The Program Executive Office for Ammunition (PEO Ammo) has the mission to continue being the best provider of conventional, leap-ahead munitions, mortars, towed artillery systems and counter-improved explosive device (IED) products by fostering innovation and diversity for the warfighter. Project managers within the PEO include Combat Ammunition Systems, Maneuver Ammunition Systems, Joint Program Manager Towed Artillery Systems, Close Combat Systems, Project Director Joint Services and Project Director Joint Products.

Project Manager Combat Ammunition Systems (PM CAS)

The Project Manager Combat Ammunition Systems (PM CAS) is responsible for equipping soldiers and marines with cannon-launched, indirect-fire munitions and mortar weapons systems. Organizations within PM CAS include Product Manager Excalibur, Product Manager Guided Precision Munitions and Mortar Systems (PM GPM2S), Conventional Ammunition Division, Technical Management Division and Business Management Division.

Product Manager Excalibur

The M982 Excalibur, a 155 mm, precision-guided, artillery high-explosive projectile with extended range, has been fielded to servicemembers and successfully employed in combat operations. Excalibur couples global positioning system (GPS) precision-guidance technology with an inertial measurement unit to provide accurate, first-round fire-for-effect capability in an urban setting with accuracy better than 10 meters circular error probable (CEP). Excalibur is approximately 1 meter in length and weighs 106 pounds. Its extended range (up to 40 kilometers) and high accuracy result in increased lethality with a decrease in required volume of fire per engagement. Excalibur Increment Ia is in full-rate production, and Excalibur Increment Ib is in engineering and manufacturing development.

Product Manager Guided Precision Munitions and Mortar Systems

The Product Manager for Guided Precision Munitions and Mortar Systems (PM GPM2S) is the life-cycle manager responsible for guided munition improvements for cannon-launched weapons (mortars and artillery), mortar weapons and mortar fire control systems. Assigned guided precision munitions include the XM1156 Precision Guidance Kit (PGK) and the Urgent Materiel Release (UMR) Accelerated Precision Mortar Initiative (APMI). Mortar weapons include the 60 mm, 81 mm and 120 mm systems and related equipment. Fire control systems include handheld devices and vehicle-mounted systems used to perform mortar tactical and technical fire control for infantry, heavy and Stryker brigade combat teams (BCTs).

The APMI is a response to an Operation Enduring Freedom (OEF) operational need statement (ONS) requiring a GPS-guided, 120 mm mortar cartridge with 10 meters CEP accuracy to rapidly defeat personnel targets while minimizing collateral damage. APMI is currently compatible with U.S. dismounted 120 mm weapons and fire control system, and the Stryker double-V hull mortar carrier and fire control system. It has been successfully used in operations in OEF.

The PGK is a GPS guidance kit with proximity and point detonating fuze functions. It is compatible with existing high-explosive, 155 mm M549A1 and M795 cannon artillery projectiles. The PGK corrects the ballistic trajectory of the projectile to reduce delivery errors and improves projectile accuracy to a range-independent accuracy of less than 50 meters CEP. The PGK will effectively reduce target delivery error of conventional artillery munitions, reducing the number of projectiles required to execute a fire mission. Fielding is expected in 2014.

The M224A1 60 mm Mortar Weapon System is a lightweight, high-angle-of-fire, smooth-bore, muzzle-loaded mortar with weight reduced by 20 percent (44 pounds to 35.3 pounds) and reduced maintenance requirements. The M224A1 consists of an M225A1 cannon (tube), M170A1 bipod assembly, M7A1 baseplate, M8 auxiliary baseplate and the M67A1 sight unit. The M224A1 fires the complete family of 60 mm ammunition including high-explosive, smoke, illumination, infrared illumination and practice cartridges. With ranges from 70 meters to 3,500 meters, the M224A1 meets lethality, range and weight requirements for light forces.

The M252A1 81 mm Mortar System is a smooth-bore, muzzle-loaded weapon that replaced the M252 mortar. It features a high rate of fire, extended range, improved lethality and improved overall system characteristics, reducing overall system weight by 20 percent (90.3 pounds to 70.3 pounds). The entire family of 81 mm ammunition can be fired by the M252A1. The M252A1 consists of the M253 cannon (tube), M177A1 bipod, M3A2 baseplate and the M67A1 sight unit.

The M120/M121 120 mm Battalion Mortar System is a smooth-bore, muzzle-loaded, high-angle-of-fire weapon organic to the battalion, providing immediate long-range, lethality, illumination and smoke-screening effectiveness for close combat. It is used in a ground-mounted (M120) or vehicle-mounted (M121 on the M1064A3 mortar carrier) role. It consists of the M298 barrel assembly, M191 bipod assembly, the M9A1 baseplate and the M67A1 sight. The 120 mm battalion mortar system provides close-in and continuous indirect fire support to maneuver forces and can rapidly respond to threats.

The M326 Mortar Stowage Kit (MSK) is a 120 mm mortar employment improvement. The powered device enables a 120 mm mortar to be quickly put in or out of action. The M326 uses a mortar support strut.
PM MAS supports allies with direct- and indirect-fire ammunition and selected weapons. Offices within PM MAS include the Product Manager Medium Caliber Ammunition, Product Director Medium Caliber Ammunition, Product Manager Large Caliber Ammunition and Product Director Non-Standard Ammunition.

Product Manager Small Caliber Ammunition (PM SC)

The Product Manager Small Caliber Ammunition (PM SC) is the life-cycle manager for the full range of small-caliber ammunition including production of legacy items such as pistol, shotgun and rifle ammunition up to and including .50-caliber for all the armed services and development of new ammunition to support emerging Army requirements. Small-caliber systems include .22-caliber, .38-caliber, 9 mm, .45-caliber, 12-gauge shotgun, 5.56 mm, 7.62 mm and .50-caliber families of munitions. PM SC also manages the modernization of the Lake City Army Ammunition Plant, Mo., the primary source of small-caliber ammunition.

The M855A1 Enhanced Performance Round is a lead-free version of the M855 cartridge that is fired from the 5.56 mm family of weapons (M4, M16 and M249) and is the newest of the small-caliber family of munitions. The M855A1 EPR uses a new bullet design that resulted in a number of significant enhancements over the original general purpose M855 fielded in the early 1980s. Improvements include better hard-target penetration, more consistent performance against soft targets and significantly increased distances of these effects. The EPR allows training exercises to be conducted on ranges where lead projectiles are no longer allowed. The same technology is also being used to improve 7.62 mm ammunition.

Project Manager Maneuver Ammunition Systems (PM MAS)

The Project Manager Maneuver Ammunition Systems (PM MAS) is responsible for the life-cycle management—including development, production and fielding—of all Army direct-fire ammunition (except nonlethal) and for the procurement of Air Force, Navy and Marine Corps direct-fire ammunition assigned to PEO Ammunition as the single manager for conventional ammunition executor. Under its mission for procurement of nonstandard ammunition, PM MAS supports allies with direct- and indirect-fire ammunition and selected weapons. Offices within PM MAS include the Product Manager Medium Caliber Ammunition, Product Director Medium Caliber Ammunition, Product Manager Large Caliber Ammunition and Product Director Non-Standard Ammunition.

Product Director Medium Caliber Ammunition (PD MC)

The Product Director Medium Caliber Ammunition (PD MC) is responsible for life-cycle management of direct-fire combat and training ammunition in 20 mm, 25 mm, 30 mm, and 40 mm caliber families for the Army. Under the single manager for conventional ammunition executor, PD MC is responsible for procurement of medium-caliber combat and training ammunition for the Air Force, Navy and Marine Corps. PD MC supports medium-caliber ammunition needs of the individual warfighter and weapon platforms, which include the M19 Automatic Grenade Launcher; M203/320 Grenade Launcher; Bradley Fighting Vehicle; Light Armored Vehicle; AH-64 Apache; MH-60 Black Hawk and AH-1W Super Cobra helicopters; A-10 Thunderbolt, AC-130U Spectre, F-15 Eagle, F-16 Falcon, FA-18 Hornet, F-22 Raptor and F-35 Joint Strike Fighter aircraft; Land-based Phalanx Weapons System (LPWS) for Counter Rockets Artillery and Mortars (C-RAM); and the Phalanx Close-In Weapon System (CIWS) for naval vessels.

Non-Dud Producing (NDP) training ammunition is being developed for the 40 mm grenade family to allow soldiers and units to train more realistically on continental U.S. training ranges without safety concerns from unexploded ordnance, while meeting environmental requirements with nontoxic components. Currently, units cannot go downrange during training to conduct fire and maneuver tactics. NDP rounds are being developed for both the low-velocity family, fired from the M203 and M320, and the high-velocity family, fired from the Mk 19. Low-rate initial production and full operational capability are planned for fiscal year (FY) 2015. A capability development document was signed for the 40 mm high-velocity training round and a capability production document for the 40 mm low-velocity in December 2011.

Product Manager Large Caliber Ammunition (PM LC)

The Product Manager Large Caliber Ammunition (PM LC) is responsible for life-cycle management of large-caliber, direct-fire combat and training ammunition for the Army and Marine Corps. Platforms supported include the Abrams main battle tank (MBT) and Stryker mobile gun system. Primary target sets for ammunition being procured and new systems being developed are armor, structures, bunkers, obstacles and infantry squads. PM LC also develops and procures specialized ammunition for foreign military sales customers of the Abrams tank. Calibers supported include 105 mm and 120 mm.

The M829E4 is a 120 mm, fifth-generation, kinetic energy, armor piercing, fin-stabilized discarding sabot cartridge for the

M150/M151 Mortar Fire-Control System-Dismounted (MFCS-D)
Abrams MBT. The cartridge is specifically designed to defeat future armored targets equipped with explosive reactive armor and active protection systems. The program is currently in engineering, manufacturing and development, with the Milestone C projected in FY 2014. This cartridge has an expanded operational temperature and provides a significant lethality overmatch against all projected armor threats.

The Advanced Multi Purpose (AMP) is a 120 mm, direct-fire, multipurpose munition to be developed for the Abrams MBT. AMP will provide the user with new capabilities to defeat antitank guided missile teams and breach reinforced walls. AMP has three modes of operation—airburst, point detonate and point detonate delay—that will allow the consolidation of the capabilities of four stockpiled cartridges into a single munition that can be used to defeat dismounted infantry, bunkers, obstacles and light armor. Additional benefits include increased logistical efficiency and being able to battle-carry a single munition that can be used for multiple engagement scenarios.

Product Director Non-Standard Ammunition (PD NSA)

The Product Director Non-Standard Ammunition (PD NSA) provides quality nonstandard ammunition and nonstandard mortar weapon systems to allied nations and other U.S. customers. Nonstandard ammunition/mortar weapons are ammunitions, explosives and weapons that are not managed by national inventory control points, have not been safety-tested and type-classified for Army use, do not have a national stock number, and cannot be procured or requisitioned through the Army or other Department of Defense supply systems. The majority of this ammunition is produced in former Soviet/Eastern bloc countries. Munitions procured range from 5.45 mm through 122 mm, supporting individual and crew-served weapons and platforms including tanks, artillery and aircraft.

Joint Program Manager Towed Artillery Systems (PM TAS)

The Joint Program Manager for Towed Artillery Systems (PM TAS) takes a joint (Army and Marine Corps) perspective in managing the development, acquisition, testing, systems integration, product improvement and fielding of the M777A2 155 mm Joint Lightweight Howitzer (LW155) system, designed to enhance strategic mobility and provide the infantryman and marine with effective and responsive fire support. The LW155 is a joint Marine Corps and Army program that replaces the M198 155 mm 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 team and the sole howitzer in the Marine Corps. The LW155 uses the M776 155 mm cannon, giving it 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.

In addition to the M777A2 howitzer, other towed artillery systems supported in U.S. Army inventories include the M199A2 105 mm Howitzer, the Improved Position and Azimuth Determining System (IPADS), and the M198 155 mm Howitzer.

The M199A2 is a lightweight, 105 mm howitzer that provides continuous close fires to infantry brigade combat teams. The system weighs 4,330 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 M199A2 howitzer was approved in 2008. Using the software for the M777A2 155 mm howitzer maximizes commonality in operation and training while minimizing program cost, schedule and risk. The application of a digital fire control will allow the digitized M199A2 to emplace and displace faster, provide more responsive fires, and become more survivable on the battlefield.

The IPADS provides common inertial survey control for all Army and Marine Corps field artillery, mortar, artillery meteorological and radar systems. PM TAS is also managing the effort to add a GPS feature to IPADS. IPADS-G will augment 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 will be aided by an internal GPS receiver; however, it must also be capable of operating in an inertial fashion independently of GPS aid.

The Army began fielding the M198 155 mm Towed Howitzer in early 1979 to provide greater range and lethality for light unit fire-support elements. As a successor to the older M114A1 155 mm towed system, the 15,750-pound (original fielded weight) M198 provided a maximum range of 30
kilometers (with rocket-assisted projectiles) and the capability to fire a broader range of ammunition options than those available for 105 mm units. Normally towed by a 5-ton truck, the M198 can also be moved by a CH-47D Chinook helicopter or Air Force assets (C-130 and larger). The M777A2 has replaced the M198.

PM TAS also supports the D-30 Howitzer program. The D-30 Howitzer is a 122 mm Soviet towed Howitzer that entered service in the 1960s. It weighs 7,055 pounds and has a maximum range of 15.4 kilometers (21.9 kilometers assisted). It has a maximum rate of fire of 10 to 12 rounds per minute and a sustained rate of five to six rounds per minute. In 2010, PM TAS was given a requirement to provide 194 D-30s to the Afghan National Army. PM TAS has delivered 104 Howitzers, provided training on the operation and maintenance of the weapon system, and established a refurbishment capability in Afghanistan that is allowing Afghan workers to refurbish additional Howitzers.

**Project Manager Close Combat Systems (PM CCS)**

Nearly every mission U.S. soldiers face, either domestic or international, involves an item managed by Project Manager Close Combat Systems (PM CCS). PM CCS’s contributions are on the forefront of theater operations and span multiple services, providing cutting-edge technology to defeat the ever-evolving and adapting threats, as well as legacy systems being used in new, innovative ways on today’s battlefield. The PM CCS portfolio of products ranges from counter-IEDs, handheld pyrotechnic devices, C-4 explosives and shoulder-launched munitions (SLMs) to mine clearing line charges, hand grenades and nonlethal weapon sets.

**Product Manager Countermine and Explosive Ordnance Disposal**

Nothing is more important than the freedom to operate wherever required on the battlefield. Finding, neutralizing and discarding explosive hazards that impede this movement demand a complete spectrum of countermine and explosive ordnance disposal (EOD) solutions for vehicle, handheld and robotic applications.

In Afghanistan, insurgents have moved to using explosive hazards made of low- or non-metallic components that are more difficult to detect using conventional methods, thus putting soldiers at greater risk of injury or death. Enter **ground penetrating radar (GPR)**, a superior technology that provides a 3-D analysis of objects buried in the ground. Both the Husky Mounted Detection System (HMDS) and the AN/PSS-14 Mine Detecting System employ GPR. This technology alerts the operator to the threat prior to detonation, greatly reducing the risk of injury to the crew and battle damage to the vehicle or surrounding facilities.

Continuous development to countermeasure technology and equipment provides EOD technicians the ability to access, disrupt and neutralize hazards from increased standoff distances quickly and smoothly. The MK40 Mod 0 Unexploded Ordnance Standoff Disrupter Tool allows the EOD soldier to render safe unexploded ordnance (UXO) and IEDs via a percussion-activated projectile from a standoff position. The EOD PAN Disrupter is a laser-aimed disrupter that can also be fired from EOD robots.

**Product Manager Improvised Explosive Device Defeat/Protect Force**

IEDs remain one of the most deadly threats to U.S. servicemembers with every step and mile they travel. Protecting the force from these dangers takes a layered approach to control, monitor, and defend personnel, facilities and vehicles.

Detecting IEDs or threats is the first line of defense. Capabilities such as **Sherlock** and Fido explosive detection systems detect potential IEDs, suicide bombers, and other explosive hazards at base entrances, ranges and control points as part of a tiered defense. They provide improved identification and detection capabilities outside the blast range.

Deny systems block enemy access to unauthorized locations and deny them the opportunity to emplace IEDs or other explosive hazards in targeted areas. **Culvert Denial Systems** block unauthorized access to culverts, the devices used to channel water and allow it to pass underneath roads, railways or embankments. These capabilities aim to reduce the security risks for U.S. forces and provide blast mitigation with standoff protection.

Defeat products focus on defensive technologies and capabilities required to conquer IEDs by neutralizing them before they can be detonated or minimizing the effects of IED blasts on personnel, equipment and facilities. The **Jackal Explosive Hazard Pre-Denial System** triggers IEDs at standoff distance and is modular and adaptable to emerging IED devices and multiple platforms. Jackal was named one of the Army’s Greatest Inventions.

**Product Directorate Area Denial**

PM CCS is redefining how soldiers shape the battlefield and protect the force through continual advances in area-denial capabilities. Area-denial systems and munitions block enemy access to key terrain and restrict the enemy’s ability to maneuver freely. These systems include cutting-edge networked munitions and legacy antipersonnel and antivehicle systems. Manportable, these systems provide soldiers faster response time, greater efficiency, and enhanced safety and can be employed to protect perimeters and flanks during attack, reinforce light forces and control enemy movement.

The XM-7 **Spider Networked Munition** is an effective lethal and nonlethal alternative to antipersonnel land mines (APLs). Currently operational in Afghanistan, the system is an advanced, man-in-the-loop (MITL) area-denial system that offers remote-controlled force protection. The system is different from a land mine in that it cannot deliver effects unless commanded to do so, and it can be safely recovered from the field and reused. Spider provides the equivalent munition field effectiveness of current APLs without the residual life-threatening risks after hostilities end or when warring factions depart.

The **M18A1 Claymore** is a directional fragmentation munition that fires metal balls (shrapnel) out to about 100 meters across a 60-degree arc in front of the device.

![Image of Husky Mounted Detection System (HMDS)](image-url)
It is remotely detonated using an electric or nonelectric initiation system and is used to deter enemy pursuit, establish perimeter defenses and conduct ambushes. It can also be used with the Spider System.

Product Directorate Combat Munitions

Having the tactical flexibility to react rapidly and effectively to any scenario ensures success against the varied threats and combat environments U.S. forces face. Combat munitions provide a range of battlefield munitions and escalation of force capabilities that broaden soldiers’ options for countering enemy actions. They include shoulder-launched munitions (SLMs), grenades, and nonlethal ammunition and systems.

SLMs provide soldiers the ability to defeat light-armored vehicles and bunkers and enemy personnel. Disposable and highly mobile, improved versions of SLMs such as the M136A1 AT4 Confined Space (AT4-CS) can be fired from confined spaces, increasing effectiveness in urban environments. The upgraded M72 Light Assault Weapon (LAW) is ideal for the combat environment in Afghanistan, characterized by difficult terrain, long foot patrols and fast-paced operations at close range. Grenades range in effect from nonlethal to lethal and can be hand-thrown or propelled from a launcher. They offer a variety of capabilities—from fragmentation and incendiary to screening and signaling—to the soldier in close-combat situations.

PM CCS’ nonlethal munitions and systems allow soldiers to react with the appropriate level of force based on the threat and serve as the last step in a scalable response—shout, show, shove, shoot. They are vital in urban conflict to limit collateral damage and avoid noncombatant casualties. The Non-Lethal Capabilities Set (NLCS) provides a variety of capabilities including checkpoint, dismounted operations, convoy protection and crowd control/detainer operations as well as counter-personnel and counter-materiel systems. The modularity of the NLCS allows the commander to tailor equipment needs based on a specific mission or threat level.

Both the M1012 12-gauge Nonlethal Point Control Cartridge and M1013 12-gauge Nonlethal Area Round temporarily disorient or incapacitate a targeted individual with nonlethal blunt trauma. They can be fired from a standard issue 12-gauge shotgun, such as the Mossberg 500, Mossberg 590 and Winchester 1200. The M1029 40 mm Crowd Dispersal Cartridge and M1006 40 mm Sponge Grenade can either be launched from the M203 40 mm grenade launcher or fired from an M16A2/M203 or M4/M203. These nonlethal munitions fill a wide range of possible nonlethal applications, including crowd control and enforcing a buffer zone.

Product Directorate Support Munitions

PM CCS’ Support Munitions—demolitions and pyrotechnics—provide soldiers with enhanced maneuver, communication and illumination capabilities across various missions on the battlefield.

Combat engineers, infantry, explosive ordnance disposal and special operations use demolitions and breeching munitions to clear mines and IEDs, overcome obstacles, and impede enemy movement. Modernization efforts are aimed at making demolitions lighter, more reliable and less sensitive. PM CCS manages a range of demolition items, including the Modern Demolitions Initiator, a suite of components used to activate all standard military demolitions and explosives, as well as bulk, shaped and cratering charges. Designed to clear mines and related obstacles for dismounted soldiers and vehicles, the Anti-Personnel Obstacle Breaching System is light enough to be carried by two soldiers with backpacks, while the Mine Clearing Line Charge is a rocket-projected explosive line charge.

Pyrotechnics include munition flares, signals and simulators. Advanced infrared decoy flares, the M206, M211 and M212 Air Countermeasure Flares are used by Army aircraft and helicopters to defeat a range of threats. The family of Handheld Signals provides aircraft, distress and troop emplacement signaling as well as battlefield illumination. Battlefield and ground effects simulators, such as the M115A2 Ground Burst Simulator and M116A1 Hand Grenade Simulator, produce battle noises and effects—shells in flight, ground burst explosions or grenades—for use in training.

“When the Sioux and Cheyenne find out we have a fully integrated tactical network, I’m sure they will pack up and go home.”