick
- SREHD - Stand-off Robotic Explosive Hazard Detection
- SRTA - Short Range Training Ammunition
- SS-ADT - Solid State-Active Denial Technology
- SSGL - Single Shot Grenade Launcher
- STANAG - NATO Standardization Agreement
- STE - Synthetic Training Environment
- sUAS - Small Uncrewed Aircraft Systems
- SVT - Soldier Virtual Trainer
- SW - Special Warfare
- SYSKOM - USMC Systems Command

T

- T - Tracer or with Tracer
- TA - Top Attack
- TA DLM - TA Dispenser Launcher Module
- TACOM - U.S. Army Tank-Automotive Command
- TBAD - Tobyhanna Army Depot
- TDP - Technical Data Package
- TH3 - Thermite

- TIC - Toxic Industrial Chemical
- TIM - Toxic Industrial Material
- TMRR - Technology Maturation & Risk Reduction
- TNT - 2, 4, 6-Trinitrotoluene
- TP - Target Practice
- TPDS - Target Practice, Discarding Sabot

U

- U.S.C. - United States Code
- UCA - Urgent Capability Acquisition
- UID - Unique Identification
- UMR - Urgent Materiel Release
- USAF - U.S. Air Force
- USMC - United States Marine Corps
- USN - U.S. Navy
- USSOCOM - U.S. Special Operations Command
- UXO - Unexploded Ordnance
- UXO SD - UXO Stand-off Disrupter
- VADS - Vulcan Air Defense System

V

- VL - Visible Light
- VT - Variable Time

W

- WAM - Wide Area Munition
- WESS - Weapons Effect Signature Simulator
- WP - White Phosphorous