
Warfighter Readiness, Battlefield Dominance

PM CCS Offers Revolutionary Networked Munition Systems

LIZ MCCARTHY AND MICHAEL D. KAPLUN

Over the past five years, the Project Manager Close Combat Systems (PM CCS) at Picatinny Arsenal, N.J., has been called upon repeatedly to respond to urgent requirements from the field. They have also seen the number of programs they manage more than double in the same time.

According to COL Raymond Nulk, Project Manager PM CCS, “We’re fortunate to have many of our systems actively supporting warfighters in Iraq and Afghanistan. Some of this is due to our being in synch from a warfighter, a requirements, and an acquisition perspective — something we’ve worked hard to achieve. Beyond that,” he continued, “we are addressing the users’ immediate needs by urgently fielding critical warfighting capabilities and providing vital training.”

PM CCS is also putting together long-term production contracts that will be flexible enough to support dynamic changes in both warfighting and training requirements. They are actively pursuing technologies to produce smaller, lighter, more lethal munitions to ensure increased mobility to the full spectrum of current Army forces and those envisioned for the next 20 years.

Leading the Way to the Intelligent Battlefield

Several networked munitions systems out of PM CCS are redefining how Soldiers shape the battlefield and protect the force. Drawing on revolutionary technology, these systems empower frontline Soldiers with intelligence information and protection capabilities to minimize risk while enhancing operational effectiveness.



Project Manager Close Combat Systems photos

An advanced man-in-the-loop area denial system, the Spider network command munition was developed to provide force protection and shape the battlefield while minimizing risk to friendly troops and noncombatants.

The first of the networked munitions to be fielded, Spider, is an advanced man-in-the-loop area denial system that offers remote-controlled force protection. The system’s Munition Control Unit (MCU) is fitted with six munition launchers, each covering a 60-degree sector. When the trip wire is activated, a signal is sent from the MCU to the Remote Control Unit where an operator chooses to detonate the grenades or take other actions, thus providing scalable application of lethal and non-lethal means, from M18A1 Claymore munitions to the non-lethal Modular Crowd Control Munitions (MCCM). The system can be recovered and replenished after an engagement and deactivated on command to enable safe recovery or passage of friendly forces. This antipersonnel landmine alternative meets National Landmine Policy by incorporating the self-destruct/self-deactivate features.

Formerly known as the Intelligent Munitions Systems, Scorpion combines detailed battlefield intelligence with precision munitions to attack targets ranging from light-wheeled to heavy-tracked vehicles. It has the ability to deny the enemy freedom of maneuver while enabling friendly maneuver through a robust command and control system. Scorpion can also sense enemy presence, collect battlefield data, and relay it to an operator. It supports full-spectrum operations in both open and urban terrain.

New Systems Fielded to Defeat IEDs

To help Soldiers combat one of the greatest threats in theater — improvised explosive devices (IEDs), the Product Manager IED Defeat/Protect Force (PM IEDD/PF) procured the Self-Protection Adaptive Roller Kit (SPARK). The kit, a modular IED roller system designed to be mounted on a wide range of tactical wheeled platforms, consists of roller banks that attach to the front of the vehicle. The roller banks make contact with the ground causing IEDs to detonate on the roller, forcing the blast down and away from the vehicle, as opposed to underneath where it could do more damage. One of the most effective weapons in our arsenal against IEDs, SPARK has saved many lives and continues to prove its effectiveness.

“You have to be on point with our Soldiers, talking with them, and implementing fixes,” stated LTC Karl Borjes, PM IEDD/PF. The SPARK program has been successful in part because his team visits Soldiers in the field, actively soliciting their feedback to bring back to the office and incorporating changes into the next procurement. SPARK upgrades based on this feedback include installing additional lights for better visibility and improved control and braking for the severe terrain of Afghanistan.



The improved SPARK includes an additional third roller bank and is currently compatible with nearly all military wheeled and tactical vehicles, including all MRAP variations and HMWWVs.

Another IED defeat system, the Rhino Passive Infrared Defeat System is also making news and saving lives. Featuring a universal bracket so it can be mounted on any vehicle platform, Rhino detects and defeats a subset of IEDs. Used in concert with SPARK or Cyclone, a powerful blower system, Rhino provides additional protection and flexibility to the Soldier. According to LTC Borjes, almost 20,000 Rhinos have been delivered to theater. PM IEDD/PF continues to explore new technologies to defeat this ever-changing and adapting threat.

Detecting IEDs: A First Line of Defense

Product Manager Countermine and EOD (PM CM&EOD) has contributed a number of products in support of current contingency operations. In addition to the well-known and heavily used AN/PSS-14 Mine Detecting Set, two new products are searching out IEDs — the Vehicle Optics Sensor System (VOSS) and the IED Interrogation Arm.

VOSS is used by Army combat engineers for route clearance and by Explosive Ordnance Disposal (EOD) teams, which rely primarily on visual detection of suspected IEDs.

According to LTC Pete Lozis, PM

CM&EOD, VOSS gives them the ability to detect IEDs from a greater standoff distance than previously achievable. “That’s a tremendous advantage when you’re talking about safety for the Soldiers operating this equipment,” he said.

In response to Joint Urgent Operational Needs from both Iraq and Afghanistan, PM CM&EOD procured, shipped, and installed over 200 VOSS systems and trained Soldiers in their use. VOSS was recognized as one of the Army Top 10 Greatest Inventions for 2007. The IED Interrogation Arm provides standoff detection of IEDs using a probing/digging tool to expose objects and a metal detector/camera to identify targets.



VOSS incorporates a powerful network of multiple cameras to create a top-to-bottom, day and night surveillance system.

Non-Lethal Capabilities Provide Range of Options

In addition to providing commanders with increased safety while reducing noncombatant fatalities and collateral damage, PM CCS develops effective non-lethal systems. These systems support Escalation of Force (EOF) procedures and allow Soldiers to react with an appropriate level of force based on the situation.

PM IEDD/PF is leading the fielding of the Non-Lethal Capabilities Set (NLCS) to active duty and National Guard brigades throughout the Army. The set provides a variety of capabilities, including checkpoint operations, dismounted operations, convoy protection, and crowd control/detainee operations, as well as counterpersonnel and materiel systems. The modularity of the NLCS allows the commander to tailor equipment needs based on a specific mission or threat level.

The Full Spectrum Effects Package (FSEP) is the first integrated package of lethal and non-lethal capabilities to support EOF on a Stryker platform. Components include the non-lethal remote weapon station with Long Range Acoustic Device, Bright White Light, the GBD-III Laser Dazzler, and a shotgun that fires non-lethal ammunition. The lethal remote weapon station includes a 66mm launcher, 360-degree cameras, projectile detection, and cueing. FSEP has demonstrated its effectiveness by successfully resolving several conflicts with noncombatants.

PM CCS also manages a variety of non-lethal munitions in 40mm and 12 gauge families that are designed to act as warning or deterrent munitions. The M1006 Point

Target Round, better known as the “Sponge Grenade,” and the M1029 Crowd Dispersal Cartridge are intended for close quarter engagement, can engage three or more targets at once, and are fired from a standard M203 Grenade Launcher. The M1012 Point Round and the M1013 Area Round engage targets at close range only and are fired from the standard issue Mossberg 500 series shotgun. Additional non-lethal munitions include the M84 Stun Hand Grenade, that produces a flash-bang effect for

room clearing or hostage rescue situations, and the MCCM, a non-lethal Claymore-like device that uses rubber pellets to disperse crowds at close range.

Grenade Enhancements Focus on Soldier Safety

Having played a role in warfare for hundreds of years, grenades continue to increase combat effectiveness and survivability. PM CCS supports a host of grenades that range in effect and mission, from non-lethal to lethal, from hand-thrown or launched from a 66mm or 40mm launcher, and those used for training. PM CCS is currently implementing a Confidence Clip to the fragmentation grenade.

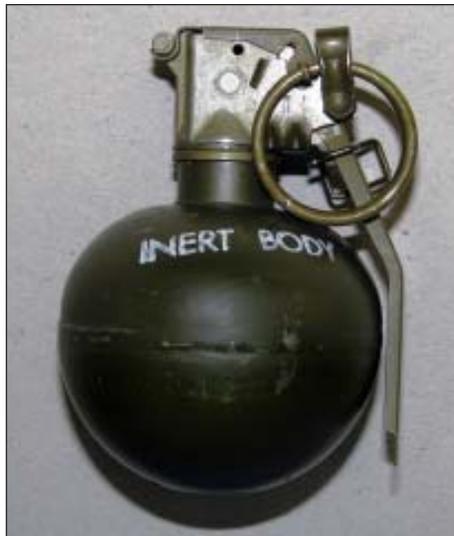
“The Confidence Clip fits between the grenade fuze and body,” explained Kevin Wong, PM CCS’ Force Application Division Chief. “It securely fastens the pull ring in place to prevent the accidental removal or rattling associated with a loose ring, thus eliminating the practice by some Soldiers of “taping” their grenades for perceived safety or to reduce noise.”

Battlefield Simulation and Illumination

The Pyrotechnics Division of PM CCS manages flares, signals, and simulators that provide important warfighter capabilities such as communications, illumination, training, and protection against advanced air-to-air and surface-to-air weapon systems. The family of hand-held signals consists of the M158 Star Cluster and M127A1 White Parachute, used by downed airmen or others needing emergency escapes, and battlefield and ground effects simulators that produce battle noises and battlefield effects for training. Significant work has been completed to enhance training through these various battlefield effect simulators. Additionally, environmental improvements were made through the development of a unique flash-bang replacement in the M115 simulator. These changes lessen the impact on the environment without changing the function of the simulators.

Enhancing SLM Training and Capabilities

Shoulder Launched Munitions (SLMs) provide Soldiers with capabilities to defeat



The Confidence Clip, which fits between the grenade fuze and body, securely fastens the pull ring in place to prevent accidental removal or rattling.

light-armored vehicles, bunkers, and other field fortifications. A greater understanding of SLM capabilities and their operation have significantly increased the weapons’ usage and success in combat. Using a “train-the-trainer” approach, PM CCS in conjunction with the U.S. Army Infantry School, has a pre-deployment training team that is dedicated to training deploying units on existing SLMs.

“We conduct surveys after each training event,” said Gary Barber, SLM and Special Projects Division Chief. “Soldiers have provided value-added feedback, which we have used to further refine both our training approach and our training strategy for the future.” To date, the training team has provided classroom instruction and field firings to more than 1,100 Soldiers worldwide.

Current disposable SLMs available include the M141 Bunker Defeat Munition (BDM), a man-portable system that is highly effective against field-fortified targets and is capable of breaching masonry walls and neutralizing light armored vehicles. The M136A1 AT4 Confined Space (AT4-CS), replacing the M136 AT4 Light Anti-Tank Weapon, is another disposable SLM that can be safely fired from enclosures or protected fighting positions, thereby increasing the Soldier’s survivability in urban conflict.

The future SLM will be small, lightweight, and multi-purpose. PM CCS is developing an acquisition strategy to field the next

generation SLM — the Individual Assault Munition (IAM). The strategy will involve the integration of new and innovative technologies in the areas of warheads, explosives, fuzing, propulsion, lightweight materials, and low-cost sights in a single munition. The IAM will ultimately replace both the M141 BDM and M136A1 AT4-CS as the Army’s primary, multi-purpose SLM for light Infantry.

Assured Demolitions

PM CCS Special Projects Division focuses on products employed by Special Operations Forces who rely on self-sufficiency, stealth, and close communications. The Radio-Frequency (RF) Remote Activation Munition System (RAMS) gives Soldiers the capability to remotely control demolition charges and other items of equipment. The Magneto Inductance (MI) version of the RAMS can initiate remotely controlled demolition items through natural or man-made structures where RF signals cannot travel. The MI-RAMS is not vulnerable to the reflection, refraction, or scattering encountered by radio, optical, or acoustic waves and enables trans-medium communications, giving Special Operations Forces the ability to establish reliable communications to initiate demolitions and munitions under the most difficult battle conditions.

Maintaining the logistical and operational edge requires more than just enhanced weapons; it requires innovations that mitigate the enemy’s capabilities. Across its wide range of lethal and non-lethal munition systems, PM CCS’ commitment to providing warfighters with the tools necessary to defeat the enemy and execute the mission effectively is second to none. PM CCS is dedicated to the sustained success of today’s Army and the continued dominance of the future force.

Liz McCarthy provides contract support to PM Close Combat Systems and PM Close Combat Weapon Systems through BRTRC Technology Marketing Group. She has a bachelor’s degree in Journalism from Loyola College in Maryland.

Michael D. Kaplun is a junior writer/editor with BRTRC and provides contract support to PM Close Combat Systems through BRTRC Technology Marketing Group. He holds a bachelor’s degree in English and Media and Society from Hobart and William Smith Colleges.
