

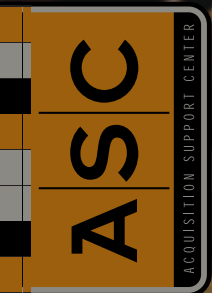
# ARMY

# AL&T

July - August 2004



## Ammunition Enterprise



## From the Army Acquisition Executive Future Combat Systems: A Single Entity

It has been said that success comes from having the proper aim as well as the right ammunition. I would add that it is important to have the proper amount of ammunition as well. In fighting and winning the global war on terrorism, ammunition once again has taken on increased importance. The so-called "iron mountain" of ammo that accumulated during the Cold War years has been reduced substantially as we continue to balance our training requirements with today's operational needs. In fact, at the Lake City Army Ammunition Plant, DOD's only small caliber production facility, we produced roughly 300 million rounds in 1999. Today, we are headed to nearly 1.2 billion rounds in 2004 with an aim toward 1.75 billion to 2 billion rounds annually in the coming years. Our challenge is to find the right models to allow us to predict our future ammo requirements, and we are working on that.

While this edition is devoted primarily to ammunition, there is also a spotlight on Stryker, one of Army acquisition, logistics and technology's great success stories. LTG Joseph L. Yakovac Jr., my Military Deputy, just presented the Secretary of the Army Environmental Excellence Award — an award normally given to Army installations — to Program Manager Stryker, COL David Ogg, for establishing an interagency environmental management team that greatly reduced the hazardous materials used in building Stryker as well as designing environment-friendly features into the family of vehicles. Examples include a design that catches spent shell casings and another that traps fluids that are normally released to the environment. In addition, the team created processes that eliminate many uses of chromium and cadmium in the production, fielding and repair in the first halon-free crew explosion protection system. Yakovac stated, "We are not only responsible for being good stewards of taxpayers' money, but good stewards of the environment."

When then Army Chief of Staff GEN Eric K. Shinseki announced transformation plans in October 1999, he talked of an Interim Force that would fill the gap between our heavy forces and our light forces. He spoke of Interim Brigade Combat Teams equipped with a family of Interim Armored Vehicles (IAVs) with two primary goals. One: to increase the Army's ability to deploy forces rapidly worldwide. IAVs would be transportable in C-130 type aircraft, enabling our troops to get to the fight fast and operate with a much smaller logistics footprint. Two: the IAV's speed, mobility and armor protection would increase lethality and enhance Soldier survivability.

In early 2002, the system was unveiled thanks to hard work by the brigade combat team — military and civilian — in Fort Lewis, WA; Anniston, AL; Warren, MI; London, Ontario; and other locations throughout the world. Their dedicated efforts gave us the Stryker — named in honor of two Medal of Honor



recipients who gave their lives on the battlefield in defense of America and freedom: PFC Stuart S. Stryker who served in World War II and SPC Robert F. Stryker who served in Vietnam. As then Sergeant Major of the Army Jack Tilley said, "These two great Soldiers were separated by a generation and fought on battlefields on opposite sides of the globe, but both made the ultimate sacrifice for their country and their fellow Soldiers. Now, it's up to all Soldiers to honor the Stryker name by making full use of the enormous capabilities of the Stryker combat vehicle."

Our Soldiers are honoring the Stryker name. On Dec. 3, 2003, the Army's first Stryker Brigade Combat Team (SBCT) crossed the Iraqi border from Kuwait. The 3rd Brigade, 2nd Infantry Division, known as the "Arrowhead Brigade," deployed from Fort Lewis to *Operation Iraqi Freedom*, delivering its enhanced capability to the Joint Force in record time: 4 years from broad concept to deployment. Exceptional support from Congress and the Office of the Secretary of Defense (OSD), along with close collaboration between the Army and industry, made this achievement possible. The SBCT comprised more than 1,000 vehicles, including more than 300 Strykers and more than 3,500 Soldiers.

The Stryker family has two variants — the Mobile Gun System and the Infantry Carrier Vehicle (ICV). The SBCT in Iraq operates eight ICV configurations including the commander's vehicle, reconnaissance vehicle, mortar carrier, medical evacuation vehicle, fire support vehicle, engineer squad vehicle and antitank guided missile vehicle. The nuclear, biological and chemical Stryker vehicle is not yet available nor is the Mobile Gun System.

Stryker brigades are our Army's first truly network-centric force, filling the capability gap between light- and heavy-force units with an infantry-rich, mobile force that is strategically responsive, tactically agile and lethal. Improved battlespace awareness and battle-command technologies embedded in our SBCTs enhance combat effectiveness and survivability by integrating data from manned and unmanned air and ground-based sensors and providing real-time, continuous situational understanding.

This spring, our second SBCT at Fort Lewis became operational. Our third SBCT, in Alaska, will be available in 2005. Continued support from Congress and OSD will ensure that subsequent brigades in Hawaii, Louisiana and Pennsylvania are fielded between 2004 and 2008.

Stryker has proven that we are on the right path to the future.

**Claude M. Bolton Jr.**  
Army Acquisition Executive



# ARMY AL&T

July - August 2004

# ACQUISITION, LOGISTICS & TECHNOLOGY

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## Creating Ammunition Enterprise Excellence

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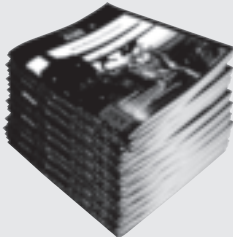
July - August 2004

# ACQUISITION, LOGISTICS & TECHNOLOGY

**Army AL&T Magazine staff thanks you for participating in our Readership Survey. Look for results of the survey in the Sep-Oct 2004 issue of Army AL&T.**



## 2004 Readership Survey



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*This medium is approved for official dissemination of material designed to keep individuals within the Army knowledgeable of current and emerging developments within their areas of expertise for the purpose of enhancing their professional development.*

By order of the  
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General  
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Chief of Staff


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Administrative Assistant to  
the Secretary of the Army  
0419701

# The Army SMCA Restructures for Success

BG Paul S. Izzo,  
BG James W. Rafferty,  
COL Jeffrey Gwilliam and  
Charles Mattingly

**“In the world of acquisition reform, ammunition and explosives remain an area where tight specifications and quality control remain as cornerstone business practices ... due to a defective item’s ability to kill or injure a service person on the frontlines ... the SMCA Executor must work with a network of ammunition and explosives producers that continues to shrink and deal with inconsistent buying patterns by the services because of changing priorities, requirements or funding. The SMCA world is not your normal acquisition environment and is a true challenge for the organization charged with the executor mission.”**

— COL Dave Underwood, Deputy Director of Logistics, Armament Enterprise Program Office, Air Armament Center



Soldiers with 2nd Battalion, 11th Field Artillery Regiment, 25th Infantry Division, fire an M119A2 Howitzer during a harassment and interdiction fire exercise at Forward Observing Base Warrior in Kirkuk, Iraq, June 2, 2004. (U.S. Army photo by PFC Elizabeth Erste, 55th Signal Company.)



The AC-130 gunship's primary missions are close air support (CAS), air interdiction and force protection. CAS missions are typically troops in contact, convoy escort and urban operations. Air interdiction missions are conducted against preplanned targets or targets of opportunity. Force protection missions include air base defense and facilities defense. (U.S. Air Force (USAF) photo.)

The Army's Single Manager for Conventional Ammunition (SMCA) is charged with the acquisition and production management of more than 166 different ammunition types for all military services including the Army, Air Force, Marine Corps and Navy. The total procurement effort cost more than \$1.9 billion in procurement dollars in FY04. The logistics management for more than 2 billion munitions items purchased was valued at \$22.9 billion. Operations and maintenance costs were approximately \$280 million and consumed more than 1,000 man-years of effort. By any measure, ammunition procurement and logistics is big business.

In one form or another, the SMCA has been in existence since the mid-1970s. It began as an outgrowth of a 1973 General Accounting Office (GAO) report and was created to resolve congressional concerns about the

efficiency of ammunition procurement, production and logistics. At the time, each military service had separate divisions for operations and infrastructure.

The SMCA's objectives have remained the same since its inception was defined in *DOD Directive (DoDD) 5160.65, Single Manager for Conventional Ammunition*, — "Achieve the highest possible degree of efficiency and effectiveness in DOD operations required to acquire top quality conventional ammunition for U.S. forces and integrate wholesale conventional ammunition logistics functions of the military departments to the maximum extent practicable."

The directive assigned the Army as the executive agent to carry out this mission. To ensure its success, each service transferred its government-owned production base to the Army, making it a long-term mission. The directive

divides conventional ammunition into two categories: service-retained and SMCA-managed items. Service-retained items include guided munitions such as projectiles,



This 105mm ammo was to be used for an M119A1 105mm Lightweight Towed Howitzer assigned to A Battery, 2-319 Airborne Field Artillery Regiment. The regiment deployed from Fort Bragg, NC, to Baghdad International Airport, Iraq, in support of *Operation Iraqi Freedom (OIF)*. (USAF photo by MSG Robert R. Hargreaves Jr.)

rockets and missiles as well as service-unique items such as torpedoes and chaff. Even service-retained items can be “transitioned” to the SMCA through a process where the developing service hands off the item to the SMCA for management. SMCA-managed items include nearly everything else that is defined as conventional ammunition.

The SMCA has 16 mission functions that are spelled out in *DoDD 5160.68, Single Manager for Conventional*

*Ammunition*, of March 1998. They range from development to demilitarization, acquisition to logistics and transportation and maintenance to quality assurance. In other words, SCMA provides soup-to-nuts life-cycle management for a wide range of ammunition that supports our military forces’ efforts around the globe.

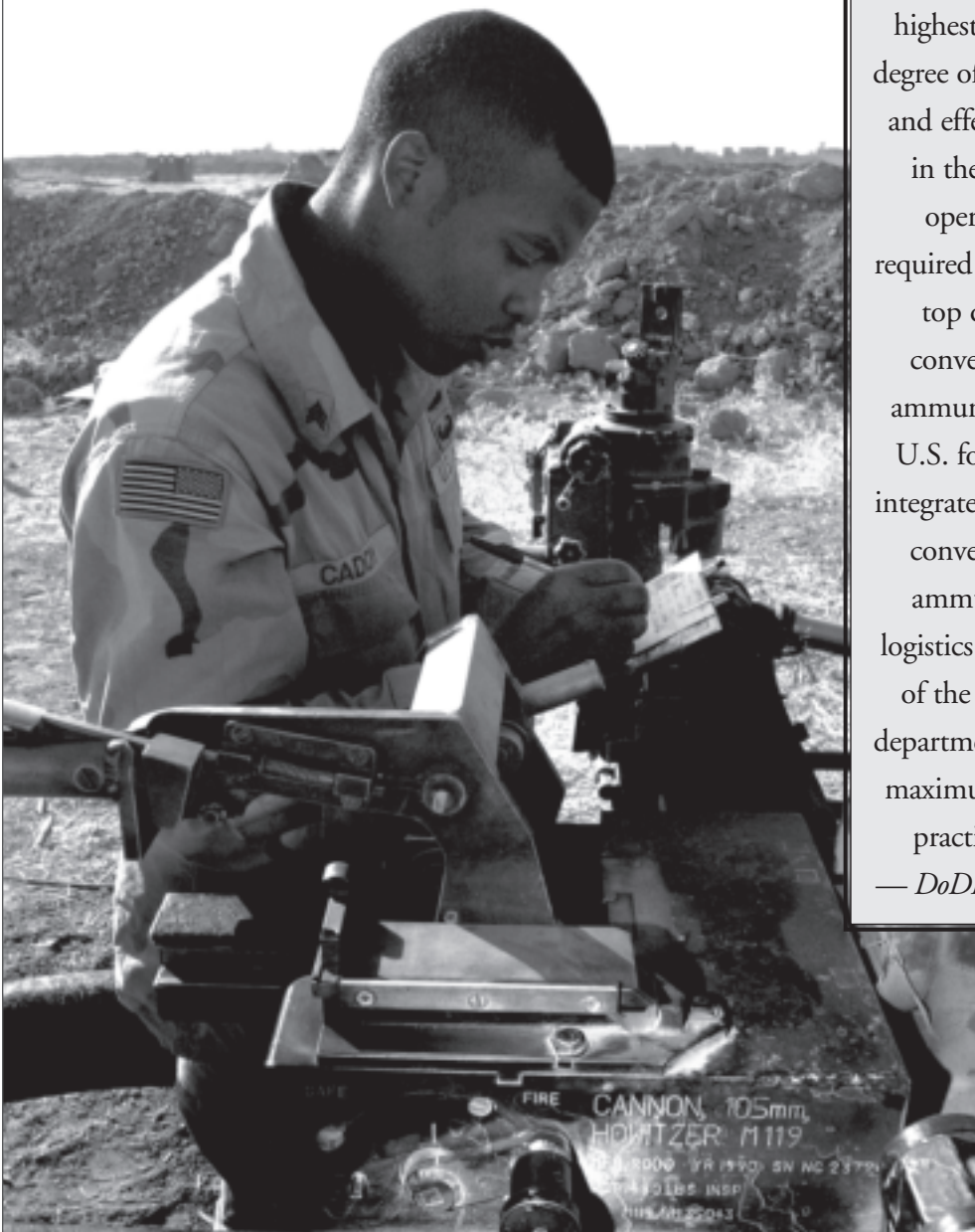
**Organized for Success**

SMCA was restructured in the late 1990s in response to new GAO recommendations that SMCA:

- Manage ammunition as a major program.
- Consolidate under a program executive office (PEO) structure.
- Convert government-owned production assets to the private sector.
- Apply acquisition reforms.

The changes were made and improvements to the operation continue today. In October 2001, the Army stood up PEO Ammunition (Ammo). By December 2002, the Army reached agreement on delineating responsibility for the SMCA mission functions, which were

SGT Elijah Caddy records coordinates for a test fire of an M119A1 105mm Lightweight Towed Howitzer. Caddy is assigned to A Battery, 2-319 Airborne Field Artillery Regiment, deployed from Fort Bragg. (USAF photo by MSG Robert R. Hargreaves Jr.)



“Achieve the highest possible degree of efficiency and effectiveness in the DOD operations required to acquire top quality conventional ammunition for U.S. forces and integrate wholesale conventional ammunition logistics functions of the military departments to the maximum extent practicable.”  
— *DoDD 5160.65*

then designated to either PEO Ammo or to the Joint Munitions Command (JMC). In April 2003, PEO Ammo was designated as the SMCA Executor charged with integrating and executing SMCA functions, making PEO Ammo ultimately responsible for SMCA’s success or failure.

It didn’t take long for PEO Ammo and JMC to change the way that SMCA did business. Using a Lean Manufacturing/Six Sigma strategy, the PEO; U.S. Army Research, Development and Engineering Center (ARDEC); and JMC began developing an ammunition enterprise approach to manage the SMCA. This delineated responsibility and defined enterprise-level process maps. The enterprise also

embarked on improving command relationships through a series of senior-level off-site meetings that resulted in an enterprise Memorandum of Understanding (MOU) signed in January 2004. The MOU is a capstone document that defines how the SMCA operates.

To improve its customer focus, PEO Ammo also established an SMCA Procurement Steering Council in October 2003. The Council gives the services a voice in the SMCA acquisition process and gathers the military services' requirements and acquisition organizations to engage the SMCA project managers (PMs). It's an opportunity to address SMCA issues and to improve critical business processes.

The PEO uses a family approach to managing the SMCA mission. For example, PM Maneuver Ammunition Systems (MAS), which has always had program management responsibility for Army small and medium caliber systems, now manages Air Force and Navy service-unique small and medium caliber ammunition. PM MAS executes the acquisition process for the services, but each service retains program management responsibility. PMs can now develop far more comprehensive acquisition plans/strategies and consolidate all service item procurements when it makes sense to do so. Items that do not fit into PM MAS, PM Combat Ammunition

Systems or PM Close Combat Systems families belong to PM Joint Services (PM JS). Therefore, PM JS is responsible for items such as Air Force and Navy bombs.

One constant in the restructuring has been the Office of the Executive Director for Conventional Ammunition (OEDCA), which acts as an ombudsman for SMCA. While change has not been easy, OEDCA has been instrumental in reassuring the services that the changes will be beneficial in the long run.

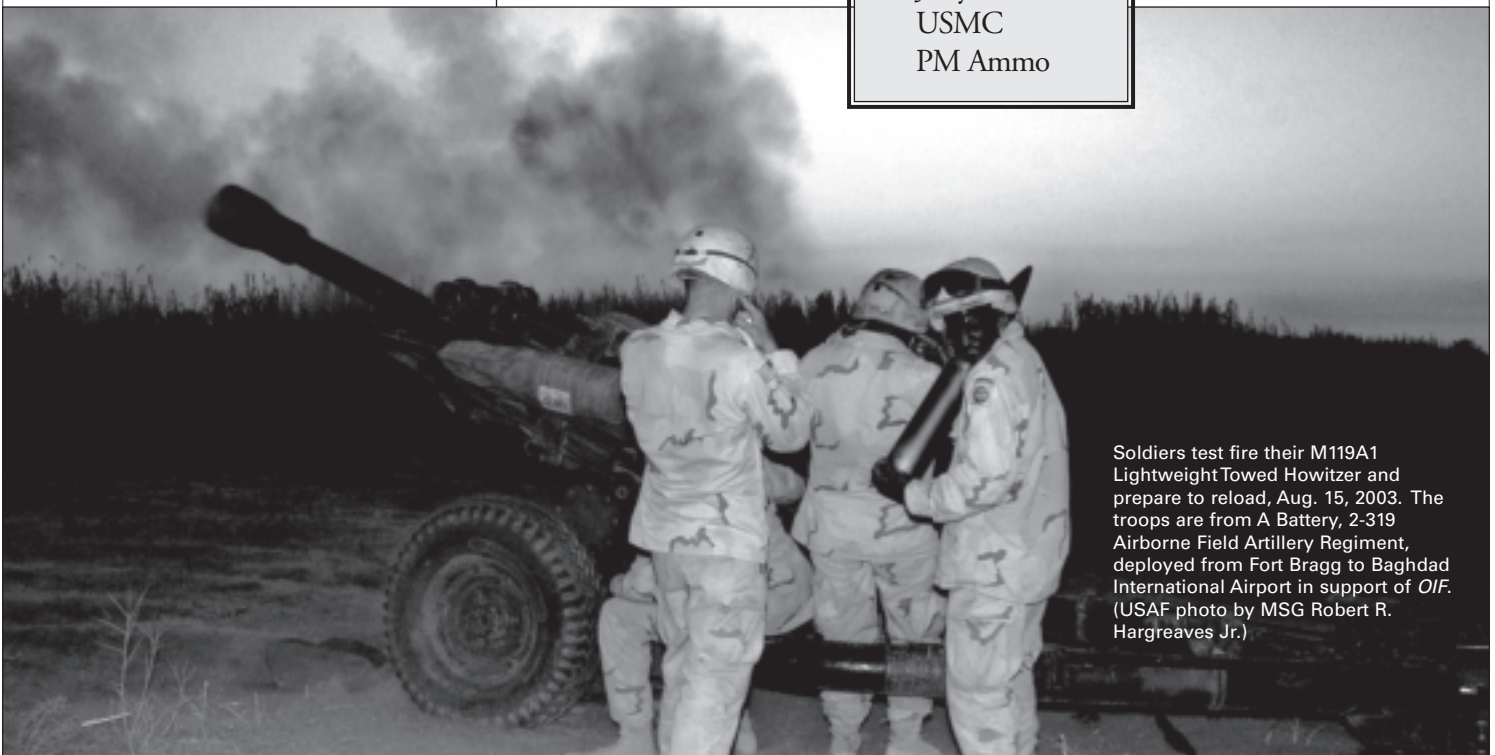
Understanding the other service customers has presented its own challenges. Each service has a different approach to ammunition management. For example, the Navy and Air Force consider

ammunition in production a logistics function. This is not the case with the Army. Most Air Force ammunition requirements come through the Air Force Munitions Command's Ogden Air Logistics Center. Additional key players exist for the other services. The most centralized is the U.S. Marine Corps (USMC) — with PM Ammo being responsible for all surface ammunition. Navy management is divided between air and sea, with PM 4 handling Navy surface ammunition requirements and PMA 201 and 242 handling air-launched munitions.

SMCA's responsibilities extend beyond ammunition production. JMC now leads SMCA logistics functions including transportation, storage, inventory management and

"I have witnessed a sincere good-faith effort in support of the Joint customer base. While there is still work to do, I believe PEO Ammo is on the right track to becoming a high-performing, efficient, team-based and responsive organization in playing a critical role in munitions research, development and life-cycle management."

— Jerry Mazza  
USMC  
PM Ammo



Soldiers test fire their M119A1 Lightweight Towed Howitzer and prepare to reload, Aug. 15, 2003. The troops are from A Battery, 2-319 Airborne Field Artillery Regiment, deployed from Fort Bragg to Baghdad International Airport in support of OIF. (USAF photo by MSG Robert R. Hargreaves Jr.)



outloading. *Operation Iraqi Freedom* has given JMC a lot of experience in recent years.

**Customer Feedback**

From a customer’s perspective, Jerry Mazza, Marine Corps Systems Command, PM Ammo, stated that, “The stand-up of any organization brings some level of anxiety. As a significant customer of PEO Ammo, I felt some of the growing pains early on. Since 2002, we’ve seen major improvement in many forums,” he continued. “Communications have increased tremendously. I have witnessed a sincere good-faith effort in support of the Joint customer base. While there is still work to do, I believe PEO Ammo is on the right track to becoming a high-performing, efficient, team-based and responsive organization in playing a critical role in munitions research, development and life-cycle management,” Mazza remarked.

Underwood, another customer, said, “With the assignment of the SMCA Executor mission to the Army’s PEO Ammo, a new evolution in Joint service common munitions procurement is being observed. With the full spectrum of acquisition expertise now available,

the Air Force approached PEO Ammo to form a ‘Tiger Team’ to examine systems engineering and configuration control issues in medium caliber and 105mm cartridges. The team’s findings and solutions appear to be producing positive results and their implementation is going to benefit all services, not just the Air Force,” he continued. “The Six Sigma culture is really having a

With the full spectrum of acquisition expertise now available, the Air Force approached PEO Ammo to form a “Tiger Team” to examine systems engineering and configuration control issues in medium caliber and 105mm cartridges.

positive impact for government and industry according to many speakers at the recent National Defense Industrial Association Munitions Executive Summit. Its use will benefit every service person placed in harm’s way.”

“Another positive indicator of what PEO Ammo brings to the Joint ammunition world is our experience with developing the FMU-160/B Electronic Proximity fuze. This fuze is used with the 105mm High Fragment Cartridge on Air Force Special Operations gunships. During testing, we fired 225 FMU-160/Bs during 9 gunship missions. Every fuze functioned as de-

signed within a foot of 15 feet above the target. This capability increase is perfectly timed for front-line needs in the global war on terrorism,” Underwood explained. “The end result of our Joint venture with PEO Ammo to produce the FMU-160/B and 105mm High Fragment Cartridge yielded a huge leap in lethality, which can be used against hostile personnel and soft targets.”

In addition, PM JS conducted a survey over the last 2 years. If the summarized comments from FY03 serve as a baseline, the FY04 survey results

show a significant improvement with 94 percent of the responses showing some improvement and 64 percent of the improvement categorized as “better.” The Navy Deputy for PM 4 said he was impressed with the new mindset and felt they were being heard. The USMC said there has been “significant improvement in key areas,” and it is impressed with Tiger Team results. In

addition to positive feedback, customers also identified more opportunities to excel. Those opportunities are already being explored.

**BG PAUL S. IZZO** is the PEO Ammo. He has a B.S. in business administration from St. Bonaventure University and an M.S. in management science from Central Michigan University. His military education includes the Command and General Staff College, Defense Systems Management College and the U.S. Army War College.

**BG JAMES W. RAFFERTY** is the Commanding General, JMC, Rock Island, IL. He has a B.A. in history from Syracuse University. His military education includes the Army War College and the Army Command and General Staff College.

**COL JEFFREY GWILLIAM** is the PM JS, PEO Ammo. He has a B.A. in anthropology from the University of Arizona, an M.A. in business administration from Babson College and an M.A. in strategic studies from the U.S. Army War College. He is an Army Acquisition Corps (AAC) member and is Level III certified in contracting and program management.

**CHARLES MATTINGLY** is the Deputy PM JS. He has a B.S. in business administration from St. Francis University and an M.B.A. in business management from Syracuse University. An AAC member, Mattingly is Level III certified in program management.



# Ammunition Enterprise Support to Soldiers

William J. Sanville, Robin Gullifer, Anthony J. Sebasto, Brian M. Green, Celia M. Hadden, Mireille Pincay-Rodrigues and Seham Salazar

**P**icatiny Arsenal, NJ, has been called the home of Army lethality. It has provided nearly 90 percent of all Army weapons and munitions systems used by generations of warfighters. Even though today's engineers and scientists at the U. S. Army Armament Research, Development and Engineering Center (ARDEC) are still turning out new ammunition items, they are also using new business metrics to measure their performance, speed, flexibility, value and customization in support of their customer — the Soldier.

With his M4 carbine aimed, a soldier prepares to enter a cave during *Operation Mongoose*. The operation searched various caves throughout the mountain range of Adi Ghar for suspected Taliban and weapons caches. (U.S. Army photo by SPC Gul A. Alisan, 55th Signal Company, Combat Camera.)



XM1060  
40mm  
grenade

This new thinking and continued focus on the warfighter is found in all organizations headquartered at Picatinny Arsenal, including the Program Executive Office for Ammunition (PEO Ammo) and its subordinate commands: Project Manager Close Combat Systems (PM CCS), PM Combat Ammunition Systems (CAS), PM Maneuver Ammunition Systems (MAS) and PM Joint Munitions Command (JMC).

Together, these organizations form the Ammunition Enterprise. As a team, they have developed and provided 167 of the Army's 172 go-to-war lethality systems for *Operation Iraqi Freedom (OIF)*. Whether in a stateside office or on the ground in Iraq, they are finding ways of fielding these weapons faster, streamlining the acquisition process, using Six Sigma — a measurement-based strategy that focuses on process improvement — talking to Soldiers who have battle-tested their products and planning the next precision guided munitions iteration.

### Urgent Fieldings Benefit Forces

U.S. forces in Afghanistan and Iraq have benefited from Picatinny's expertise in many areas including urgent fieldings. During a 12-month period, ARDEC fielded 17 specialized weapons and ammo systems in record time. Among them was the XM1060 40mm Thermobaric Grenade, which was developed and fielded in only 4 months. It is the first small-arms thermobaric device to be released to the war theater. Commanders report that it has given them the capability needed for urban terrain and close-quarters cave operations. Similarly, the M919

25mm round, a PM MAS-managed item, proved its value against armored targets when it was used in combat for the first time during *OIF*.

Another urgent need request — for nonlethal items to support U.S. operations in urban environments — was filled by PM CCS' Nonlethal Capabilities Set (NLCS). NLCS gives the operational commander options — graduated force levels to meet numerous threats, from dealing with unruly crowds to providing military assistance for civil disturbances. The set has five components: counter-personnel systems, countermateriel systems, individual protective equipment,

mission enhancement and training devices. Together, they represent almost 50 items ranging from the Modular Crowd Control Munition, a nonlethal Claymore munition variant, to body shields and other individual equipment.

More than 13 NLCS systems have been deployed to Iraq and Afghanistan. They have been particularly effective in crowd control situations, but have also been used in cordon and search operations and enemy prisoner of war (POW) camps. According to a Soldier from the 800th Military Police Brigade, they are "using the nonlethal Claymores at a rate of 1 every 2 days at the POW camps to prevent escapes and riots."

During a 12-month period, ARDEC fielded 17 specialized weapons and ammo systems in record time. Among them was the XM1060 40mm Thermobaric Grenade, which was developed and fielded in only 4 months.



During a search for enemy combatants and weapons caches in the Afghani mountains, soldiers secure a cave opening after throwing a grenade inside. (U.S. Army photo by SPC Gul A. Alisan, 55th Signal Company, Combat Camera.)

PM MAS responded to an urgent fielding request during the initial phase of *Operation Enduring Freedom* and *OIF* with several munitions including the Abrams tank-fired 120mm M908 obstacle reduction round — a modification of the silver bullet M830A1 Multi-Purpose Antitank (AT) round that was used so successfully in *Operation Desert Storm*.

**Countering IEDs in Iraq**

Improvised explosive devices (IEDs) have become the weapon of choice against coalition forces in Iraq. These remotely detonated weapons have been used to kill and maim hundreds of Soldiers and Marines. The most common type uses artillery, tank or mortar projectiles combined with some plastic explosive and a blasting cap. The initiator is either a battery or some remote control device such as a car alarm, a cordless phone or a doorbell switch. They are typically camouflaged or buried on the roadside, lying in wait for passing convoys.

PM CCS' Countermine Division has fielded several systems to help detect and neutralize

PM CCS' Countermine Division has fielded several systems to help detect and neutralize IEDs and provide Soldiers with a high degree of protection.

IEDs and provide Soldiers with a high degree of protection. The first is the Interim Vehicle Mounted Mine Detection System (IVMMD), consisting of a Meerkat mine-detection vehicle, the Husky mine detection and towing vehicle, a series of detonation trailers, spare modules and a parts container. Developed, tested and built in South Africa, the system uses a pulse-induction metal detector to find

metal-cased AT mines as well as large metal IEDs. The Meerkat has a one-person crew. The operator must pass over the top of the mine or IED to detect it. Risk is mitigated by the sharp V-shaped armored hull and frangible components that make up the front and rear modules.

The Husky uses its own mine detector to hunt for IEDs, or it can tow the detonation trailers to de-

tect and proof the route for buried plastic-cased AT mines. A Buffalo mine-protected clearance vehicle follows the detection vehicles and uses a

A Metal Detecting and Marking Vehicle belonging to the 141st Engineering Battalion aids in clearing a section of Highway 1 outside Ad Dujayl, Iraq, earlier this year. The battalion, out of Dickinson, ND, is at Forward Observing Base O'Ryan in support of the 1st Infantry Division. (U.S. Army photo by PFC Elizabeth Erste, 55th Signal Company, Combat Camera.)

telescopic arm to investigate suspected targets found and marked by the IVMMD Meerkat or Husky. Both the Meerkat and Buffalo have been struck by IEDs or AT mines and, in both cases, the Soldiers inside walked away without injury and the vehicles were successfully repaired and placed back in operation. As one operator put it, "Every round [of ammunition] we find is one less that could injure or kill a Soldier."

**Quality Ammunition**

Other organizations at Picatinny ensure that Soldiers have the quality ammunition they need today, while continuing to find ways to improve the munitions for future battles. PM CAS, JMC and ARDEC are the principal enterprise players in this effort. The inclusion of Army user representatives from the U.S. Army Training and Doctrine Command Artillery and Infantry Schools — as well as the Single Manager for Conventional Ammunition customers from the other services — reinforces the goal of staying customer-focused.

Recent battlefield feedback on artillery and mortar performance has been outstanding. Mortars continue to be the most responsive and deeply integrated means of fire support. Numerous mortars from the 60mm, 81mm and 120mm families (high explosive (HE), smoke and illuminating — both visible light and infrared) — have been successfully used in Afghanistan and Iraq. During a mountain battle waged by the 101st Airborne Division (Air Assault) in Afghanistan, 120mm mortars were responsible for the overwhelming majority of enemy kills. Mortars were also effective during the high-operations tempo advance to Baghdad, and the planned Mortar Fire Control System



will further improve this capability. Cannon artillery performance in *OIF* has also proved invaluable to our Soldiers. Observations from the 3rd Infantry Division (3ID) and others say that cannons paved the way to Baghdad early in *OIF*, and numerous 105mm and 155mm HE, smoke and illuminating rounds have been, and continue to be, successfully employed by U.S. ground forces.

A key enterprise success in precision artillery in *OIF* is Sense and Destroy Armor (SADARM), a “smart” artillery projectile containing two submunitions designed for precision engagement of Self-Propelled Howitzers and other armored vehicles.

PM CAS, JMC and ARDEC teamed to expedite SADARM’s conditional materiel release in 2002 so that 347 rounds could be shipped to support *OIF*. SADARM exceeded expectations

SADARM exceeded expectations by providing superior performance for the 3ID — 121 rounds fired in combat destroyed 45 pieces of enemy equipment.

by providing superior performance for the 3ID — 121 rounds fired in combat destroyed 45 pieces of enemy equipment.

PM MAS supports the Soldier in the field as the Army’s life-cycle manager of all small-caliber direct-fire ammunition, training and tactical weapons other than nonlethal. High consumption rates associated with training, the global war on terrorism and *OIF* have resulted in intense production of small- and medium-caliber ammunition — more

than 1.4 billion rounds will be produced in FY04. This is a 400-percent increase in small-caliber production since 1999, and a 700-percent increase in medium-caliber production since 2002.

There is nothing more critical to our Soldiers’ ability to perform their mission than ammunition in direct-fire engagement. We are constantly reminded of that, especially by reports from in theater.

**Ammo Enterprise Goes to the Fight**

MAJ Robert Floersheim, Assistant PM MAS, is just one of many Picatinny experts who have provided hands-on, on-the-ground expertise in Afghanistan, Iraq and elsewhere. He is currently providing ammunition acquisition expertise to the Coalition Provisional Authority and is assigned to Baghdad as part of the reconstruction task force. One of his fellow PMs, MAJ Michael Williams, gathered ammunition performance information that evaluated ways to improve the instant stopping power and lethality of small-arms ammunition in close-quarters battle while maintaining the lethality against a body-armor-clad enemy at longer engagements.

ARDEC engineers responded immediately when the 101st Airborne Division reported that its air Volcano systems were inoperative for deployment. The trip to Fort Campbell, KY, resulted in two of the Division’s three systems being put back into operation during the visit. The ARDEC Explosive Ordnance Disposal unit’s presence in Iraq and Afghanistan was critical in collecting vital enemy ordnance and explosive device information and establishing protocols that enable America’s Joint service troops to render foreign enemy ground combat weapons safe.



A Soldier prepares to enter a cave to search for enemy fighters in Afghanistan. (U.S. Army photo.)



Soldiers secure the opening of a cave in the Afghani mountains after throwing a grenade inside. (U.S. Army photo by SPC Gul A. Alisan, 55th Signal Company, Combat Camera.)

Brian M. Green, from PM CCS's Countermine Division, delivered the mine-clearing equipment to Soldiers at Bagram Air Base, Afghanistan, and conducted initial user training. He performed similar duties in Iraq. MAJ Pete Lozis and Eric Steckmann were in Afghanistan twice to field other countermine equipment.

MAJ Joseph Hitt from PEO Ammo was on the ground before the war started as part of the Assistant Secretary of the Army for Acquisition, Logistics and Technology Operations Cell at Camp Doha, Kuwait. He provided a readiness link back to the PEO and ensured that the right ammunition was targeted to the right unit. He also provided battle damage assessment. He was later joined by MAJ Jason Robbins, Executive Officer to BG Paul S. Izzo.

Picatinny engineers, scientists, weapons specialists, logisticians and other experts can be found wherever U.S. troops live and fight. They serve as the Army's "911" lifeline for lethality assistance and troubleshooting. This always-open line of communication

helps the Ammunition Enterprise support U.S. forces around the world by assessing existing and newly fielded munitions systems effectiveness and identifying warfighter needs. Together, ARDEC, PEO Ammo and its PMs and JMC have contributed to military operations in Afghanistan and Iraq by ensuring that America's armaments inventory remains strong.

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**MIREILLE PINCAY-RODRIGUES** is the Project Officer for Non-Lethal Weapons at PM CCS. She holds a B.S. in mechanical engineering and an M.S. in engineering management from the New Jersey Institute of Technology. She has a multidisciplinary background that includes development and production of ammunition and nonlethal systems. Pincay-Rodrigues is Level III certified in research, development, technology and evaluation and is Level II certified in program management.

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## Linking People and Technology With the Ammunition Enterprise Portal

Richard T. Eva and Leslie A. Thrasher

**O**ver the past 30 years, ammunition community organizations have developed various information technology (IT) applications to support specific mission and organizational assignments. An inventory of software used by the Program Executive Office for Ammunitions (PEO Ammo), the Joint Munitions Command (JMC) and the Armaments Research, Development and Engineering Center (ARDEC), identified more than 40 distinct functional and organizational computer programs covering numerous financial, technical and administrative applications.

Organizational boundaries, relationships, geography and technological limits have necessitated unique database management systems, user interfaces, data definitions, accessibility and operating systems. In the late 1980s, many organizations attempted to connect applications to facilitate the data exchange. Enterprise architectures attempted to do much the same in the 1990s. What has evolved today are stand-alone applications that exchange data at the application level, forming the initial enterprise architectures for the future. Attempts to link these stand-alone systems have been problematic, spawning complex issues such as data synchronization and integrity, unstandardized data definitions and data availability.

### **Ammunition Enterprise Portal**

The Ammunition Enterprise Portal was established by PEO Ammo, JMC and ARDEC to integrate people, processes and infrastructure. The intent is to use the portal to transition the ammunition community from those initial enterprise architectures to an integrated enterprise environment that meets the community's IT strategic goals and ensures that information is managed as a tangible and critical resource. The key to this is the ability to identify, define, standardize and consolidate enterprise processes and move them to a secure, automated environment.

The Portal addresses two specific IT strategic initiatives:

The intent is to use the portal to transition the ammunition community from those initial enterprise architectures to an integrated enterprise environment that meets the community's IT strategic goals and ensures that information is managed as a tangible and critical resource.

- To provide a secure, Web-based solution to collect, host and eventually assimilate the diverse applications used in the ammunition community.
- To establish a collaborative environment for the diverse and geographically separate ammunition community.

Integrated product or Six Sigma teams began identifying and documenting current processes, roles, relationships and responsibilities. Next, they looked at process inputs, outputs, definitions, ownership and measures, data definition and the content management structure, which provides the cornerstone for integrating and developing new

and existing applications. Finally, they focused on how teams function in the Portal's Community of Participation (COP) section, with emphasis on the ammunition community's ability to work as a team using the collaboration tools provided there.

The first step to a fully integrated infrastructure consistent with DOD operational architecture and security requirements is to provide a standard methodology for collecting, identifying, consolidating and assimilating the applications into a data-centric environment. The Portal promotes full enterprise access to the ammunition community's administrative, technical and financial data through a single logon, Web-based portal while





maintaining appropriate security, copyright, proprietary, ownership and distribution protection.

### Core Areas

The Ammunition Enterprise Portal has two core areas — the COP and the Ammunition Enterprise Systems (AES). The COP is a collaborative knowledge management tool that allows geographically dispersed and organizationally diverse teams to communicate, access and share common data. This portal section is built around a team-room environment that has five collaborative areas: messaging, document management,

Fully integrated applications are those applications that use the same database structure, database schema, data definitions, front-end and user interface functionality. Interfaced systems may have the same database application and structure and the same data definitions but have a different user interface.

tasking, calendar and scheduling and discussion forum. Each area links to other areas, providing a virtual workspace.

At the team room's foundation is the document management area, which allows for storage, retrieval and configuration management of team documents. Individual profiles drive the security and accessibility down to the document level, while standard content management structure and data definitions provide a framework for data storage, access, sharing and maintenance. Future plans call for

providing users access to Web conferencing, secure instant messaging and interoperability between Microsoft® Outlook functions.

The AES provides a single access point for collecting the ammunition community's financial, technical and administrative systems and applications. AES applications can be fully integrated, interfaced or linked. Fully integrated applications are those that use the same database structure, database schema, data definitions, front-end and user interface functionality. Interfaced systems may have the same database application and structure and the same data definitions but have a different user interface. Other applications may only be linked to the AES with a transition plan to eventually integrate or fully interface the application.



The AES adopted the “codification” methodology to discretely measure integration levels into the enterprise depending on the type and revision of the database application, standardized structure, data dictionary integration and standardization and shared user authentication and security level. The AES’s goal is to consolidate the diverse ammunition systems and applications and merge them for common single access for all acquisition community members.

The AES contains the Web Ammo system — a budgeting tool for developing the Program Objective Memorandum, the Budget Estimate Submission and the President’s Budget for all ammunition items — and Web Ammo, the Engineering Support in Production (ESIP) system, used to develop and staff budget information for ammunition items in production. In addition to these systems, the AES is developing a workflow tool and has identified several other active ammunition applications for linkage and transition to the Portal.

The Community of Interest (COI) provides links to DOD ammunition-related organization Web sites as well as those of industry partners. Plans for the COI area include a contractor integrated technical information service environment for industry.

The AES methodology focuses on delivering geographically dispersed information to end users rather than providing new all-encompassing

systems/applications. It concentrates on identifying, collecting, coordinating and linking enterprise data resources, then providing the widest possible access to this data via Internet tools. This approach underscores the belief that properly organized data has tremendous value to workers throughout the enterprise and ensures the entire ammunition community

Properly organized data has tremendous value to workers throughout the enterprise and ensures the entire ammunition community benefits from being able to access information quickly instead of waiting for the development and implementation of complex applications.

benefits from being able to access information quickly instead of waiting for the development and implementation of complex applications. With data readily accessible, increasingly complex applications can evolve as new requirements are identified. Principal data-centric approach components are:

- **Bring data together.** Information is brought together through a link, interface or integration in a single common environment for Internet “publishing.”
- **Stay focused on the data.** Use what data exists today to add value quickly. Deploy and expand the current data rather than developing new applications.
- **Leverage the Internet.** Use Internet technologies to deploy newly organized data as widely as possible. Given the right security and accessibility, the entire enterprise is provided data access.
- **Simplify use.** Data accessibility coupled with standardized user interface minimizes user training and facilitates navigation between applications within the Portal.

- **Add more applications.** Leverage existing data that are widely deployed on the intranet/Internet. Applications that follow can build on a rich data environment and be more focused on specific, narrow tasks.

**Path Forward**

The Ammunition Enterprise Portal allows the ammunition community to collaborate and fully use data in a secure Web-based environment while maximizing Army and DOD data and IT resources. The goal is to transition from an IT-driven environment to an information management, knowledge-based integrated environment — a true Ammunition Enterprise Portal. Visit the Portal at <http://ammoportal.altess.army.mil>.

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# S&T Advances

## Future Munitions Development

Joseph A. Brescia, David Fair and Kevin T. Hayes



**A**s the Army's "Center for Lethality," the U.S. Army Armament Research, Development and Engineering Center (ARDEC) located at Picatinny, NJ, provides the U.S. military with fire-power necessary to achieve decisive battlefield victory. To support this effort, ARDEC conducts an aggressive science and technology (S&T) program focusing on the development of state-of-the-art munitions from explosives, propellants and warheads to the lethal power of mortars, artillery, tanks and much more.

A blast from a 155mm, high-explosive round fired from an M109A6 Medium Self-Propelled Howitzer from the 3-16th Field Artillery, 4th Infantry Division (4ID), Fort Hood, TX. The 3-16th Field Artillery deployed last year to Camp Warhorse in the Diyala Province, Iraq, in support of *Operation Iraqi Freedom (OIF)*. (U.S. Army photo by SSG William L. Davis, 982nd Signal Company.)

ARDEC scientists and engineers — working in Picatinny’s laboratories and engineering centers — play a critical role in developing new technologies for the Army’s Future Force. A network of strategic alliances and partnerships with other government laboratories, the private sector and academia contribute to ARDEC’s ability to mature technologies to an adequate technical readiness level (TRL) so the Army can proceed to successful Milestone B system development and demonstration decisions. ARDEC’s S&T strategy also incorporates input from the U.S. Army Training and Doctrine Command (TRADOC) and the program manager (PM)/program executive office (PEO) communities to field mission-critical munition technologies to enhance capabilities within the Current Force.

In keeping with its long history of munitions excellence, ARDEC continues to pursue technology programs that will improve munitions capabilities. Among these are five important S&T objectives (STOs) that reflect Army transformation objectives: Mounted

Combat System (MCS) Ammunition System, Common/Modular Power Sources, Hardened Combined Effects Penetrator Warheads, Common Guidance and Microelectromechanical System (MES) Safe and Arm (S&A). Each offers significant promise, providing Soldiers the required power and lethality to decisively win future battles. In addition, ARDEC’s labs and centers are working on numerous emerging technologies, such as the Liquid Metal Kinetic Energy Penetrator and Photo-Etched S&A.

effort began under the Multi-Role Armament and Ammunition System Advanced Technology Demonstration (ATD), but when the MCS was selected, the ammunition S&T required to support Increment I continued development as part of the LOS/BLOS ATD.

A network of strategic alliances and partnerships with other government laboratories, the private sector and academia contribute to ARDEC’s ability to mature technologies to an adequate technical readiness level.

The MAST STO will also provide enhanced capabilities to the Mid-Range Munition (MRM) and Advanced Kinetic Energy (KE) munitions to increase range and lethality, develop technologies to integrate an advanced multipurpose

**MCS Ammunition System Technologies (MAST) STO**

The MAST STO is working on technologies that will enhance the capabilities of the Future Combat Systems (FCS) Increment I — line-of-sight/beyond-line-of-sight (LOS/BLOS) — ammunition suite for the MCS. This

munition — the LOS Multipurpose (MP) Munition — and advanced propulsion and multi-effects warhead technologies.

MAST supports the ammunition development for the FCS MCS. The Unit of Action Maneuver Battle Lab, PM Office for Maneuver Ammunition



An M1A1 Abrams tank from Charlie Company, 1st Tank Battalion, fires its 120mm main gun at the Udari Range in Kuwait in support of OIF. (U.S. Marine Corps (USMC) photo by SGT Paul L. Anstine II.)

Systems and the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology are the key customers and the MAST efforts support their priorities. The primary deliverables are:

- TRL 6 demo of an LOS-MP munition by the end of FY05.
- TRL 6 demo of an Enhanced KE munition by the end of FY07.
- TRL 5 demo of an Enhanced MRM munition by the end of FY07.
- TRL 6 demo of an Advanced Propulsion capability by the end of FY07.

### **Common/Modular Power Sources for Advanced Munitions STO**

This STO will develop new power sources for future advanced munitions that will extend range and increase lethality. Thrust areas include thermal batteries with novel insulation and new gas-generating materials,

Thrust areas include thermal batteries with novel insulation and new gas-generating materials, new liquid reserve batteries with electrolytes based on organic chemistries and a new hybrid power system based on piezoelectric and thermophotovoltaic technologies.

new liquid reserve batteries with electrolytes based on organic chemistries and a new hybrid power system based on piezoelectric and thermophotovoltaic technologies.

This 5-year effort will transition new thermal battery technology at TRL 7 in FY07, new hybrid technology at TRL 7 in FY08 and new liquid reserve battery technology at TRL 7 in FY08. Eventually, the STO will supply new thermal battery and hybrid power technologies for numerous important munitions development efforts including Excalibur, the MRM and the Precision Guided Mortar Munition (PGMM) programs.

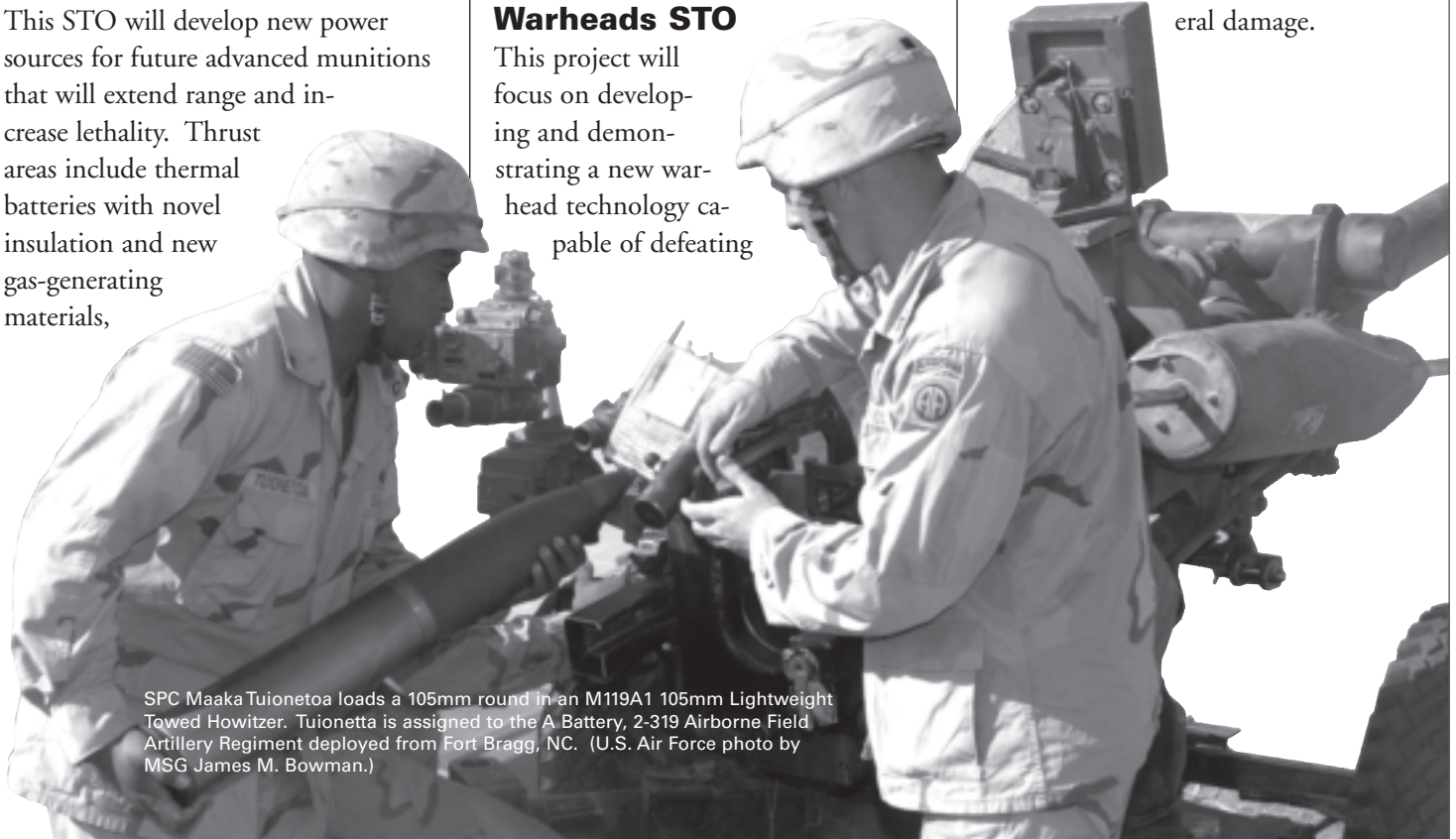
### **Hardened Combined Effects Penetrator Warheads STO**

This project will focus on developing and demonstrating a new warhead technology capable of defeating

structures, bunkers, armored targets and personnel, fortified positions and urban and aerial targets using the same warhead. Thus, instead of needing a family of munitions to defeat disparate targets, Soldiers will be able to use a single munition for a large range of targets. This new warhead technology will provide increased effectiveness against armor systems equipped with Explosive Reactive Armor and increase the number of stowed kills by an estimated 150 percent. It will also simplify battlefield engagement requirements, add flexibility, increase firepower and produce substantial logistical savings for the Future Force. When mature, the technology will be applied to the Joint Common Missile, PGMM and MRM.

### **Common Guidance STO and Manufacturing Technology Objective (MTO)**

Currently, the maneuver commander does not have a capability to defeat high-value targets from a distance and still minimize collateral damage.



SPC Maaka Tuionetoa loads a 105mm round in an M119A1 105mm Lightweight Towed Howitzer. Tuionettoa is assigned to the A Battery, 2-319 Airborne Field Artillery Regiment deployed from Fort Bragg, NC. (U.S. Air Force photo by MSG James M. Bowman.)

This project brings together a team to achieve the Common Guidance STO and MTO goals to find affordable, Gun-Hard Inertial Measurement Units (IMUs).

Gun-Hard IMUs do not exist for precision munitions (optical IMUs are expensive and not gun-hardened). The team is looking at MEMS technology, which will provide inherent cost savings and size reduction, and is ideal for application to navigation and control systems for small missiles and munitions. Using MEMS technology, gyroscopes, accelerometers and control electronics can readily be integrated to form a tightly packaged, low-cost, extremely small, high-performance IMU suitable for munition and missile guidance and other applications.

Munitions and missiles equipped with MEMS IMUs will significantly reduce the cost of precision-delivered missiles and munitions, as well as expand precision delivery capability to artillery ammunition, thereby reducing the number of required rounds by more than 30 percent.

Munitions and missiles equipped with MEMS IMUs will significantly reduce the cost of precision-delivered missiles and munitions, as well as expand precision delivery capability to artillery ammunition, thereby reducing the number of required rounds by more than 30 percent. In addition to the inherent cost savings provided by MEMS technology, a 1-degree-per-hour MEMS IMU, which meets the navigation requirement for more than 90 percent of the tactical weapons fleet, will provide major cost savings to the military via expanded production by using cross-system commonality and industrial-base production. While there is little commercial support for military applications, an active military program for MEMS IMUs

would make it economically feasible for commercial plants to commit to producing the military devices that could survive and function after a 20,000 g-force launch.

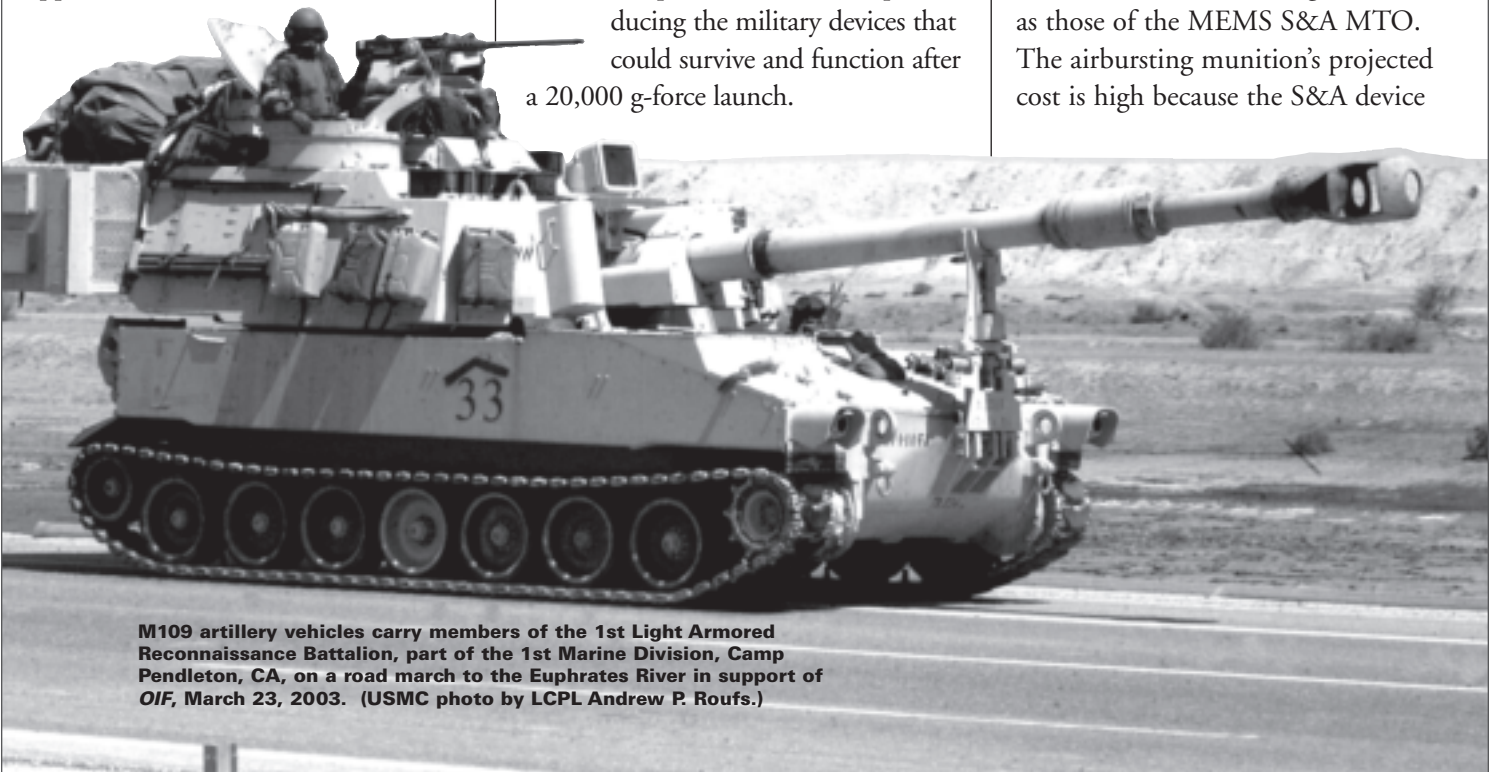
Current planning for program implementation is for a 5-year effort spanning FY01 through FY06. The design and manufacturing technologies concurrently developed and pursued in Phases 1 and 2 will directly evolve into the ultimate Phase 3 IMU product.

A second effort will look at developing and producing the IMU deeply integrated within a Global Positioning System military receiver, using a single microprocessor architecture, and incorporating integrated hardware and software antijam capability in less than 3 cubic inches.

These technologies, when matured, will be transitioned to the Joint Direct Attack Munition, Excalibur, Joint Common Missile, PGMM, Extended Range Guided Munition and Advanced Gun System.

**MEMS-Based S&A Development Project**

This team will work on a program to successfully achieve the Objective Individual Combat Weapon (OICW) System Enhancements STO goals as well as those of the MEMS S&A MTO. The airbursting munition's projected cost is high because the S&A device



**M109 artillery vehicles carry members of the 1st Light Armored Reconnaissance Battalion, part of the 1st Marine Division, Camp Pendleton, CA, on a road march to the Euphrates River in support of OIF, March 23, 2003. (USMC photo by LCPL Andrew P. Roufs.)**

Soldiers from A Battery, 3rd Battalion, 29th Field Artillery Regiment, 3rd Brigade Combat Team, 4ID, Fort Carson, CO, fire an M109A6 Howitzer (Paladin) during a routine drill Nov. 6, 2003, at Samarra Southeast Airfield, Iraq. The 4ID is deployed in support of OIF. (U.S. Army photo by SGT Jack Morse, 982nd Signal Company.)



contributes significantly to the cost. The fuzing system for OICW includes a power supply, S&A and electronics and occupies approximately half the available payload. A reduced payload limits terminal effects.

The MEMS S&A development project is geared toward overcoming three current challenges:

- Traditionally expensive and labor intensive S&As in production.
- S&A miniaturization limitations.
- Existing energetic materials that require large interfaces.

The approved STO's goal is to rapidly develop, demonstrate and transition lethality-enhancing and weight-/cost-reducing technologies into the XM29 Integrated Airburst Weapon System (formerly OICW). Specifically, the effort is to reduce munition fuzing costs and increase payload volume by reducing the overall S&A fuzing size. Once

again, MEMS was selected as a high-payoff enabling technology that will facilitate XM29 fielding and the XM307 Advanced Crew Served Weapon System. System effectiveness may be boosted by an increase in lethality.

The Army's S&T focus must be responsive to the current war effort by selectively fielding capabilities that directly support the Current Force, and must also continue to drive transformation capabilities for the Future Force. Working closely with key stakeholders in TRADOC and the PM/PEO community, DOD agencies, the private sector and academia, ARDEC continues to provide the most advanced armaments and munitions for peace and war.



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# Government-Industry Collaboration — Developing the Army's Go-to-War Ammunition

LTC David Rice, Peter Burke and Ken Heider

**T**he Ammunition Enterprise has traditionally had five major functions: continuing research and development of new ammunition, process and production engineering to iron out kinks in mass producing ammunition, preparing and maintaining drawings and specifications so arsenals can advise private industry how to better perform its job, nationwide procurement to make the best ammunition possible and ammunition manufacture and assembly oversight as required to sustain a steady munitions flow to our Soldiers. Clearly, the focus is on developing and sustaining an ammunition and firepower base that will provide U.S. forces full-spectrum dominance, regardless of where the battle takes them.

Marines prepare 81mm mortar positions just south of the Wusbin Valley, Afghanistan. The Marines are conducting security during the movement through the Wusbin Valley in support of *Operation Enduring Freedom*. (U.S. Marine Corps photo by LCPL Justin M. Mason, 2nd Marine Division Headquarters Battalion.)



Just how big is the ammunition market? Well, in FY02, the three U.S. military departments procured more than \$2.5 billion in conventional ammunition. This figure rose to more than \$3.3 billion in FY03 and will, most likely, become an even larger amount given the ongoing war on terrorism and continuing operations in Iraq and Afghanistan. The critical job of developing it all starts at the Program Executive Office for Ammunition (PEO Ammo) and the U.S. Army Armament Research, Development and Engineering Center based on user needs and combatant commander requirements. This need is met in the laboratories and research centers by the engineers, scientists and ammunition experts who work there.

### Delivering Precision Effects for Close Combat

The XM395 120mm Precision Guided Mortar Munition (PGMM) is a good example of how a critical operational need is being filled. Mortars are the maneuver commander's primary source of organic, highly responsive, indirect fire support for close combat. However, when a maneuver element encounters an obstacle, such as a bunker complex, the commander is forced to close on and defeat the enemy using direct-fire weapons, which expose his troops to enemy fire. Conventional mortar ammunition can only provide suppressive fire. In some situations, it can't be used at all because of the collateral damage probability to surrounding structures or possibility of injuring noncombatants.

The XM395 120mm Precision Guided Mortar Munition is a good example of how a critical operational need is being filled. Mortars are the maneuver commander's primary source of organic, highly responsive, indirect fire support for close combat.

The PGMM, developed by the Product Manager (PM) for Mortar Systems Office at Picatinny Arsenal, NJ, is essentially a round of high-explosive mortar ammunition that incorporates a laser seeker and guidance/control system that will defeat personnel under protective cover (bunkers/buildings) or lightly armored vehicles in two rounds or less. *The Defense Planning Guidance Update for FYs 04-09* specifies the need to generate precision effects against "the full range of mobile targets during operations on urban terrain: enemy forces, military infrastructure, nonstate actors in urban environments and time-critical targets." *TRADOC Pamphlet 525-3-90, Objective Force (OF) Tactical Operational*

*and Organizational Concept for Maneuver Units of Action (UA)*, affirms the criticality of precision munitions in the new operational environment. PGMM will be a critical enabler for our force to defeat time-urgent, critical targets across the full spectrum of conflict in all operational environments and terrain.

While PGMM will support the close fight in all environments, its greatest contribution may be in urban and complex terrain, where it uses accuracy to achieve lethality while minimizing collateral damage. PGMM will support point target engagements requiring penetration of structures to incapacitate the enemy, defeat lightly armored vehicles in complex/urban terrain and provide a new indirect-fire capability to rapidly engage fleeting or

short-dwell material targets. Mortar units armed with PGMM will assist the UA to achieve dominance across all contingencies, from full-spectrum stability and support operations to major combat missions, while avoiding injury to noncombatants and excessive damage to designated structures.

### Reducing Risk and Producing Better Products

The XM1028 120mm Antipersonnel cartridge was based on an urgent need/requirement from U.S. Forces Korea, who were concerned about Abrams tank vulnerability. They believed the Abrams lacked sufficient firepower to kill or suppress close-in dismounted troops armed with handheld antitank weapons. Although the Abrams current ammunition suite is highly lethal against an array of targets, including dismounts, its rate of fire and coverage area are nevertheless inadequate against numerous dangerously armed ground troops.

As the user community more clearly articulated its requirements, the Project Manager for Maneuver Ammunition Systems (PM MAS) communicated these requests to several potential prime contractors. One in particular, General Dynamics Ordnance and Tactical Systems (GD-OTS), committed itself to intense market research and, after listening to the customer, began doing independent research and development (IR&D) on antipersonnel cartridges. Its concept involved the rapid expulsion of approximately 1,100 tungsten balls — a tank "shotgun shell." Metal parts, primers and combustible cartridge cases required only slight modifications. Robust testing of full-scale cartridges at government ranges quickly proved the efficacy of their technical approach and put GD-OTS in a good position to prepare its proposal.

PM MAS received highly competitive proposals from two bidders deemed responsive and capable of producing the XM1028 cartridge in sufficient quality and quantity. In the end, the GD-OTS range-proven full-scale cartridge won the development and production contract valued at more than \$25 million. To the government, technical risk was significantly reduced by GD-OTS' investment in its own IR&D program.

GD-OTS entered the systems development and demonstration phase at full pace with a producible design. GD-OTS moved quickly to consolidate its development team and put in place the processes and management controls to ensure technical performance within cost and schedule constraints. IR&D partnership dividends continued when, less than 12 months after contract award, results from a full-scale design evaluation test conclusively proved that the GD-OTS technical approach was the best option.

The XM1028 program's success resulted from a wise, but calculated, leveraging of IR&D resources, which, in turn, lowered government risk. The program remains on schedule to meet production qualification test and low-rate production milestones. The Army's acquisition objective is 16,000 cartridges to be fielded in FY05's

second quarter. The user community is expected to submit requests for even more.

As the user community more clearly articulated its requirements, the Project Manager for Maneuver Ammunition Systems communicated these requests to several potential prime contractors. GD-OTS committed itself to intense market research and, after listening to the customer, began doing independent research and development on antipersonnel cartridges.

### Networked Munitions Provide Stepping Stones

The recently announced *National Landmine Policy* states the president's firm, unconditional commitment that U.S. forces will not use any persistent landmines — antitank and antipersonnel mines that do not self-destruct — after 2010. It also directs materiel developers to develop alternatives to persistent landmines. These self-destructing/self-deactivating alternatives will incorporate sophisticated network technologies to provide situational awareness and positive munition control.

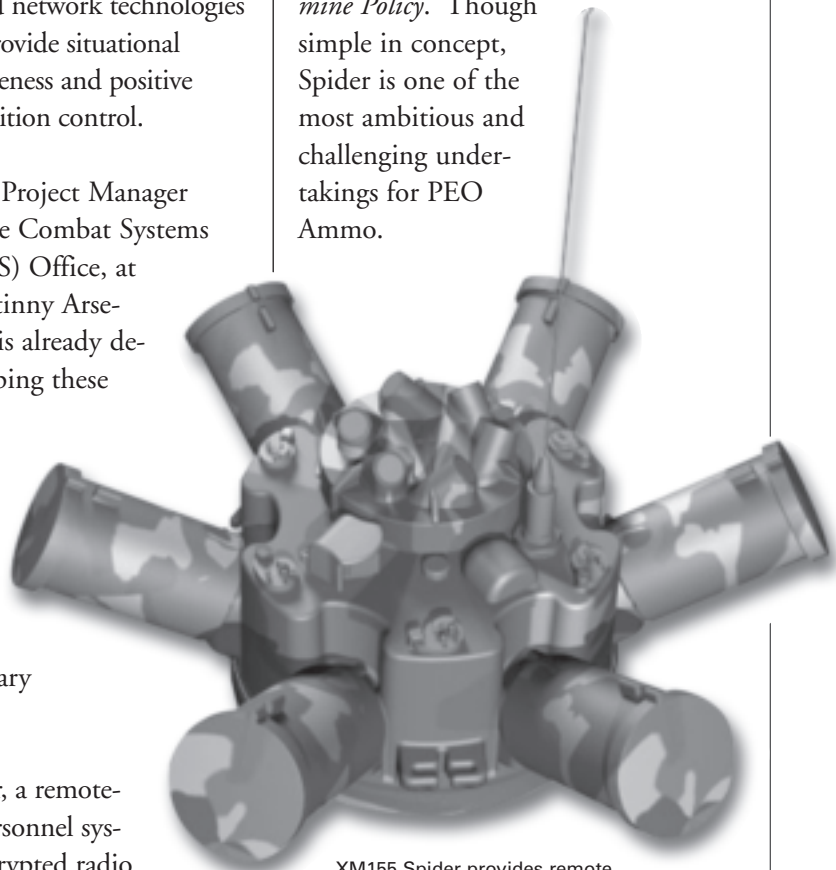
The Project Manager Close Combat Systems (CCS) Office, at Picatinny Arsenal, is already developing these

network. A Spider field detects intruders and alerts the field operator, who may then engage a hostile target or warn off a noncombatant. If enemy presence is already known or expected, the operator can command the field to operate in an autonomous mode in which individual Spider munitions detect, report and engage targets immediately. Other Spider commands include On-Off-On, command destruct and reset self-destruct time. The munition includes components such as remote control units, repeaters for extended ranges and munition control units — each with up to six antipersonnel grenades. For operational flexibility, Spider may also be used to control other lethal and nonlethal munitions as well as demolition items.

The Spider program is developing a variety of technologies that are crucial to the *National Landmine Policy*. Though simple in concept, Spider is one of the most ambitious and challenging undertakings for PEO Ammo.

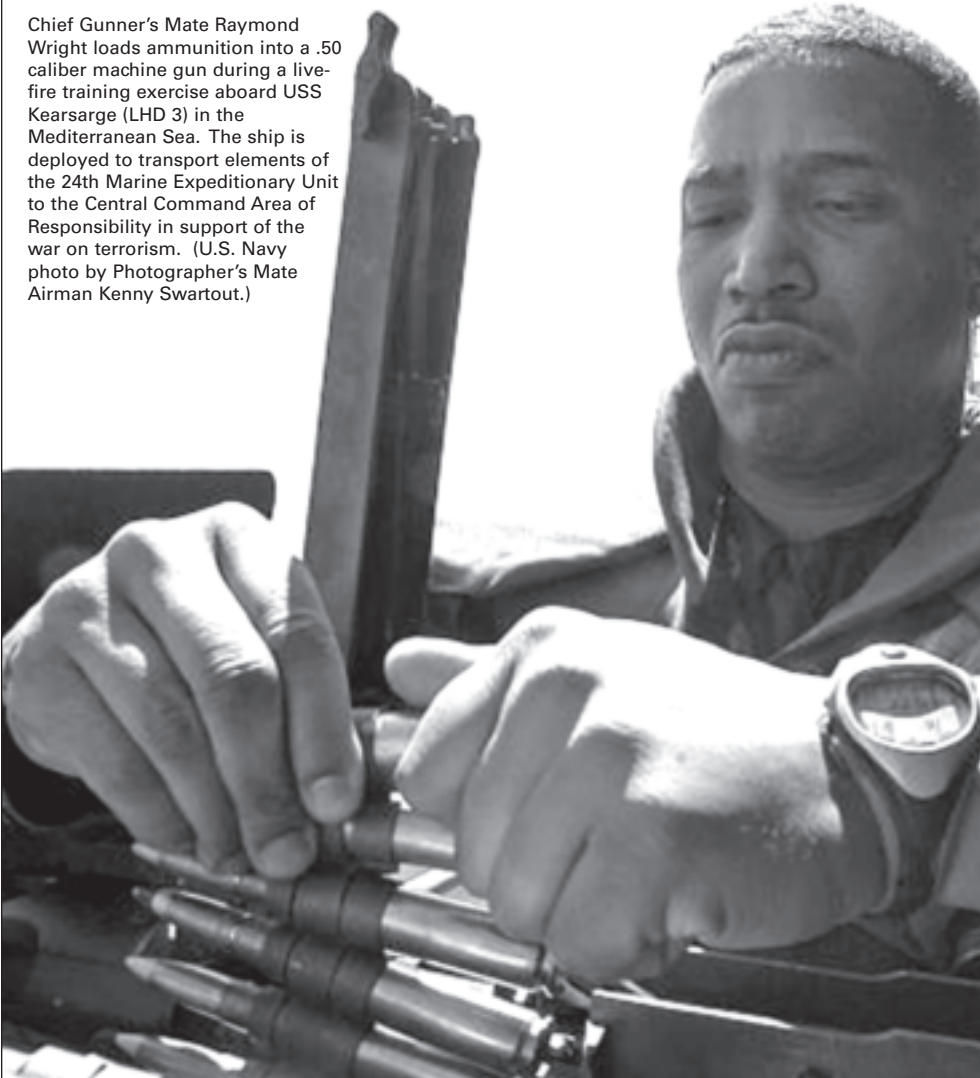
networked munitions with two complementary programs.

The first is Spider, a remote-controlled antipersonnel system that uses encrypted radio frequencies to control the munition and provide an information



XM155 Spider provides remote command and control of lethal and nonlethal munitions.

Chief Gunner's Mate Raymond Wright loads ammunition into a .50 caliber machine gun during a live-fire training exercise aboard USS Kearsarge (LHD 3) in the Mediterranean Sea. The ship is deployed to transport elements of the 24th Marine Expeditionary Unit to the Central Command Area of Responsibility in support of the war on terrorism. (U.S. Navy photo by Photographer's Mate Airman Kenny Swartout.)



Safety, communications security and network interoperability pose new technical challenges. Integrating secure communications and software with traditional explosives requires various certifications and pre-qualifications that have never before been obtained for a munitions item. Among these are the DOD Information Technology Security Certification and Accreditations Process, the Joint Tactical Radio System waiver and the Army Fuze Safety Board Review for Spider software.

If Spider is not the ultimate end state, it is a necessary stepping stone that meets the president's current timelines. The second networked munition — the Intelligent Munition System (IMS) — is being developed as a core system under

the Army's Future Combat Systems (FCS). Spider and IMS are complementary systems and both are necessary to meet the president's timelines and directives. Spider will be fully compatible with the IMS control system, while IMS will add anti-vehicle capabilities, increased situational awareness, remote deployment and full integration into FCS. As FCS technologies mature, they will be incorporated into the Spider/IMS.

With Spider and IMS, PM CCS is on the cutting edge of Army transformation. Though capable of independent employment, these networked munitions will be fully integrated into the FCS architecture. Spider and IMS will receive, process and send commands

and information. They will also engage targets directly or pass targeting information to other FCS ground systems, while continuously updating the battlespace common operating picture.

This is an exciting time for materiel developers. As the nature of warfare changes, the engineers, scientists, government employees and contractors who develop ammunition will meet challenges by taking advantage of new technologies and techniques pioneered at Picatinny Arsenal and elsewhere.

**LTC DAVID RICE** was the Product Manager, Large Caliber Ammunition Systems in the PM MAS Office until his recent departure for Senior Service College. He holds a B.A. in business administration from the University of Oklahoma and an M.B.A. from Texas Tech University. He is also a Command and General Staff College graduate.

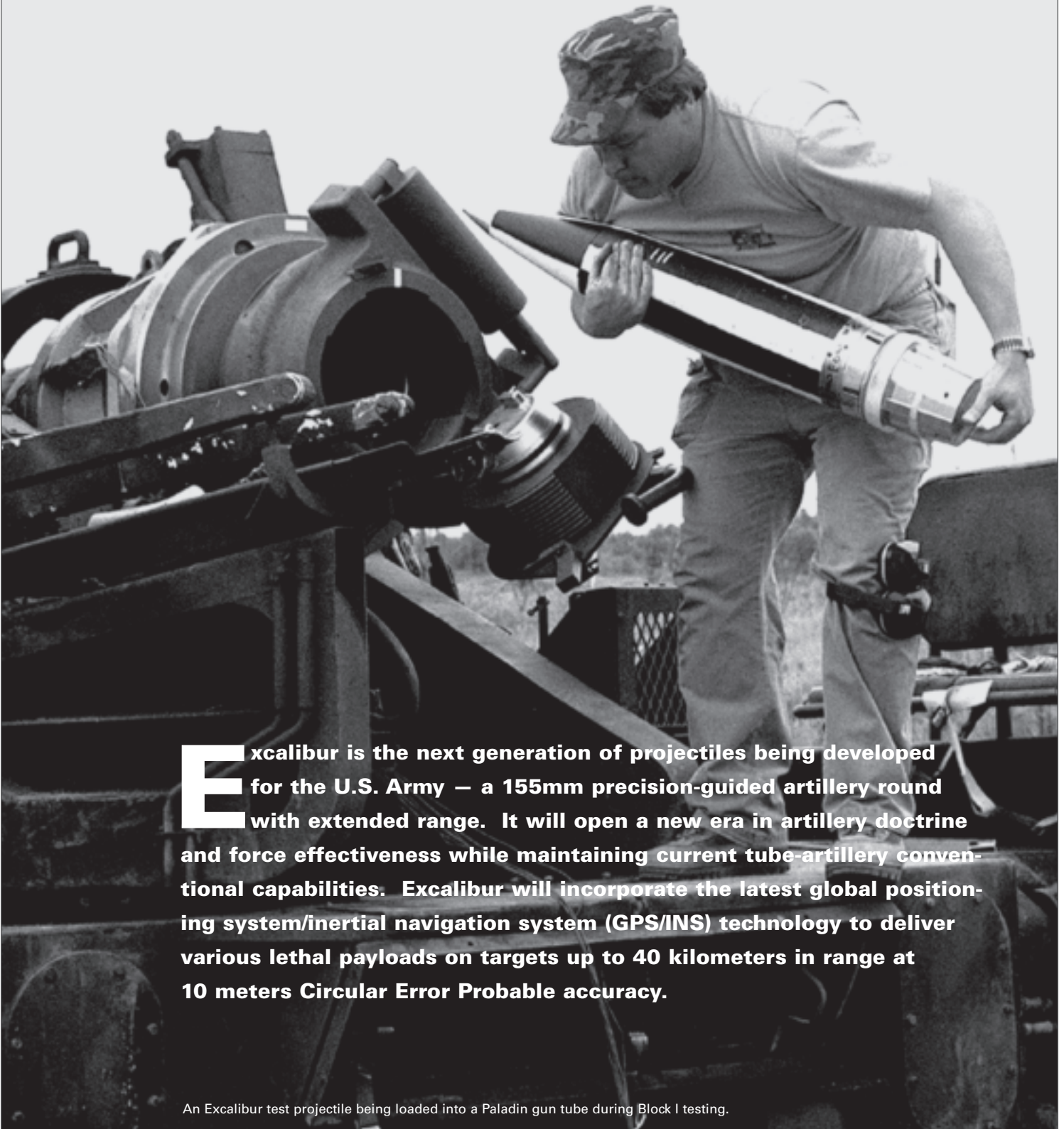
**PETER BURKE** is the Precision Effects Branch Chief in the PM Mortar Systems Office, PEO Ammo. He holds a B.S. in industrial engineering from the New Jersey Institute of Technology and an M.B.A. from the Florida Institute of Technology. He is an Army Acquisition Corps (AAC) member and is Level III certified in systems planning, research, development and engineering (SPRDE).

**KEN HEIDER** is the U.S. Army Spider Project Officer within the Networked Munitions Division for PM CCS. He has a B.S. in mechanical engineering from the University of South Florida. Heider is an AAC member and is Level III certified in SRPDE and Level II certified in program management.



# Excalibur — Precise, Lethal and Cost-Effective

Chris Grassano



**E**xcalibur is the next generation of projectiles being developed for the U.S. Army — a 155mm precision-guided artillery round with extended range. It will open a new era in artillery doctrine and force effectiveness while maintaining current tube-artillery conventional capabilities. Excalibur will incorporate the latest global positioning system/inertial navigation system (GPS/INS) technology to deliver various lethal payloads on targets up to 40 kilometers in range at 10 meters Circular Error Probable accuracy.

An Excalibur test projectile being loaded into a Paladin gun tube during Block I testing.

The projectile's modular design incorporates three unique payloads, which will make Excalibur the most versatile artillery projectile in the Army arsenal. With the evolving current operational environment, the 155mm Excalibur projectile will enable the maneuver commander to precisely defeat critical targets while also minimizing collateral damage and unexploded ordnance.

The projectile's modular design incorporates three unique payloads, which will make Excalibur the most versatile artillery projectile in the Army arsenal.

Block I will provide a unitary warhead payload capability for the Joint Lightweight 155 (JLW155) in FY06. Paladin and Future Combat Systems Non-Line-of-Sight-Cannon capabilities will follow. The Block I Unitary variant has three increments, each of which will provide incremental time-phased performance capabilities to the warfighter.

### Evolutionary Acquisition and Spiral Development

The Excalibur Program is an Acquisition Category IC program managed by the Program Executive Office for Ammunition at Picatinny Arsenal, NJ. The Excalibur family of munitions will be developed, produced and fielded in incremental, evolutionary blocks.

Block II will incorporate a smart submunition payload. Block III will use target-discriminating technology to seek, detect, discriminate and defeat specified targets. Future improvements to all blocks will allow for technology refresh and insertion of user requirements to be identified throughout the projectile's life cycle.

The Excalibur development strategy is based on integrating acquisition reform tenets to include evolutionary acquisition and spiral development, performance specifications and open architecture, integrated product and process development (IPPD), concurrent engineering (CE), integrated data environment, alpha contracting, cost as an independent variable (CAIV), earned value management system, risk management, simulation and modeling for acquisition requirements and training (SMART), Six Sigma and Lean Design principles, single process initiatives and aggressive and nontraditional test and evaluation (T&E).

### Performance Specifications and Open Architecture

The acquisition strategy for the Excalibur projectile was competitively solicited using a performance specification, which satisfied the Operational Requirements Document (ORD). All system-level performance requirements flowed down to individual subsystem performance specifications and interface control documents (ICDs). ICDs are managed by the Interface Control Working Group to ensure interoperability with all supported and supporting systems.

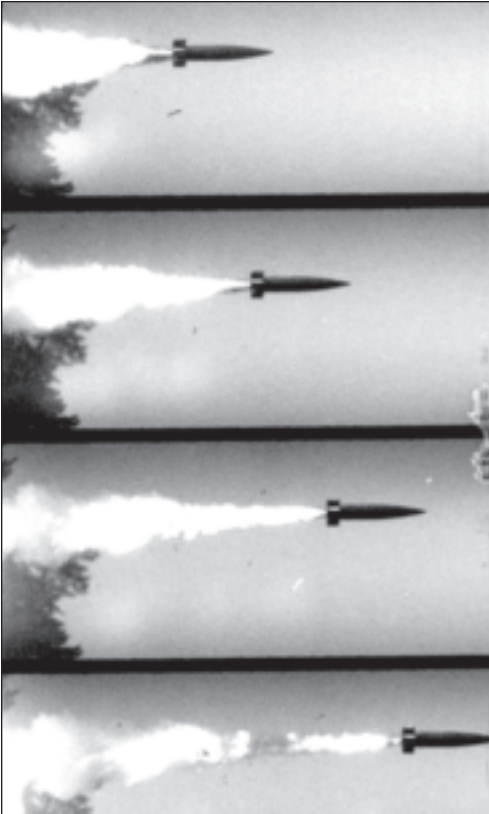
In the current contract, the Excalibur Product Management Office (PMO) invokes no military specifications and only three military standards. Excalibur's open system architecture is based on open system standards as a performance requirement. This will greatly facilitate the incorporation of technology refreshers throughout the projectile's future development and production phases.

### IPPD

The Excalibur program has embraced an IPPD approach to facilitate open communication between the contractor and government teams with

An Excalibur test projectile is being fired from a Paladin gun tube during field testing.





An Excalibur test projectile races to target during basebleed testing. Photo at far right is a close-up of Excalibur.

representation from appropriate disciplines in a true CE environment. The teams are given responsibility for developing discrete system elements within allocated cost, schedule and performance parameters. The Excalibur government support and systems contractors have been organized using integrated product teams (IPTs) including ones for program management, projectile, systems engineering, guidance navigation and control, T&E and cost performance. The user is an integral part of the management team and is represented in all performance trade-off studies to ensure ORD adherence.

**IDE**

The PMO required that a contractor-developed, integrated technical information system be established containing all applicable documents and drawings associated with Excalibur projectile development. To encourage ad hoc and working-level meetings, the system uses a Web-based, real-time

collaboration environment. All government and prime subcontractor participants have access to the system.

**CAIV and Cost-Reduction (CR)**

The cost-performance IPT — which includes PMO, user, government matrix technical support and contractor representatives — manages the CAIV and CR processes per Office of the Secretary of Defense (OSD) and Army guidance. The objective is to meet the user’s desired key performance parameters while minimizing cost. CAIV trade-offs were made with the user while the ORD was being developed and will continue throughout the development program. Many requirements were time-phased and grouped into capabilities to be fielded in increments. CR initiatives were generated by systematically applying Lean Design and Lean Manufacturing principles.

**Risk Management**

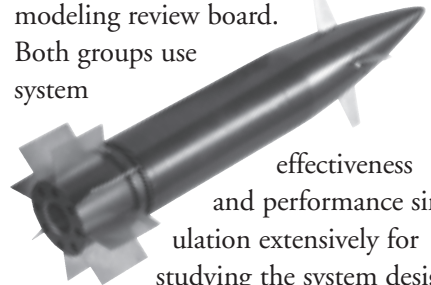
The Excalibur risk management program’s goal is to identify and mitigate risk by instituting a formal review process to ensure that the program’s Acquisition Program Baseline requirements are met. It is managed by a Risk Management Board (RMB), and all program participants have an opportunity to identify program cost, schedule and performance risks. Risks are characterized as high, medium or low, depending on the probability of occurrence and severity of impact to the program.

High-risk items require immediate action by the IPT lead whose area is affected. That IPT is required to

study the risk and present a mitigation plan at the next RMB. Mitigation plans for medium- and low-risk items are briefed by request or after successfully executing the mitigation plan.

**Planning for SMART**

The Excalibur program relies extensively on SMART. Structural design analysis as well as system effectiveness and performance estimate verification rely on computer-based modeling and simulation (M&S). Finite element analyses are conducted prior to all structural testing to ensure adequate design. Both the government and contractor share responsibility for conducting this analysis by managing a joint industry-government modeling review board. Both groups use system



effectiveness and performance simulation extensively for studying the system design effects on overall system effectiveness and subsystem performance.

The acquisition strategy for the Excalibur projectile was competitively solicited using a performance specification, which satisfied the Operational Requirements Document.

**Aggressive and Nontraditional T&E**

T&E is a significant portion of any development process, and the Excalibur T&E IPT has significantly reduced the number of projectiles required for developmental testing (DT) and operational testing (OT), compared to previous projectile development programs. The number of projectiles required to be tested for the traditional safety

series is 374. For the Excalibur program, the T&E IPT has reduced the quantity to 58. This was facilitated by

extensive use of design margin verified in M&S and testing at margin conditions. Operational testers will rely extensively on DT data, thereby reducing the OT requirements without sacrificing confidence in their assessment.

### Commonality

The Army recognizes that high precision-guided munitions development costs, when balanced against fiscal realities, require additional emphasis on affordability. To make Excalibur more affordable, the Army and Navy have established a process to objectively examine cooperation and commonality issues among their precision-guided munitions programs. An Army-Navy-OSD Executive Steering Committee and associated IPT are coordinating the development and production of these programs. Initiatives include opportunities to leverage research and development investments, foster competition through economies of scale and review potential component and system commonality areas.

### Technical Representatives at Contractor Facilities

Given Excalibur's technical and programmatic complexity, the PM

decided it was important that key technical representatives be physically located at the prime contractor's facility in Tucson, AZ, to coordinate, then execute, a disciplined systems development process. In addition, specific responsibilities of Defense Contract Management Agency (DCMA) representatives are clearly outlined in an approved Memorandum of Agreement that is updated as necessary. These representatives will participate in daily meetings and activities throughout program development and execution. DCMA Tucson issued a Letter of Delegation to DCMA Northern Europe to provide operations oversight of the major subcontractor, Bofors Defence, Karlskoga, Sweden.

The Excalibur guided projectile program is a key element of U.S. Army transformation to a strategically deployable, logistically supportable and highly lethal force. These 155mm artillery projectiles will allow the U.S. Army cannon artillery units to dominate future battlefields at extended ranges in support of the lighter Interim and Future Forces now being equipped and deployed. Excalibur features include low cost-per-kill,

increased survivability, extended range, fire-and-forget GPS/INS and a modular design strategy that means the same guidance and tail sections can be used for different warhead options.

**CHRIS GRASSANO** is the Deputy PM Excalibur, PMO CAS, Picatinny Arsenal. He holds a B.S. in electrical engineering from New Jersey Institute of Technology, an M.B.A. and an M.S. in management from Florida Institute of Technology. He has completed all programs on Leadership for Senior Executives at Harvard University and is a Defense Systems Management College Advanced Program Management Course graduate. Grassano is Level III certified in three career fields: program management; test and evaluation; and systems planning, research, development and engineering.



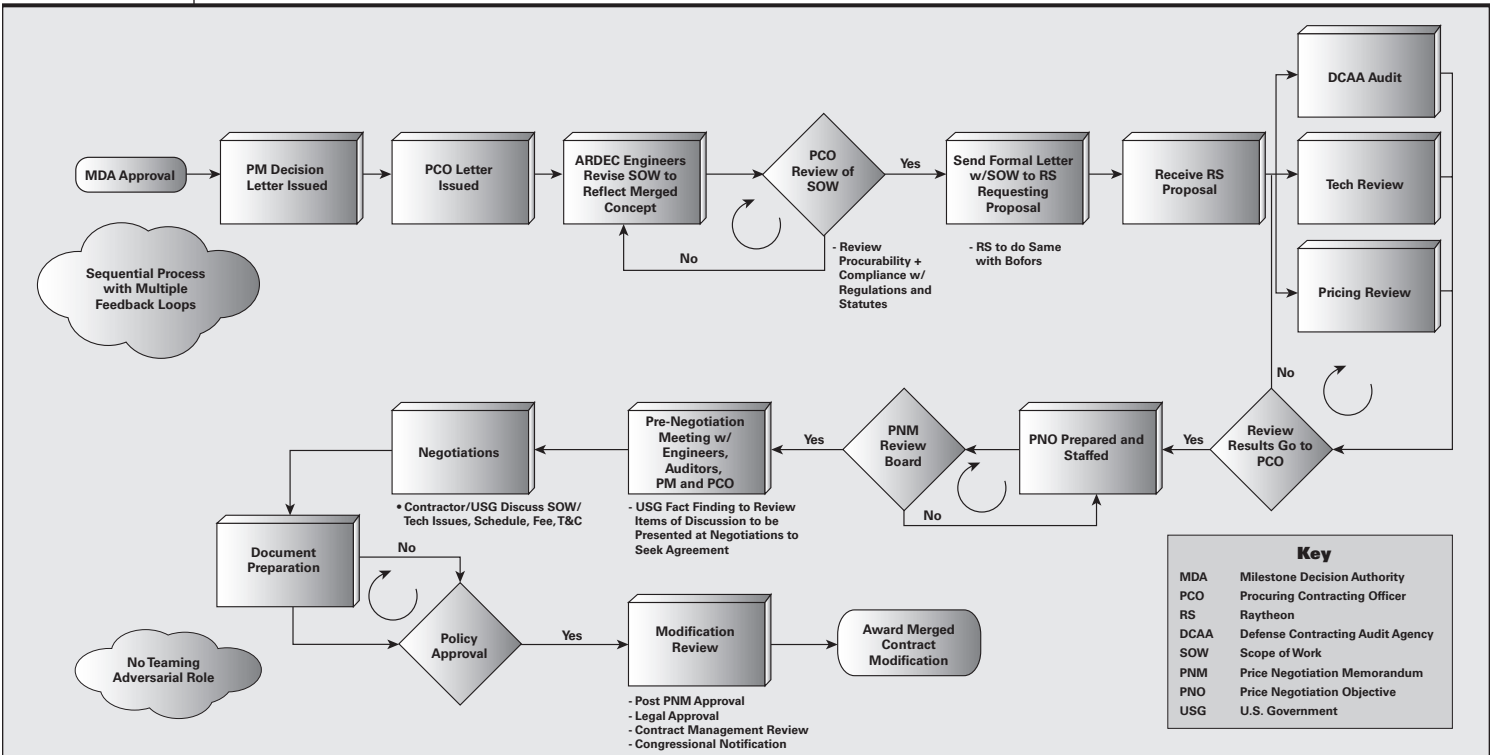
## Applying Six Sigma to Excalibur Reduces PALT

Faith Harder

In late 2000, the Army merged the 155mm XM982 Excalibur and the joint U.S./Sweden Trajectory Correctable Munitions (TCM) program into a single cooperative program to develop a precision-guided, extended-range projectile. The biggest challenge was to cut the development cycle from 24 months to less than 1 year to meet the expectations of COL Nathaniel H. Sledge Jr., the Project Manager for Combat Ammunition Systems (PM CAS).

PM CAS is a Six Sigma organization, so it was natural that team members Faith Harder, the PM's Acquisition Analyst; Scott Cawood, International Project Engineer; and Cynthia Schoner, Contracting Officer; use this approach. The Six Sigma methodology's fundamental objective is implementing a measurement-based strategy that focuses on process improvement and variation reduction through the Six Sigma improvement project application.

The objective was to achieve a 50-percent reduction in the Procurement Administrative Lead Time (PALT) and award an Excalibur contract modification that would effectively merge the U.S. and Swedish extended-range projectile programs. The process team used its Six-Sigma tool kit to accomplish the mission, including cause-and-effect analysis, failure mode and effects analysis and house of quality to identify and prioritize issues and define improvement processes. Level I and II



**Figure 1. Traditional Contract Approach**

process maps showed what was required to accelerate the procurement process. Gantt charts were created to establish the baseline and track the team's progress.

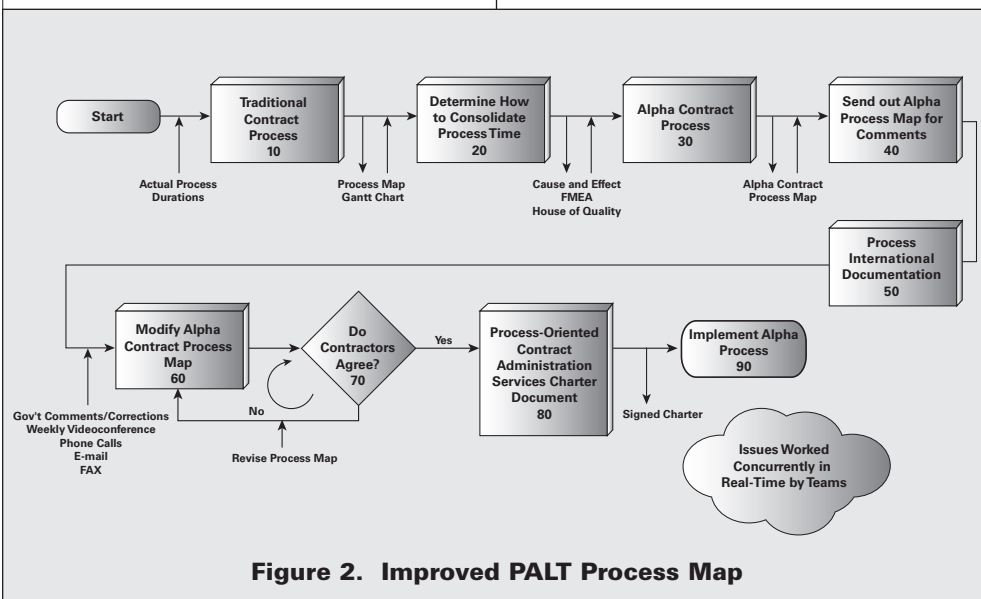
To fully appreciate the process "reengineering" approach undertaken, review the time-consuming, sequential contract approach in Figure 1. Then compare it to the much-improved PALT Process Map in Figure 2 below. This more streamlined approach

allowed the team to work issues concurrently and in real time, resulting in significant cost and time savings.

On Dec. 11, 2002, the U.S. Army and the Kingdom of Sweden signed a Memorandum of Agreement for cooperative Excalibur projectile development. The merged Excalibur and TCM programs contract was awarded Dec. 17, 2002, for \$238 million and a 63-month period of performance. Team members also streamlined the

international documentation cycle from 24 to 12 months and reduced PALT by 50 percent, earning recognition under the U.S. Army Tank-automotive Command's Army Research, Development and Engineering Center's Value Engineering Program where it was credited with cost avoidance of approximately \$9 million. We are proud to say the team met its goal.

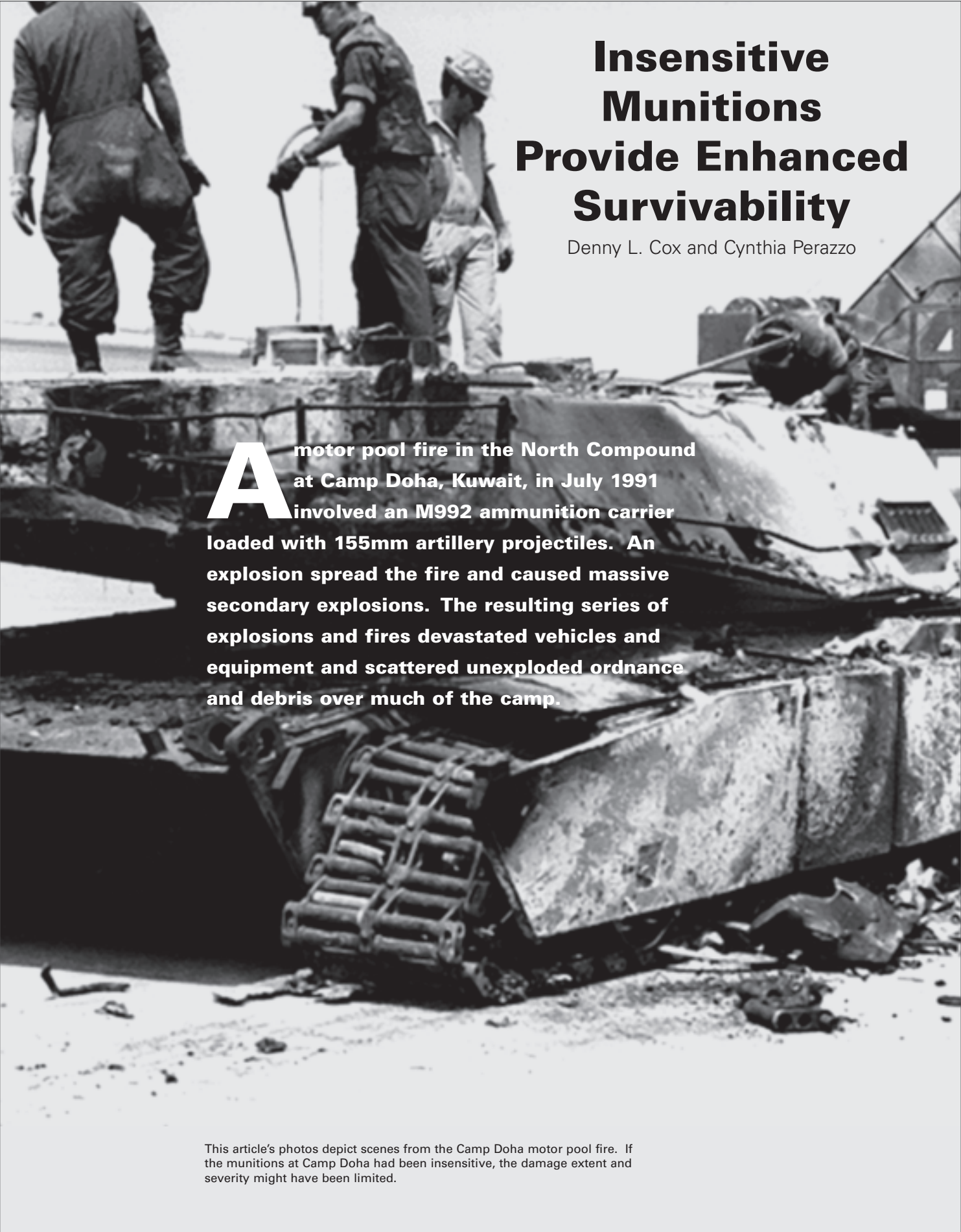
FAITH HARDER is the Acquisition Planning Team Leader for PM CAS. She received her Six Sigma Green Belt Certification from VSE Corp. and public service administration certification from Fairleigh Dickinson University, where she is pursuing her B.A. in public service administration.



**Figure 2. Improved PALT Process Map**







# Inensitive Munitions Provide Enhanced Survivability

Denny L. Cox and Cynthia Perazzo

**A** motor pool fire in the North Compound at Camp Doha, Kuwait, in July 1991 involved an M992 ammunition carrier loaded with 155mm artillery projectiles. An explosion spread the fire and caused massive secondary explosions. The resulting series of explosions and fires devastated vehicles and equipment and scattered unexploded ordnance and debris over much of the camp.

This article's photos depict scenes from the Camp Doha motor pool fire. If the munitions at Camp Doha had been insensitive, the damage extent and severity might have been limited.



A fire/ordnance-damaged M1A1 Abrams tank is loaded for transport to a maintenance depot for extensive repair following the Camp Doha motor pool fire.

PEO Ammo’s responsibilities include the life-cycle management of ammunition, which includes acquisition and its associated research and development, production, deployment, rework and demilitarization. PEO Ammo is also the Single Manager for Conventional Ammunition with attendant responsibilities for all services.

Integral to the production of ammunition is the integration of IM technologies that facilitate compliance with IM requirements. A wide variety of munitions provide the conventional lethality capability for the U.S. Army’s mortar, tank, artillery, mine, individual and crew-served munitions, and much of the capability for the U.S. Marine Corps and our allies. The acquisition programs and development efforts for these munitions are managed by the Project Manager (PM) for Combat Ammunition Systems, PM for Maneuver Ammunition Systems, PM Close Combat Systems and PM Joint Ser-

vices. Their associated development and acquisition schedules are closely managed to ensure that warfighters’ requirements are expeditiously met with the best-performing products possible within program constraints.

**IM Strategic Plan**

PEO Ammo developed an IM Strategic Plan to assess its munitions status, identify potential opportunities for and degree of IM improvement, prioritize improvement efforts and initiate actions to develop and execute detailed IM im-

provement plans. The plan is proceeding in two phases.

Insensitive munitions are conventional munitions that fulfill their performance requirements on demand but minimize collateral damage when they are exposed to unplanned stimuli including fires, shock and impact.

The Army lost more tanks in that one incident than it had during the entire 1991 war against Iraq. Forty-nine individuals were injured, 3 Soldiers were killed while clearing the area of damaged ordnance and 102 vehicles were either damaged or destroyed. Losses exceeded \$15 million in damaged or destroyed ammunition. If the munitions at Camp Doha had been “insensitive,” the damage extent and severity might have been limited.

**Minimizing Collateral Damage**

Insensitive munitions (IM) are conventional munitions that fulfill their performance requirements on demand but minimize collateral damage when they are exposed to unplanned stimuli including fires, shock and impact. The U.S. forces, along with our NATO allies, are actively pursuing IM technology that will protect our personnel, vehicles and platforms. IM does more than provide force protection — it is required for weapon system materiel release and fielding. IM requirements

are contained in *DoDD 5000.1, Chairman of the Joint Chiefs of Staff (CJCS) Instruction 3170.01D*, and *CJCS Manual 3170.01B*. The Joint Requirements Oversight Council (JROC) adjudicates all requests for waiver from IM requirements.

In April 2003, U.S. Army Program Executive Officer for Ammunition (PEO Ammo) BG Paul Izzo undertook the tasks of assessing the degree of IM compliance and identifying opportunities for IM improvements for its managed munitions for FYs 04-13. PEO Ammo’s IM vision is to develop and acquire munitions that enhance the survivability of logistical and tactical systems, reduce risk of injury to personnel and are potentially more cost-effective and efficient to transport, store and handle.

In phase one, PEO Ammo established an IM Integrated Product Team (IPT) to develop the IM Strategic Plan that focuses resource allocation on priority technology requirements. The IM IPT includes PEO Ammo and PM members with programmatic, logistical and technical expertise, as well as members with IM experience. This combination of functional domain knowledge ensures that all technical and programmatic aspects are properly evaluated. The IPT developed the approach, gathered the required data, conducted extensive data analyses, produced an automated management decision tool specific to this effort and developed conclusions and recommendations for a follow-on phase two effort.

IM test requirements were established for fast cook-off, slow cook-off, bullet impact, fragment impact and sympathetic detonation. Additionally, shaped-charge jet impact has received renewed emphasis because of ongoing operations in the Iraqi theater. To

prioritize various acquisition programs' needs, the IM IPT collected technical data to establish a baseline for all PEO Ammo munitions. Using this preliminary information, the IPT developed IM baseline characterizations for all munitions and identified opportunities to improve IM performance of individual munitions. IM subject matter experts (SMEs) within the IPT assessed future IM performance based on existing test data, when available, and engineering judgments when no test data exists.

The IPT also identified other essential characteristics to consider including the consequence of reaction for each munition in the six IM regimes, operational impact if the munition is fielded

PEO Ammo's responsibilities include the life-cycle management of ammunition, which includes acquisition and its associated research and development, production, deployment, rework and demilitarization.

with IM deficiencies and the relative ease with which IM technology could be exerted into existing munitions programs. Finally, the procurement magnitude for each weapon was considered to account for very large or small buys of weapons.

The IPT performed a "pair-wise" comparison of all IM prioritization criteria. Individual comparisons were then combined for each pair of criteria to develop a numerical score for each pair of characteristics. These scores were then ranked relative to each other to establish a hierarchy of prioritization characteristics. Each IPT member's input for the consequences of IM reaction and weapon procurement magnitude was compared and then scored.



In addition to 102 destroyed or damaged vehicles, 49 individuals and 3 Soldiers were killed in the Camp Doha motor pool fire. Losses exceeded \$15 million in damaged or destroyed ammunition.



Insensitive munitions would have limited the damage extent and severity experienced at Camp Doha.

A software model developed by the IPT, using commercially available products, calculated the inputs for all pair-wise analyses. This computer model then quantified scores for each munition identified for assessment, assigning a score based on its values for each IM prioritization criterion. The scores were ranked relative to one another, with the highest scores indicating munitions that should receive the highest consideration for transitioning to IM.

Subsequently, the results provided a first-cut analysis that was used by senior management to prioritize IM planning. If there were factors external to the IPT's analysis that necessitated movement within the list, or elimination altogether, those factors were incorporated into the model. Opportunities to leverage technology development from other services and significant changes in procurement schedules were two such external factors analyzed.

PEO Ammo developed an IM Strategic Plan to assess its munitions status, identify potential opportunities for and degree of IM improvement, prioritize improvement efforts and initiate actions to develop and execute detailed IM improvement plans.

Phase two will focus on developing technology programs that address IM solutions across all families of munitions. During phase one, the highest priority munitions will be identified and intermediate solutions, pending the development and maturation of some IM technologies, will be employed, especially in the area of rocket motor and propellant technology.

The IM Strategic Plan effort undertaken by PEO Ammo is significant because it was the first such undertaking by any organization to look at the whole munitions portfolio, rather than trying to manage and incorporate IM into each individual munition program. Phase one of PEO Ammo's IM Strategic Plan has been presented to Army and DOD leaders, and Army

IM Executive Agent BG Jeffrey A. Sorenson has endorsed the plan and directed other PEOs within the Army to proceed with similar initiatives. Additionally, the IM Strategic Plan

concept was recently presented to the Functional Capabilities Board (FCB) with a recommendation that all military departments embrace this concept. Likewise, the FCB endorsed the concept for presentation to the Joint Capabilities Board and the JROC for the Joint Capabilities Integration and Development System.

Plan implementation will provide several IM benefits including:

- Warfighting efficiencies such as increased weapons throughput and improved sortie generation.
- Improved logistics link.
- Improved replenishment.
- Reduced real estate and lower hazard classification.
- Increased survivability resulting from minimized collateral damage and safer ammunition inventory.

PEO Ammo's forward-looking posture with respect to IM will increase crew survivability — a major consideration with lighter combat vehicles. The benefits from IM have applicability across service boundaries and platform configurations.

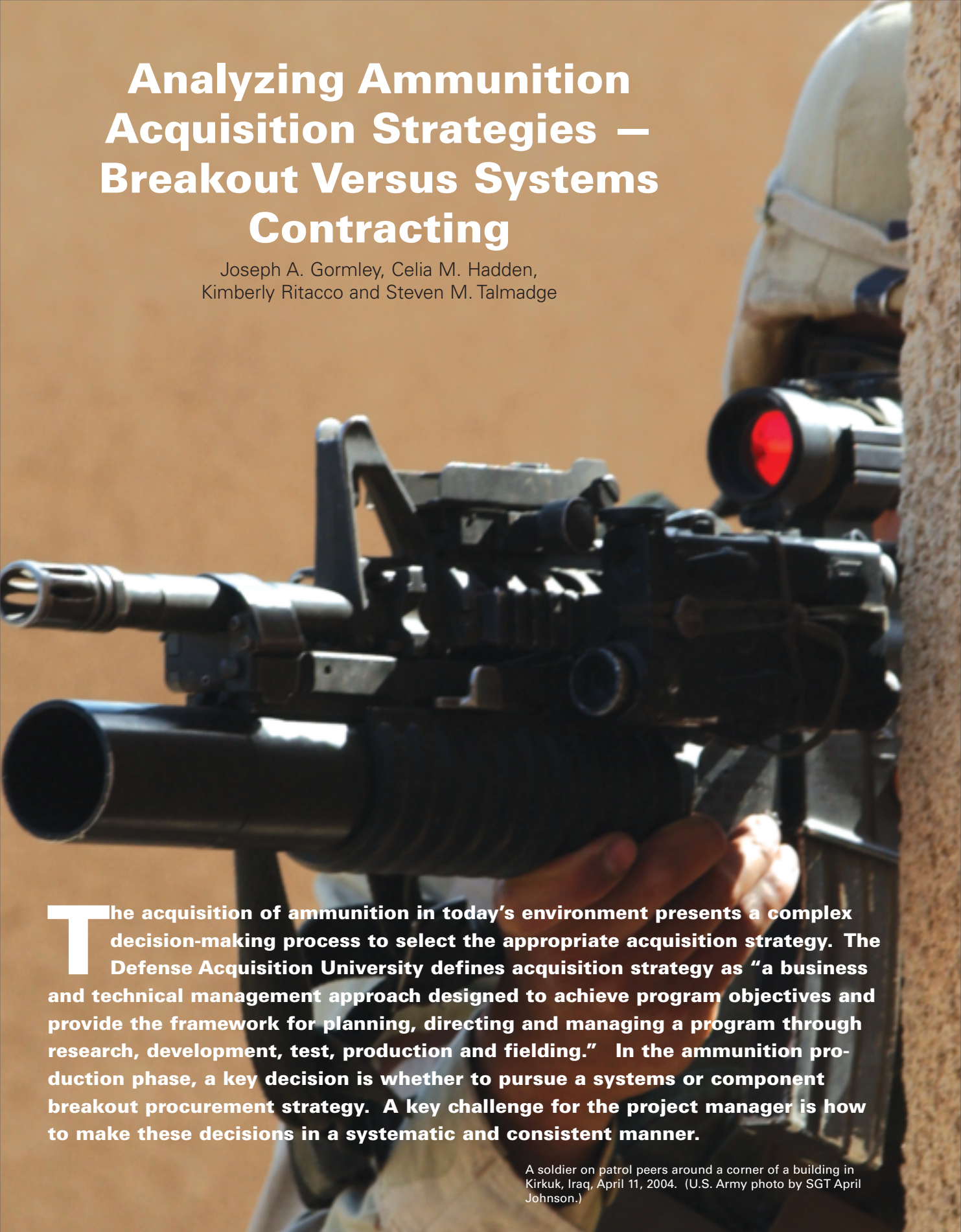
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**DENNY L. COX** is an Ammunition Management SME and is an associate with Booz Allen Hamilton providing technical support to PEO Ammo.

**CYNTHIA PERAZZO** is a Program Management Engineer in PEO Ammo's Management Division. She holds a B.S. in engineering from Catholic University of America and a B.S. in physics from State University of New York-Plattsburg. She is pursuing an M.S. in management from the Florida Institute of Technology. Perazzo is Level III certified in systems planning, research, development and engineering and is an Army Acquisition Corps member.

# Analyzing Ammunition Acquisition Strategies – Breakout Versus Systems Contracting

Joseph A. Gormley, Celia M. Hadden,  
Kimberly Ritacco and Steven M. Talmadge



**T**he acquisition of ammunition in today's environment presents a complex decision-making process to select the appropriate acquisition strategy. The Defense Acquisition University defines acquisition strategy as "a business and technical management approach designed to achieve program objectives and provide the framework for planning, directing and managing a program through research, development, test, production and fielding." In the ammunition production phase, a key decision is whether to pursue a systems or component breakout procurement strategy. A key challenge for the project manager is how to make these decisions in a systematic and consistent manner.

A soldier on patrol peers around a corner of a building in Kirkuk, Iraq, April 11, 2004. (U.S. Army photo by SGT April Johnson.)

*Systems procurement strategy* is when a contract for an end item is awarded to a prime contractor who accepts responsibility for procuring all components and subassemblies, and then integrating them and ensuring the end

item functions as required. In *component breakout strategy*, the government goes directly to industry and procures the necessary components and processes and provides them as government furnished material or equipment to a final-process contractor for assembly and test.

The difference in the two strategies is much like building a home and deciding whether to employ a general contractor to attend to construction details or accept responsibility oneself for contracting and coordinating all the skills

and services necessary to complete the house. In this case, it means assigning the risk of integration and assembly to a single “systems” contractor, or accepting the risk of integrating and assembling the deliveries and processes from multiple “breakout” contractors and vendors.

Risk often equates to cost. Systems contractors will usually cost more because they must cover the potential cost of late component deliveries and flawed integration processes. Of course, the government can choose the less expensive summary cost of



CPL Bryan J. Webber fires an MK19 40mm Automatic Grenade Launcher during a crew/serve live-fire exercise. This training is to maintain proficiency in force protection. (U.S. Navy photo by Photographer's Mate First Class Edward G. Martens, Fleet Combat Command Group, Pacific, Philippines.)

multiple contractors and accept the potential integration “risk” associated with faulty material, late deliveries and the resulting monetary claims for default when other component or process contractors are inconvenienced.

The dilemma in choosing between systems or breakout procurement strategies is an old one. Both have pros and cons and either may have merit over the other in different situations. Obviously, there are many factors to be considered in the decision process. The technology and

Systems procurement strategy is when a contract for an end item is awarded to a prime contractor who accepts responsibility for procuring all components and subassemblies, and then integrating them and ensuring the end item functions as required.

complexity associated with each end item must be viewed in light of the capabilities and critical skills available in the traditional munitions industrial base. Typical questions one might ask are: were there similar items procured in the past; what was the strategy; and was it successful? *The Competition in Contracting Act*, small business policies and numerous sections of the *Federal Acquisition Regulation* and various statutes require consideration of component breakout. The decision may also be influenced by whether there are like end items being procured and the possibility of savings

across these end items by grouping component procurements.

Cost and potential cost savings of breakout must be weighed against potential risk. Is the risk so great it would be less expensive to pay a systems contractor to accept the risk?

Choosing a systems or component strategy is certainly a decision that must be in accordance with regulation and statute. At the same time, the decision must include an objective evaluation of all factors and an evaluation independent of opinion, culture and the notion that “we’ve always done it this way.” The decision methodology

should be a structured, single process that can be applied to the different end items and products across the acquisition manager’s portfolio, yet be flexible enough to allow consideration of each item or product’s unique attributes.

The following two examples demonstrate the complex issues involved in choosing appropriate acquisition strategies and how the government must adapt to new methods of procurement, while ensuring that readiness is maintained and Soldiers are being provided with the highest quality equipment.

### 40mm Grenades

The 40mm grenades for the M203 and MK19 weapons have historically been procured through component breakout acquisitions to small businesses with the government performing the system integration role. These 40mm cartridges were procured on a component basis to reduce contract cost and to satisfy small business set-aside goals. Contracting directly with subcontractors eliminates prime contractor overhead costs. However, it was concluded that the cost-reduction benefit was more perceived than real. The overhead costs represent functions that must be performed on a program — if not by the prime contractor, then by the government. In breakout strategy, the government must go through the entire contracting process for each component — from preparing procurement packages and developing requests for proposals, to performing source-selection evaluations and conducting negotiations annually.



SPC Isaiah Oliver mans an MK19 Grenade Launcher mounted on a Humvee in central Iraq. (U.S. Army photo by SFC David K. Dismukes, Coalition Forces Land Component Command Public Affairs.)

While actual contract costs may decrease with a component breakout approach, there is an increase in technical and schedule risk that leads to an overall increase in program costs. More importantly, if the difficulties in a breakout strategy materialize, fielding of critical ammunition may be impacted. This time-consuming process — coupled with reduced government personnel, increased workload and ongoing military actions and associated training — led to a rescission of FY03 funding for 40mm grenades.

Beginning in FY05, 40mm cartridge procurement for the M781, M583, M433, M430A1, M918 and M385A1 will be handled as a system by two or three small business teams. This allows

the benefits of small business set-asides to be maintained without the burden associated with component breakout. The items will be combined into one family acquisition in a long-term contract (base year with four 1-year options). The basis for award will be a best-value evaluation, and the system contract will yield many benefits for both the government and industry.

### **Bombs**

Bombs are the largest family within Project Manager Joint Services (PM JS) and include both tactical and training configuration. Bombs represent the greatest challenge in crafting long-term acquisition strategies. The current acquisition environment for general purpose and penetrator bombs is

characterized by breakout procurement, single bomb body producers with significant government facility and equipment investment and other components produced by several small businesses.

To address the need for dynamic changes in bomb acquisition, PM JS is realigning its integrated product team structure to focus on the family system approach. The decision was based on criteria including the interrelation of bomb components, protecting the existing industrial base, competition, insertion of new technology and timely delivery.

### **A Structured Methodology Alternative**

The PM for Combat Ammunition Systems (PM CAS) recognized the



need for, and difficulty in defining, a structured methodology to equitably resolve the question of systems versus breakout. Late in 2003, the PM began working with Altarum Institute, a non-profit research and innovation institution, to develop and implement a structured approach to analyzing acquisition strategies for artillery and mortar ammunition. The goal was an accepted, definitive process to determine strategies for specific ammunition items or commodities that would achieve program executive office/PM business objectives, could be implemented within regulatory and statutory boundaries of a complex acquisition environment and would strike optimal balances between risk and reward.

While actual contract costs may decrease with a component breakout approach, there is an increase in technical and schedule risk that leads to an overall increase in program costs. More importantly, if the difficulties in a breakout strategy materialize, fielding of critical ammunition may be impacted.

Development of this structured approach has resulted in an acquisition template in Microsoft® Excel that guides the acquisition analyst through a particular item's impact on business objectives related to cost, schedule, performance and risk and ammunition acquisition environment constraints such as legal statutes, industrial base impacts and cultural issues. The functional result is a suggested optimal acquisition strategy with a detailed list of actions necessary to implement the suggested strategy.

Initial acquisition template applications have suggested that both systems and breakout strategies may be preferred depending on the particular item or commodity. In some cases, template application has suggested that a system strategy has

advantages over the item's current component breakout approach. However, with such a reversal of strategy, it becomes difficult to satisfy the competing priorities in the areas of contract bundling, direction of work to government-owned government-operated plants and equitably breaking out work for small businesses.

The overall objective in developing this decision-making template is to create a framework that PMs can easily use to identify and implement appropriate acquisition strategies for their respective programs or projects. Similarly, the decision template and framework can be used to evaluate current acquisition strategies, their degree of optimization and, if necessary, determine the actions necessary to transition these programs to a more efficient and effective acquisition strategy. Whether determining a new strategy or evaluating an existing one, the next decision development template step is to use the output to define the detailed implementation plan for achieving the recommended acquisition strategies.



Marines establish an overwatch position with their MK19 Grenade Launcher during a field training exercise. (National War College photo.)



A special operations soldier mans a MK19 Grenade Launcher as he and his team conduct a mounted patrol through the town of An Najaf, Iraq, during *Operation Iraqi Freedom*. (U.S. Army photo by SSG Kyle Davis.)

PM CAS, along with Altarum, is in the process of “dry-running” the acquisition decision template and expects to complete the effort in late FY04. The PM expects to begin using this template to evaluate and assess the systems versus component breakout strategies for all of his FY05 programs, commodities and end items.

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## Continuous Improvements Ahead for the Army's Bunker Buster

Gary L. Barber



XM141 Bunker Defeat Munition

To support continuous improvement of munitions, the Project Manager for Close Combat Systems (PM CCS) has applied some outside-the-box thinking. The result — a systems approach to procurement called “in-stride modernization.” The goal is to provide warfighters with the quality products they need today while continuing to modernize the munitions they will use tomorrow. It’s a whole new way of looking at munitions product improvement as the Army transitions from the Current to Future Force.

The strategy is perhaps most easily explained using an example — the XM141 Bunker Defeat Munition (BDM), also known as the Shoulder-Launched Multipurpose Assault Weapon–Disposable. The BDM is a modified nondevelopmental item weapon system that can defeat fortified positions (bunkers) constructed of earth and timber, breach masonry walls and defeat lightly armored vehicles at an effective range of 150 meters. The weapon is being used successfully by Coalition Forces in *Operations Iraqi* and *Enduring Freedom*.

The BDM originated in response to operational deficiencies of existing shoulder-fired rockets identified during *Operations Just Cause* and *Desert Storm*. It was intended as an interim solution, but the follow-on weapons that were to have replaced it were canceled.

With the BDM in full production and needing improvements to be able to support a user requirement for safe firing from an enclosure or confined space, it became the perfect candidate for PM CCS’ in-stride modernization initiative. Working with contractor Talley Defense of Mesa, AZ, and Fort Benning, GA, the team will incorporate a new propulsion system, making it possible to meet new user requirements while retaining the weapon system’s original capabilities. The PM will implement a nonrecurring engineering effort for the BDM starting this fiscal year. The contract will be quickly negotiated via Alpha contracting. Once the design is finalized, a quantity of production representative munitions will be rapidly assembled and delivered for Army qualification and operational evaluation. Following approval by the Milestone Decision Authority, the new

BDM — called BDM Confined Space — will be fielded to the Army. The PM will maintain the flow of these critical weapons to Army inventory while substantially modernizing BDM capabilities to address Soldier requirements.

In-stride modernization allows the PM to quickly address new capabilities or deficiencies by improving existing systems instead of initiating a new program. As part of the effort, PM CCS will also improve BDM training, improve the warhead and make the weapon capable of meeting insensitive munition requirements. Limited funding for ammunition is a fact of Army life, but the need to rapidly respond to evolving needs of warfighters engaged in current operations is crucial. The key to these successful efforts is the partnership between the contractor, materiel developer, combat developer and the Soldier.

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# Rapid Ammunition Planning Tool and Optimization Routine (RAPTOR)

John Irizarry and Victor W. Lowe Jr.

**A** new decision-aid tool will help the Project Manager for Combat Ammunition Systems (PM CAS) develop an overall ammunition strategy road map to ensure that the Army always has the necessary artillery and mortar ammunition on hand to accomplish its portion of the National Military Strategy. Called the Combat Ammunition Plan (CAP), it was developed by the Altarum Institute, a nonprofit organization located in Ann Arbor, MI.

To generate the CAP, the Altarum team developed a software module called the RAPTOR. RAPTOR will take diverse inputs, such as existing program status, budgets, stockpile levels, warfighting and training needs, warfighting analysis and industrial base capability, science

and technology objectives (STOs), independent research and development, manufacturing technology and Small Business Innovation Research Program initiatives and determine the optimal time-phased strategy for managing the life cycle of artillery and mortar ammunition as depicted in the figure below.

RAPTOR will also generate time-phased acquisition options that will enable the Army, given available resources, to acquire ammunition at a rate that will come as close as possible to achieving the levels of ammunition needed to satisfy training and stockpile requirements, while also ensuring optimal force effectiveness.

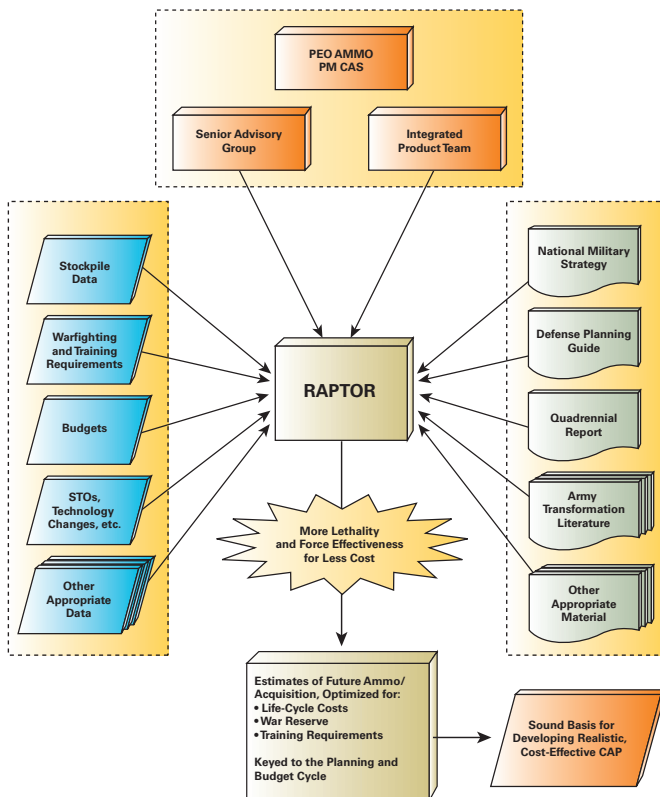
Fast, flexible and designed to accommodate the dynamic DOD planning

and budget environment, RAPTOR will allow PM CAS to quickly calculate an optimal CAP that reflects any changes in the planning environment whenever parameter values change. RAPTOR will also identify stockpile shortfalls and excesses.

To ensure customer satisfaction and acceptance, RAPTOR is being developed under the guidance of a senior advisory group and an integrated product team, co-chaired by Program Executive Office for Ammunition and PM CAS.

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RAPTOR uses diverse inputs to determine the optimal time-phased strategy for life-cycle management of artillery and mortar ammunition.



# The Industrial Base Challenge — Delivering the Right Ammunition, at the Right Place, at the Right Time

LTC Matthew C. Butler, Toni McNeal and Rene Medina



**O**ur Nation is at war and our forces need munitions — from small caliber ammunition to tactical bombs, from flares to hand-held counter-mine detection equipment. For many of these items and others, the Army traditionally looked to the industrial base. However, in recent years, the industrial base has dwindled to a single firm for general-purpose bombs. And, although most industrialized countries have the capability of manufacturing certain types of ammunition, few make it to U.S. specifications. This article discusses the steps being taken to ensure the producibility of ammunition in sufficient quantities to meet U.S. forces' operational requirements.

The C-17 Globemaster III — the newest, most flexible cargo aircraft to enter the airlift force — releases its flares. The aircraft is capable of rapid strategic troop and cargo delivery to forward bases in the deployment area. (U.S. Air Force photo.)

## The Way Ahead

Small caliber ammunition includes all calibers used in individual weapons such as 5.56mm for the M16 rifle and 7.62mm and .50 caliber for ground and vehicle-mounted machine guns. For the Army alone, the demand for small caliber ammunition has expanded from about 300 million rounds in 1999 to more than 1.2 billion rounds today. Across the services, the total requirement is between 1.5 billion and 2.0 billion rounds annually. This left the Project Manager for Maneuver Ammunition Systems (PM MAS) with a number of options to evaluate:

- Expand production at the Lake City Army Ammunition Plant (LCAAP). LCAAP is the government-owned, contractor-operated (GOCO) facility from which the Army and the other

services currently draw 1.2 billion rounds of small caliber ammo annually.

- Purchase NATO specification ammo from overseas.
- Construct small caliber ammo production operations at another GOCO facility, which would require adding completely new equipment and training a new workforce, resulting in at least a 3-year lag before significant production could begin.
- Buy direct from the commercial market.
- Institute a combination of some or all of these options.

PM MAS selected a two-pronged approach. First, through minor upgrades, addition of extra shifts and addition of some new equipment to its current lines, LCAAP increased its capacity to 1.5 billion rounds annually. Second, LCAAP

began purchasing ammo directly from the commercial markets. Primary considerations in selecting these alternatives were that they meet immediate and future needs with minimum risk.

Market surveys revealed that commercial sources had current capacity of about 300 million cartridges, with growth potential to 500 million rounds or more — output that meets U.S. military requirements. With the help of a systems integrator, the Army has begun working with industry to build a new and more integrated partnership that is bringing that capacity together in a well organized, uniform and responsive fashion.

## Bombs and Energetics

The Joint Munitions Command (JMC) Bombs/Energetics Division at Rock



Island, IL, manages the acquisition and logistics for PM Joint Service assigned items including non-Army, service-unique bombs, Navy gun ammunition and multiservice-use bulk propellants and explosives.

As with small caliber ammunition, the need for tactical bombs has experienced significant growth since Sept. 11, 2001, but there are challenges in getting them. Near-term requirements must be satisfied and long-term strategies need to be established to meet future needs. Most important, the industrial base's health must be improved. If we recognize the existing industrial base's maturity and the difficulty in bringing in new competition, it becomes clear that one way to ramp up current production — or ensure ongoing production of certain

items — is to improve relationships with vendors on existing contracts.

The McAlester Army Ammunition Plant (MCAAP) in Oklahoma has traditionally been viewed as a location where the components provided by industry are put together to make bombs, ammunition, propellants and explosives. Then, the products are shipped to various depots, and from the depots to various hot spots on Earth for use by warfighters.

This approach works well in peacetime when the demand for these bombs — primarily for training — is fairly constant and predictable. To meet today's surging requirements, the Ammunition Enterprise is beginning to aggressively manage and coordinate its

relationships with both industry partners and the Army's end-user community. This partnership is leading to significant reductions in processing time, shipping and transportation of bombs into MCAAP.

Since only one firm currently makes general-purpose bombs, and building new facilities is so costly, JMC is looking at alternative technologies such as Case Ductile Iron to make bombs. If a bomb has a thick wall, making it weigh 500 pounds, for instance, it would eliminate the need for cement fill. If successful, this technology could provide an alternative to the current steel configuration, providing access to additional resources.



The MC-130E Combat Talon I and MC-130H Combat Talon II provide global, day, night and adverse weather capability to airdrop and airlift personnel and equipment in support of U.S. and allied special operations forces. Here it protects itself with flares to defeat infrared surface-to-air missiles. (U.S. Air Force photo.)

The U.S. Air Force is also developing an insensitive explosive fill for its general use bombs using a mixture of trinitrotoluene (TNT) and aluminum. Since the insensitive fill is not ready to be used in tactical bombs, and there is no available TNT in the stockpile, JMC awarded an indefinite delivery/indefinite quantity (IDIQ) contract for supply of TNT over a 5-year period to Alliant Ammunition and Powder Co. (AAPC). Virgin TNT will be supplied from a National Technology Industrial Base source, reclaimed and OCONUS TNT. The facility that produces the virgin TNT can be easily modified to produce other energetic materials, notably insensitive explosives. The IDIQ is now delivering sufficient quantities of TNT to meet increased requirements.

Partnering with major contractors has proved beneficial for current program execution. New partnerships are now being established with AAPC for TNT and General Dynamics Tactical and Ordnance Systems for bombs. Through these partnerships, communications will be improved, expectations will be better understood, common goals can be set, delivery times improved and

problems identified so they can be resolved early on.

### Mortar and Artillery Ammunition

Getting the right ammo, at the right place, at the right time may sound easy, but contracting practices today and the current industrial base's state make it increasingly challenging. The PM for Combat Ammunition Systems (PM CAS) is using disciplined engineering, problem prevention versus detection and fact-based decisions. It is also working through integrated product teams (IPTs) to change the mindset and implement processes that will result in a partnership approach to ammunition production.

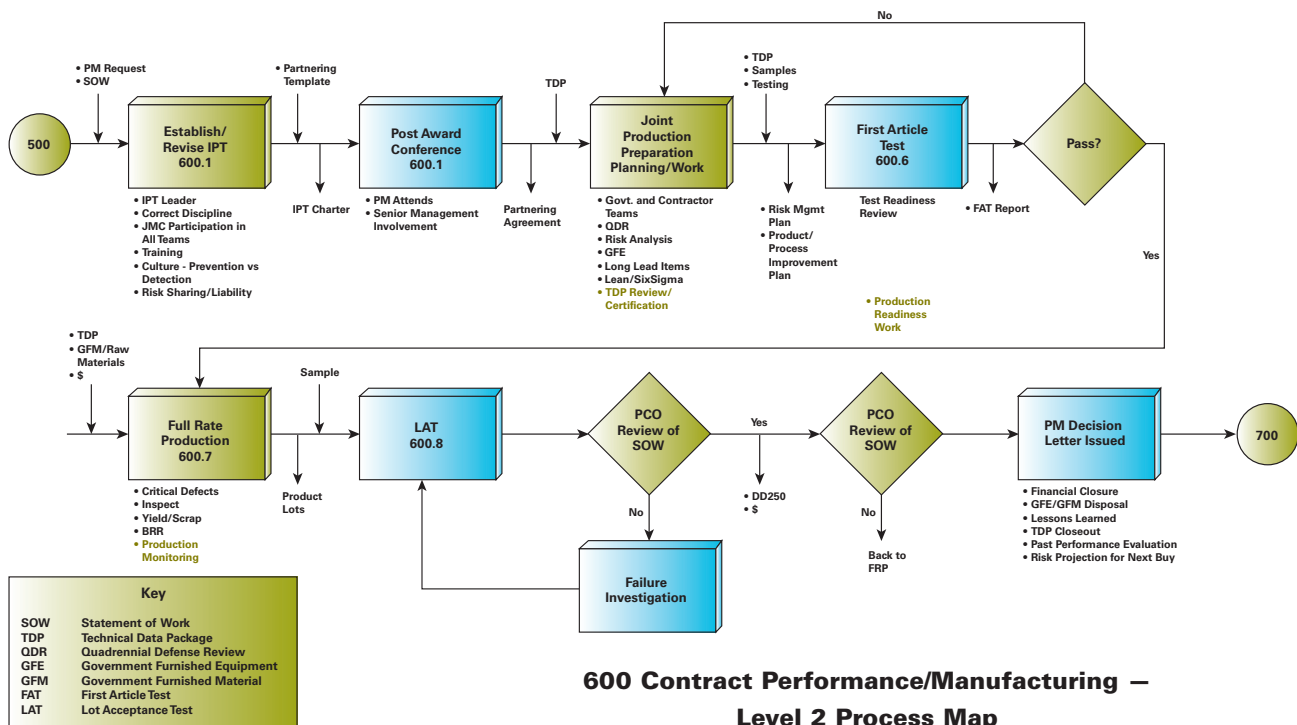
“Selecting the right partner, not contractor, is the place to start,” suggests Chief Conventional Ammunition Division, PM CAS, Armand Herrera. “I purposely use the word ‘partner’ because I believe we are all in this together. We have a Six Sigma team looking at

improving contracting practices to ensure PM CAS contracts with the right partner,” Herrera explained. “It follows one of our organization’s main management philosophies — reinforce successful partnerships.”

In addition, cross-functional IPTs are formed early in the acquisition cycle. Key IPT membership considerations are that every person is a contributor, is able to function as part of a fast-moving team and brings a valued skill or expertise to the table. This is particularly important in the pre-production engineering (PPE) phase where the emphasis should be on proactively preventing problems instead of reactively fixing things that go wrong.

Near-term requirements must be satisfied and long-term strategies must be established to meet future needs.

A main PPE initiative is risk management. To ensure consistency, PM CAS uses Risk Radar, a commercially available software package. A formal risk management board also reviews IPT risk analyses, mitigation plans and implementation strategies.



600 Contract Performance/Manufacturing – Level 2 Process Map



The IPTs look at risk in cost, schedule and performance with emphasis on producibility using Six Sigma tools and a process map that shows production process inputs and outputs from start to finish. The IPT, along with its industry partners, brainstorm risk areas and come up with a comprehensive list to analyze, assign risk factors and propose mitigating measures. Additionally, it's extremely important to visit partners, tour their facilities and meet face-to-face to discuss management philosophies, best practices and expectations.

### Countermeasure Flares

Consider the more than 500,000 shoulder-fired, surface-to-air infrared (IR) guided missiles available on the worldwide market today. In the wrong hands, they present a huge threat to the U.S. military and its fixed- and rotary-wing aircraft. To counteract this threat, PM Close Combat Systems (PM CCS) in concert with the U.S. Army Research Development and Engineering Center (ARDEC) developed the M211 and M212 IR countermeasure flares, which were type-classified in 2002. The M211 and M212 are used in conjunction with the existing M206 countermeasure flares in a "cocktail" mix to defeat a wide range of IR surface-to-air missiles. They have been used successfully in the field on some models of helicopters currently in Afghanistan and Iraq. After returning from Iraq in December 2003, then ARDEC Commander BG Clay L. Newman said, "The M211/M212 flares saved my life while I was deployed. Thank you and everyone on your team."

New operational requirements came out in December 2003 forcing the Army to review its current strategy to procure new flares. PM CCS, working in conjunction with PM Aviation Electronic Systems, was able to determine the total

flare requirement needed to support all current, existing and future platforms with ALE-47 dispensers.

Since these are relatively new items, initial production rates were relatively low — about 6,000 per month. Working closely with the flare manufacturing industry, PM CCS defined a production rate sufficient to support both Army and Air Force requirements. PM CCS partnered with its contractors to expand the current production lines by providing funds for the companies to purchase special tooling machinery to better support the M211 and M212 production lines. Alloy Surfaces and ATK each invested in additional manufacturing equipment and facilities to increase production rates threefold.

While not common practice, this method provided a reasonable solution to enhance the vendor's capability in a sole-source environment. PM CCS was willing to make this commitment to ensure continued production of items urgently needed by warfighters.

As technology changes and production requirements surge, so must the way we do business. Today, the government is the systems integrator, using multiple contracts, focusing on problem detection and reaction and using commercial partners to overcome an outdated industrial base. Change means building IPTs that add genuine value, forming critical government/contractor partnerships looking for new materiel to replace dwindling resources and looking at innovative technologies to reduce production cost and increase quality and flexibility in production rates.

How we provide our warfighters with ammunition is more critical than ever before. The new Ammunition Enterprise formed by PEO Ammo brings together the acquisition management

skills and expertise of PMs, ARDEC engineers and JMC munitions logistics experience to provide strong potential for improvements in ammo production for years to come. The resulting benefits in munitions quality, effectiveness and timeliness make a direct contribution to combat success and the survivability of America's warfighters wherever they deploy.

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# Managing Complexity — Fielding Mortar Fire Control Systems

MAJ James O. Winbush Jr.

**A**sk any Army acquisition officer what program management is all about, and you'll probably hear "managing cost, schedule and performance."

These are the three factors we are taught in acquisition development courses. Other elements, such as managing risk, leadership and customer relations are usually treated separately, which may suggest to some that they are not essential. In fact, they may be the most important elements in successfully managing a defense program.

A Stryker mortar carrier vehicle makes its way off a California Air National Guard C-130 cargo plane at Esler Air Field. The C-130s, which can carry single Strykers, delivered 21 Strykers and 175 soldiers to the airfield from Geronimo forward landing strip at the Fort Polk, LA, Joint Readiness Training Center.



Lightweight Hand-Held Mortar Ballistic Computer

With this in mind, the Product Manager for Mortar Systems (PM Mortars) at Picatinny Arsenal, NJ, adopted an incremental development strategy to get the Mortar Fire

Control System (MFCS) out of development and into the hands of Soldiers on point around the globe. This approach allowed engineers and managers to break the complex system into manageable increments and facilitated the delivery of digital fire control for mounted 120mm weapons.

## Background

MFCS is the Army's first fully digitized fire control system for mortars and a critical combat enabler for enhancing mortar responsiveness, accuracy and lethality. Leveraging components of other Army programs and nondevelopmental items (NDIs), the program showed promise of being fielded as early as 1999. However, translating the operational requirements into specifications that the contractor could decompose into functional software and suitable hardware proved more difficult than anticipated. The PM ended the system development and demonstration contract in July 2000 and turned the software development and hardware integration over to experts at the U.S. Army Armaments Research, Development and Engineering Center (ARDEC), also at Picatinny Arsenal.

Almost immediately, the PM/ARDEC team correctly assessed that the software was too complex for near-term delivery with full functionality. They also incorrectly assumed that the hardware components selected by the contractor would meet operational requirements,

permitting software integration into a functioning system. They failed to properly assess the individual components' integration readiness level. As a result — though the software was completed in time to support the initial operational test (IOT) in September 2001 — a failure of the fire control computer, specifically, the Commander's Interface (CI), led the PM to request a 1-year delay for IOT.

The PM opted for an old leadership tool — the after action review (AAR) — to determine why the program failed to reach acceptable maturity. Although painful, the structured AAR was beneficial in setting the stage for future success. The MFCS had functioning software. Unfortunately, the CI did not perform to requirements. The fire control computer, however, was just a symptom of an underlying problem: the development team had focused on qualifying each MFCS component and had lost the program's "total system focus."

## Avoiding Pitfalls

The new development team was determined to avoid the pitfalls that had thus far plagued the program, so they focused on the following best practices:

- Identify and solve the root cause of problems; get out of the action-reaction mode.
- Apply appropriate methodologies for problem resolution that include impacts on all stakeholders.
- Keep users involved in all matters regarding program status and get them involved in all key decisions.
- Focus on risk management for issues relating to schedule and performance.

MFCS is the Army's first fully digitized fire control system for mortars and a critical combat enabler for enhancing mortar responsiveness, accuracy and lethality.

- Ensure understanding of how each component interacts with every other component — vertically and horizontally — within the system.
- Ensure that quality is considered in a comprehensive manner that includes a viable plan for system reliability growth.

## Engineering Challenges

Systems integration was the first engineering challenge. The second was finding a replacement CI in time to execute IOT within 12 months. The integration problem proved to be multifaceted. While the strategy of using NDI components saved time and money, this approach demanded that program integrators stay informed of any circuitry or firmware changes and assess integration risk for the production hardware. This forced the team to establish effective relationships with item managers and other PMs.

The lead time to procure a replacement CI could have been detrimental to the program. Fortunately, one of the leading U.S. ruggedized computer manufacturers, Miltope Corp., purchased the CI contractor. The PM immediately engaged Miltope's president and established an effective working relationship. The PM extended his trust and the opportunity to perform without prejudice to Miltope's leadership. They responded with improved internal process controls and successfully modified the CI to survive the high-shock environment of the 120mm mortar, improved its thermal problem and simplified the internal layout. Miltope also rapidly delivered prototypes to the development team for subsystem testing and systems integration.

**Managing Risk**

Although we had confidence that Miltope would deliver a quality product, we wanted to mitigate the risk with a plan to qualify an alternative CI. Our development partner, ARDEC, took on this task and executed a parallel plan to qualify alternative computers that could serve as CI. This alternative program provided a backup CI that allowed us to accelerate different phases of our system’s developmental testing and maximize system-level testing in a representative IOT environment at Yuma Proving Ground, AZ. Because we also performed extensive engineering testing using the alternate CIs, we were able to reduce the normal 12 weeks of formal software qualification testing to just 6 weeks once Miltope delivered the low-rate production computers.

In general, identifying and quantifying risk in development programs is a difficult and time-consuming task. However, the program gains that we believed could be realized through proper risk analysis and application to the MFCS program demanded that we incorporate formal risk management into our overall management philosophy. The PM ultimately decided to use a commercially available risk analysis software program to perform a quantitative analysis of cost and schedule risks. The analysis produced a tool that outlined the probability of occurrence and the overall program impact for each key program risk element. From this, we were able to set thresholds for applying additional resources to maintain the program’s critical milestones.

Fortunately, we forged a strong relationship with the test community and openly shared all the information about our system — both the positives and negatives — which promoted mutual trust.

**The Leadership Variable**

No matter how good the plan, leadership often spells the difference between success or failure. Part of effective leadership also means knowing when to lead and when to support. The PM was in charge of the overarching integrated product team (OIPT), which included members from all Army test agencies. The test personnel were invaluable in assisting the PM/ARDEC team to avoid several pitfalls mentioned earlier. Many PM offices view the test community as the enemy, which creates an “us-versus-them” environment. Our feeling mirrors that of LTG Joseph L.

Yakovac Jr., Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT), who said in an interview for the January-February 2004 issue of *Army AL&T Magazine*, “The testers are all of us. If you blame something on the testers, I contend you haven’t worked with them.”

Fortunately, we forged a strong relationship with the test community and openly shared all the information about our system — both the positives and negatives — which promoted mutual trust. At times, the PM functioned in a support role, assisting the test agencies to properly test or evaluate MFCS.

In addition to understanding leadership’s role in the project, the PM felt that it was equally important to ensure

Once fielded, MFCS will enhance 3ID’s combat capability and provide them with organic battalion fires capable of responding to calls for fire in less than 1 minute following mission receipt.

that key leaders on the HQDA staff were constantly updated on the program’s progress. By demonstrating that there was a realistic plan in place

to achieve program success, the PM successfully built strong support for the program with all stakeholders. Bad news was never hidden and, as a result, the PM overcame detractors who might have otherwise terminated the program upon the announcement that IOT was being delayed.

The other critical leadership decision was empowering IPT members to execute in their respective areas of responsibility. A

complex program managed by the IPT process requires that each IPT member have the power to make day-to-day decisions within the overall program plan’s boundaries. We encouraged our IPT members to be proactive and take responsibility to solve individual problems and issues.

**Delivering MFCS**

The MFCS successfully completed the preliminary qualifications test in August 2002. In September 2002, MFCS entered a rigorous 6-week IOT with soldiers from the 1-9th Cavalry Regiment, 3rd Brigade, 1st Cavalry Division. The soldiers demonstrated that MFCS, using digital communications, significantly improved mortar fire responsiveness and effectiveness during battalion combined team operations.

In January 2003, following a successful IOT in November 2002, the ASAALT MILDEP and the 1st Cavalry Division asked PM Mortars to accelerate MFCS fielding to support possible combat operations in Iraq. This required us to

deliver one divisional set instead of the scheduled brigade set.

Following the 1st Cavalry Division fielding, we were tasked to deliver MFCS Version 2 (V2) software 3 months ahead of schedule to support the Stryker Mortar Carrier Version B IOT in February 2004. Applying the lessons learned from the baseline MFCS program, we compressed our development and testing schedule to support the Army's newest mounted 120mm mortar weapon system. MFCS V2 was the critical element

supporting the evaluation of the effectiveness and responsiveness of 120mm mounted mortars at the company level without a dedicated fire direction center vehicle.

Today, PM Mortars is once again engaged in supporting urgent warfighter needs. Since November 2003, we have been working with the 3rd Infantry Division (3ID) and the HQDA staff to accelerate MFCS fielding to support the Army Chief of Staff's modularity initiative to build additional brigades throughout the Army. We began

fielding a divisional set to 3ID in May 2004. Once fielded, MFCS will enhance 3ID's combat capability and provide them with organic battalion fires capable of responding to calls for fire in less than 1 minute following mission receipt.

MAJ JAMES O. WINBUSH JR. is the Assistant PM for Mortar Systems, responsible for fielding the MFCS to Stryker and heavy forces. He has a B.S. and an M.S. in engineering from Old Dominion University.

**M**ost people think of D-day as June

6, 1944, the day of the invasion of Normandy.

But, did you know the term D-day is used for the day on which any combat attack or operation is to be initiated?

The "D" designates the day of an operation when the date hasn't yet been determined, or where secrecy is essential. The letter is derived from the word for which it stands — "D" is for the day of the invasion. There is only one D-day for all units participating in a given operation.

When used in combination with figures and plus or minus signs, the term indicates the length of time preceding or following a specific action. Thus, D-3 means 3 days before D-day; D+3 means 3 days after D-day.

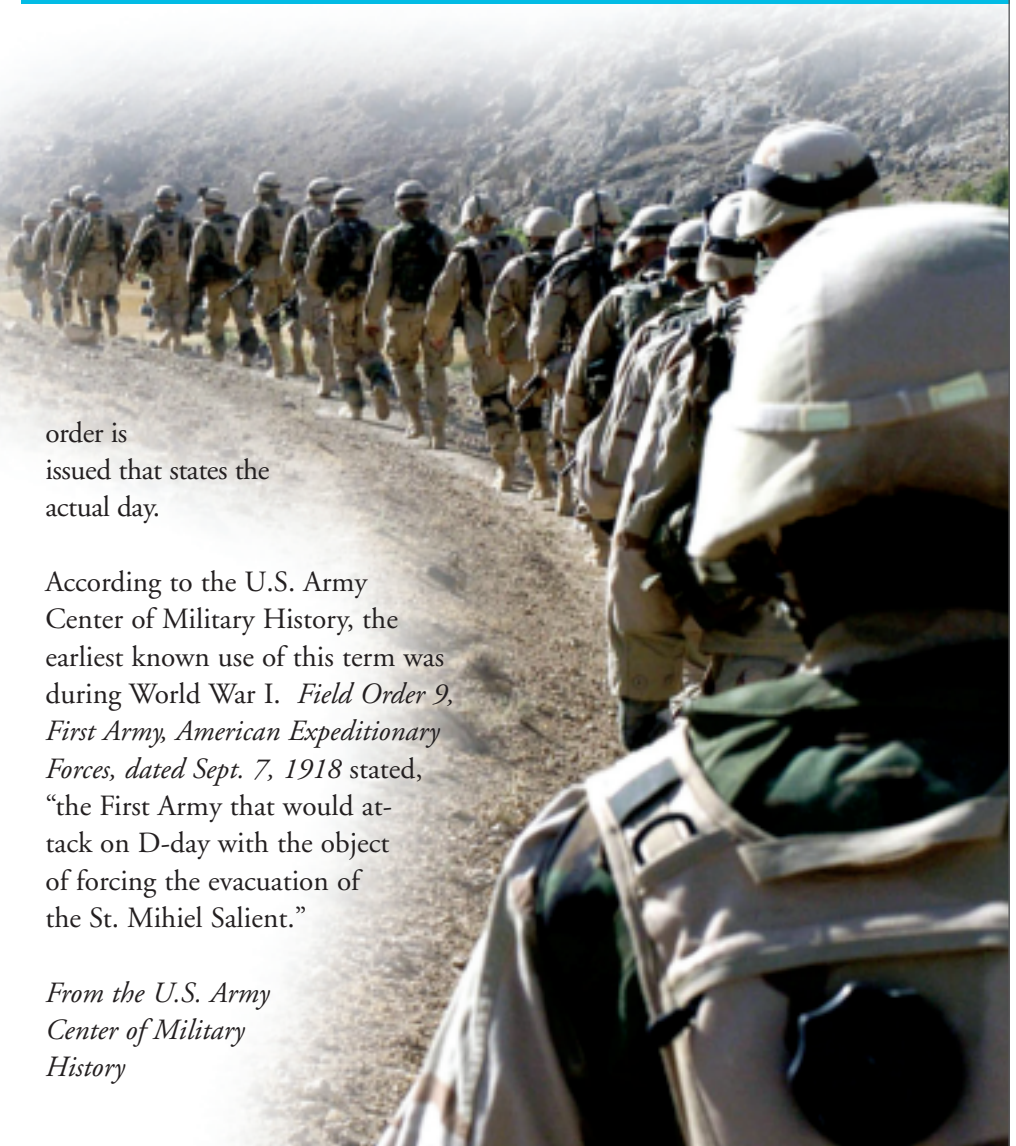
Plans for large-scale operations are made up in detail long before specific dates are set. Thus, orders are issued for the various steps to be carried out on the D-day minus or plus a certain number of days. At the appropriate time, a subsequent

order is issued that states the actual day.

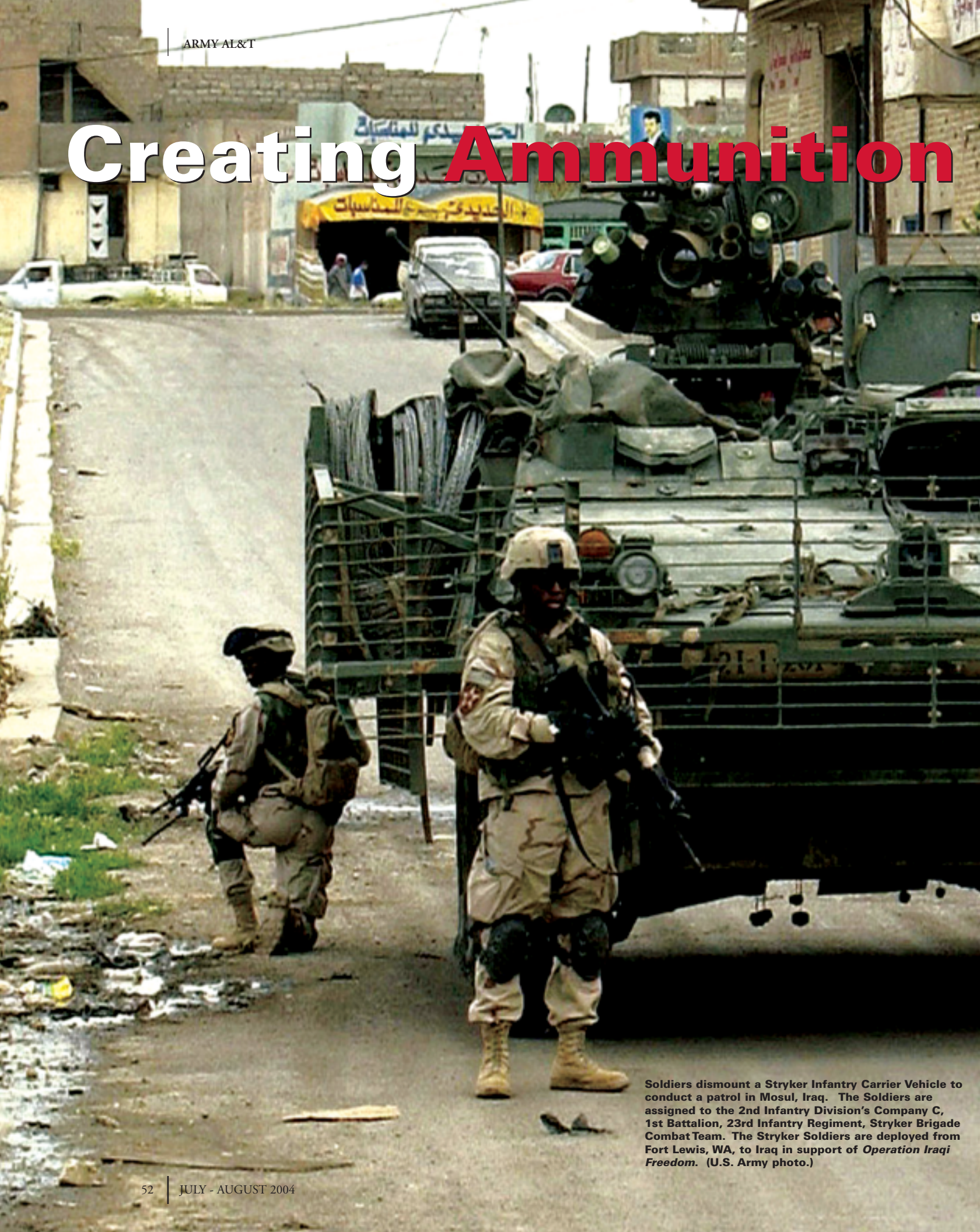
According to the U.S. Army Center of Military History, the earliest known use of this term was during World War I. *Field Order 9, First Army, American Expeditionary Forces, dated Sept. 7, 1918* stated, "the First Army that would attack on D-day with the object of forcing the evacuation of the St. Mihiel Salient."

*From the U.S. Army Center of Military History*

## Did You Know?




# Creating Ammunition



Soldiers dismount a Stryker Infantry Carrier Vehicle to conduct a patrol in Mosul, Iraq. The Soldiers are assigned to the 2nd Infantry Division's Company C, 1st Battalion, 23rd Infantry Regiment, Stryker Brigade Combat Team. The Stryker Soldiers are deployed from Fort Lewis, WA, to Iraq in support of Operation Iraqi Freedom. (U.S. Army photo.)

# Enterprise Excellence

BG Paul S. Izzo, Kevin Fahey, Robert Crawford and Normand L. Frigon



**T**he U.S. Army transformation philosophy calls for using the best industry practices to restructure the Army to make it more flexible and responsive to warfighter needs. The Army Program Executive Office for Ammunition (PEO Ammo) has accepted this challenge as part of its responsibility for integrating conventional ammunition life-cycle management. In addition to overseeing acquisition strategies, research and development, program management, budgeting, logistics and sustainment of ammunition families, PEO Ammo serves as the Single Manager for Conventional Ammunition (SMCA). As such, it is charged with integrating other DOD services' acquisition and logistics requirements into the Army's to create a single voice in SMCA operations and Army ammunition management. To accomplish this, PEO Ammo has taken the lead in establishing the Ammunition Enterprise.

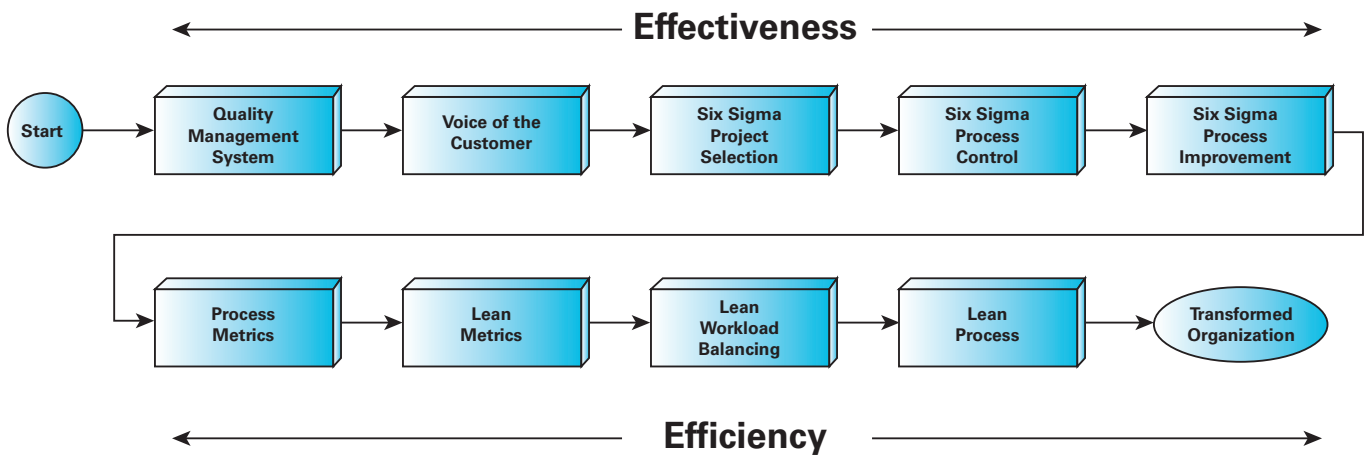


Figure 1. E2 Philosophy

**Ammunition Enterprise**

The Ammunition Enterprise was established by PEO Ammo; the U.S. Army Research, Development and Engineering Command’s (RDECOM’s) Armament Research, Development and Engineering Center (ARDEC); and the Joint Munitions Command (JMC) to create an integrated organization that sees the “big picture” and hears the “customer’s voice.” The underlying strategy brings together the people, infrastructure and processes required for total ammunition life-cycle management to support warfighters. It is focused on developing an effective and efficient enterprise for fielding munitions, optimizing key business processes and implementing Lean Manufacturing/Six Sigma process initiatives into all enterprise elements including design, development, manufacturing, administration, stockpile management and strategic planning. Establishing the Ammunition Enterprise has led directly to the selection of the Enterprise Excellence (E2) model as the philosophical approach to achieve transformation.

The underlying strategy brings together the people, infrastructure and processes required for total ammunition life-cycle management to support warfighters.

**E2 Philosophy**

E2 focuses on “value to the customer.” To our customers — combatant commanders and their Soldiers — this means delivering safe, reliable ammunition at the right time, to the right place, at an acceptable cost. Integrating this strategy ensures that the cultural and organizational changes essential for transformation are realized. PEO Ammo employs a holistic approach to manage and improve organization operations. Critical systems and processes are central to all leadership, management and technology decisions and tools such as the Quality Management System,

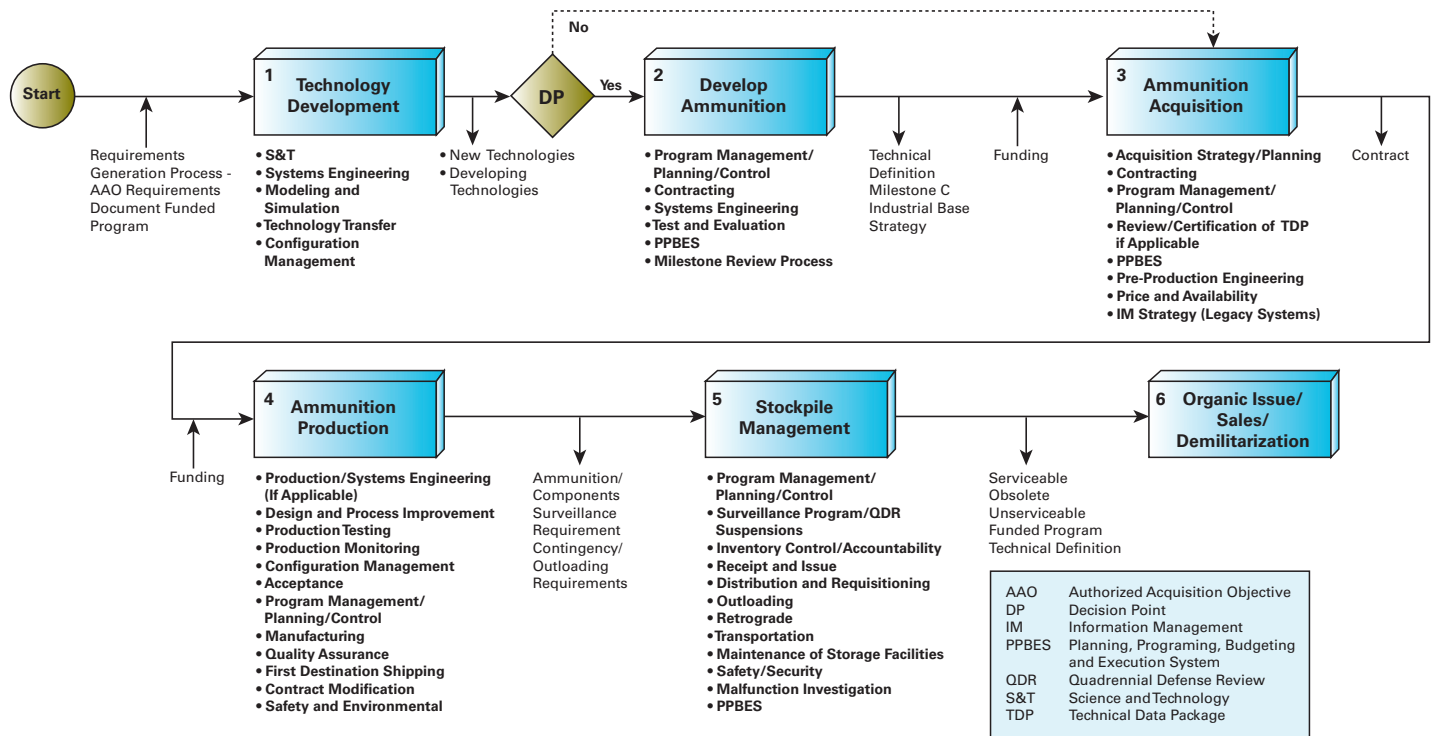
Voice of the Customer and Lean Manufacturing/Six Sigma processes are used to accomplish tasks and achieve a balance between effectiveness and efficiency as depicted in Figure 1.

**Transformation**

These new Ammunition Enterprise and E2 business models make fact-based decisions that will improve the quality, cost, schedule and risk of munitions life-cycle systems and processes while bringing about continuous measurable improvement (CMI) of all Ammunition Enterprise business processes. Already, there have been positive changes at all enterprise levels and in all business processes as E2 brings a disciplined acquisition management approach to managing ammunition as a system-of-systems, not a series of individual programs. The







**Figure 2. The Ammunition Enterprise Process Map**

first step to the transformation to E2 was Lean/Six Sigma Executive Black Belt Workshops led by VSE Corp. The workshops concentrated on applying lean techniques to increase organizational speed, while combining the tools and culture of Six Sigma to improve efficiencies and focus on customer issues.

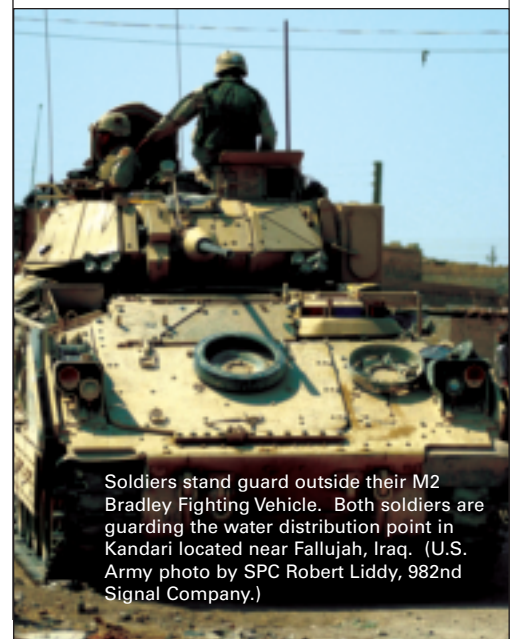
It is said that leadership starts at the top and, in this instance, BG Paul S. Izzo, PEO Ammo, not only participated in the Executive Black Belt Workshop, he chairs the Ammunition Enterprise Executive Board, which was instituted to ensure that the new business models are institutionalized throughout the

These new Ammunition Enterprise and E2 business models make fact-based decisions that will improve the quality, cost, schedule and risk of munitions life-cycle systems and processes while bringing about continuous measurable improvement of all Ammunition Enterprise business processes.

organization. Deputy PEO Ammo Kevin Fahey; JMC Deputy for Operations Robert Crawford; and senior executives from PEO Ammo's program management offices, JMC and RDECOM's ARDEC also took part in the cross-functional, multidisciplinary workshops that explored causes of customer critical-to-quality issues as well as issues that created the longest lead-time delays in the acquisition process. This led to numerous Black Belt Improvement Projects and the application of Lean/Six Sigma practices in three Ammunition Enterprise process teams: Procurement of Ammunition, Supplier Assessment and Engineering Support.

**Accomplishments**

After establishing Ammunition Enterprise and implementing E2, PEO Ammo has seen clear improvements in business processes and cultural changes within the ammunition community. One crucial outcome of E2 is the end-to-end Ammunition Enterprise Process Map illustrated by Figure 2. This map was developed jointly to



Soldiers stand guard outside their M2 Bradley Fighting Vehicle. Both soldiers are guarding the water distribution point in Kandari located near Fallujah, Iraq. (U.S. Army photo by SPC Robert Liddy, 982nd Signal Company.)

help communicate the big picture, clarify roles and responsibilities, prioritize improvement initiatives and understand the requirements, functions and processes throughout the munition systems life cycle. The Enterprise Process Map demonstrates the effort's comprehensive nature, provides an in-depth understanding of the munitions life cycle and outlines enterprise responsibilities and critical business processes.

Identifying requirements, functions, key processes and people is the centerpiece of transforming dispersant ammunition functions into an enterprise. A critical element is PEO/JMC/ARDEC integration to ensure Joint service requirements are being addressed. Figure 3 outlines lead and support responsibilities between JMC and PEO Ammo for the Ammunition Enterprise mission

MISSION	LEAD	SUPPORT
<b>ACQUISITION</b>		
RDT&E	PEO AMMO	JMC
Acquisition Strategy	PEO AMMO	JMC
Hardware Production	PEO AMMO	JMC
Components for Renovation (Maintenance Support)	PEO AMMO	JMC
APE (Maintenance Support)	PEO AMMO	JMC
PAA Program/Budget/Receive Funding	PEO AMMO	JMC
Industrial Base	Co-Lead	
<b>LOGISTICS/SUSTAINMENT</b>		
Receipt/Issue	JMC	PEO AMMO
Storage/Distribution Management	JMC	PEO AMMO
Inventory/Accountability	JMC	PEO AMMO
Safety/Security	JMC	PEO AMMO
Quality Assurance (ASRP/Surveillance)	JMC	PEO AMMO
Maintenance	PEO AMMO	JMC
Demilitarization/Disposal	PEO AMMO	JMC
Transportation	JMC	PEO AMMO
OMA Program/Budget/Receive Funding	JMC	PEO AMMO
RDT&E	Research, Development, Technology and Engineering	
APE	Ammunition-Peculiar Equipment	
PAA	Procurement of Army Ammunition	
ASRP	Ammunition Stockpile Reliability Program	
OMA	Operation and Maintenance Army	

**Figure 3. Key to Enterprise Integration and Synchronization**

functions and is consistent with *DoDI 5160.68, Single Manager for Conventional Ammunition (SMCA): Responsibilities of the SMCA and the Military Services.*

PEO Ammo is the lead with JMC in the supporting role for all acquisition mission functions. For the industrial base mission function, PEO Ammo and JMC are co-leads. JMC is the lead for all logistics/sustainment mission functions except demilitarization and disposal, which is led by PEO Ammo's Product Manager for Demilitarization.

After creating the Ammunition Enterprise Process Map, the Executive Black Belt Working Group went through a structured evaluation using the Lean/Six Sigma tools to identify 78 enterprise processes and evaluate them per their need for improvement, risk and value added to create a prioritized plan for improvement initiatives.

The Enterprise Level Executive Steering Committee oversees the implementation of E2 to ensure that the



Paratroopers of the 82nd Airborne Division's Battery A, 2nd Battalion, 319th Field Artillery Regiment, fire their 105mm Howitzer during a training mission at Baghdad International Airport, Iraq. (Photo courtesy of the DOD.)



More bang for your buck: Lean Manufacturing/Six Sigma improvement initiatives are helping to reduce the cost of munitions production while also delivering safe, reliable ammunition at the right time and place.

CMI culture cascades throughout the Ammunition Enterprise. The committee creates an environment in which CMI can grow through:

- **Communication, cooperation and coordination.** Ensure workforce understands “why” CMI is key to enterprise’s future.
- **Focus.** Approve and prioritize Lean/Six Sigma improvement initiatives based on enterprise process priorities and customer expectations.
- **Remove roadblocks.** Eliminate nonvalue-added requirements.
- **Progress review.** Help establish appropriate metrics and measure initiative progress and overall CMI growth.
- **Recognition.** Reward accomplishments and provide professional

The Ammunition Enterprise Process Map demonstrates the effort’s comprehensive nature, provides an in-depth understanding of the munitions life cycle and outlines enterprise responsibilities and critical business processes.

development opportunities such as Six Sigma Green Belt Certification.

This structure is based on collaboration with JMC and ARDEC boards that will operate under an Ammunition Enterprise Executive Board to enable consistency and synergy among ARDEC, PEO Ammo and JMC CMI initiatives. Board members are senior leaders who are trained in the E2 model and understand the Lean/Six Sigma applications. The board is augmented with ad hoc members, when appropriate, based on process ownership.

As the Ammunition Enterprise deploys the E2 model, it is building on RDECOM ARDEC’s experience in applying Lean/Six Sigma tools so they work for

both administrative and manufacturing processes as follows:

- Reduction of procurement administrative lead time from 24 months to 11 months resulting in \$12 million being cut from procurement costs.
- Identification of design deficiencies in the M734A1 Mortar Fuze production yield. Redesign reduced scrap from 5.0 percent to 0.1 percent for \$50 thousand per month savings.
- Reduction of PEO Ammo’s insensitive munitions waiver process from a 2-year cycle to only 7 months.
- Development of new large-scale manufacturing processes for PAX-2A explosives that reduced per pound cost from \$65 to \$30, saving the Army \$349 million over the life cycle.
- Corrective actions were taken to release a mortar ammunition stockpile worth \$200 million, following a 120mm Mortar Fin malfunction investigation. This action also reduced future procurement risks.

A Stryker Mortar Combat Vehicle test firing. (Photo courtesy of General Dynamics Land Systems.)



The initiatives described on Page 57 are just some of more than 60 improvement initiatives completed by the Ammunition Enterprise. “The culture change may be the most important outcome resulting from E2 implementation,” Izzo remarked. “The Army and Joint Services Ammunition Management System has transformed itself into an enterprise. E2 implementation will continue at PEO Ammo and its impact on the Ammunition Enterprise will be significant,” Izzo explained.

The Ammunition Enterprise and E2 will:

- Improve communication, cooperation and coordination.
- Promote a culture of fact-based decision making at every organizational level.
- Lead to better resource prioritization and application.
- Allow the PEO to get more and better ammunition into the field faster.
- Improve quality, cost and schedule significantly while reducing risk.
- Drive cultural change throughout the supply chain.

“Most important, it will mean that we can deliver munitions to the warfighter more efficiently and effectively than ever before. This is our primary objective,” Izzo concluded.

**BG PAUL S. IZZO** is the PEO Ammo. He has a B.S. in business administration from St. Bonaventure University and an M.S. in management science from Central Michigan University. His military education includes the Command and General Staff College, Defense Systems Management College and the U.S. Army War College.

**KEVIN FAHEY** was the Deputy PEO Ammo when this article was written. He is now the Acting PEO for Ground Combat Systems. He has a B.S. in engineering from the University of Massachusetts and is Level III certified in program management and systems planning, research, development and engineering (SPRDE).

**ROBERT CRAWFORD** is JMC’s Deputy for Operations. He has a B.S. in mechanical engineering from the University of Illinois and an M.B.A. from St. Ambrose

University. He is Level III certified in SPRDE and program management and Level II certified in manufacturing, production and quality assurance.

**NORMAND L. FRIGON** is a Director of VSE Corp.’s Management Sciences Division. He has developed and implemented Six Sigma, Lean Enterprise and Supply Chain management programs at American Ordnance LLC, U.S. Army Tank-automotive Armaments Command, ARDEC, PEO Ammo, PEO Ground Combat and Support Systems and other Army suppliers. He has a B.A. in statistics and an M.B.A. in quantitative sciences from National University. He also graduated from the University of Michigan Executive Development Center’s course in Strategic Quality Planning. Frigon is the former Associate Director, Reliability Engineering and Management Institute, University of Arizona.



# Posturing the U.S. Ammunition Industrial Base for the Future

Matthew T. Zimmerman

**T**he Single Manager for Conventional Ammunition (SMCA) Industrial Base Strategic Plan establishes a management framework for posturing the ammunition industrial base supply chain to effectively respond to current and future conventional ammunition requirements. Its initiatives and strategies provide the underpinnings for optimizing acquisition planning and decision making that affects the ammunition production base's preparedness.

Sonar Technician Third Class Jon Kristoffersen inspects an explosive charge before entering the water from an airborne CH-46D Sea Knight helicopter. (U.S. Navy photo by Photographer's Mate Third Class Joshua Word.)



**Figure 1. Ammunition Family Commodity Categories**

(GOCO) Army Ammunition Plants (AAPs) and three government-owned, government-operated (GOGO) plants that support the Army, Navy, Air Force, Marine Corps and Special Operations Command product lines.

**Strategic Planning Process**

Strategic planning commenced with the establishment of a multiservice, multiorganizational integrated product team (IPT). The SMCA Industrial Base IPT’s diverse composition ensured maximum industrial base stakeholder representation as illustrated by Figure 2. The IPT followed a disciplined approach to structure the planning process and strategic plan content, employing Six Sigma methodologies throughout the effort. The top-level planning process condenses simplistically to the logic of establishing where we want to be in 2015, where we are now and how are we going to get there. These are outlined in Figure 3 on Page 61. The processes’ execution was iterative and required periodic reality checks to ensure all goals and objectives were realistically attainable.



At the “tank line of the future” at Iowa Army Ammunition Plant, a 120mm tank round is filled with propellant.

**The Industrial Base**

The ammunition industrial base supply chain is a vast global network of critical core competencies, capabilities

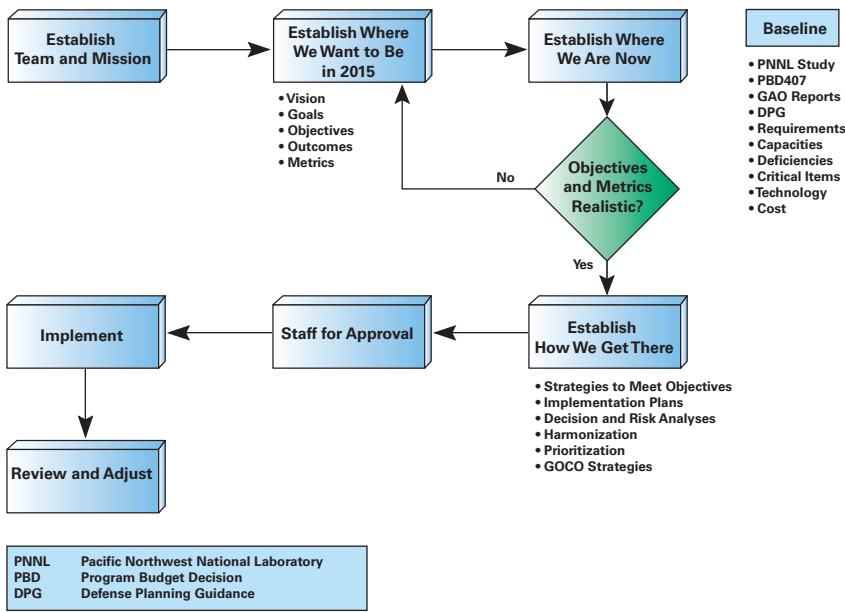
- Assistant Chief of Staff for Installation Management/Army Environmental Center
- Assistant Secretary of the Army for Acquisition, Logistics and Technology
- Assistant Secretary of the Army for Installations and Environment
- Chemical Materiel Agency
- Defense Contract Management Agency
- General Services Administration
- HQDA G-3
- HQDA G-4
- HQDA G-8
- Joint Munitions Command
- Munitions Industrial Base Task Force
- PEO Ammunition
- PEO Tactical Missiles
- PM Aviation Rockets and Missiles
- PM Close Combat Systems
- PM Combat Ammunition Systems
- PM Maneuver Ammunition Systems
- U.S. Air Force
- U.S. Army Armament Research, Development and Engineering Center
- U.S. Army Materiel Command Headquarters
- U.S. Marine Corps
- U.S. Navy
- U.S. Office of the Undersecretary of Defense for Acquisition, Technology and Logistics

and capacities that provide the required raw materials, components and assembled end items for military training and combat. The industrial base’s dimensions are organized and managed by commodity family categories as depicted in Figure 1 and by base functional area industrial sectors that include:

- Propellant.
- Small caliber ammunition.
- Metal parts.
- Explosives.
- Load, assemble and pack (LAP) operations.
- Electronics, sensors and fuzing.

Program Executive Office Ammunition (PEO Ammo), Picatinny Arsenal, NJ, and the Joint Munitions Command (JMC), Rock Island Arsenal, IL, jointly manage the ammunition industrial base, which absorbs DOD resources in excess of \$2 billion annually. It comprises commercial and organic suppliers supporting more than 365 ammunition end items and an expansive bill of materials. The commercial supply side extends well beyond 100 suppliers, while the organic supply base comprises 11 government-owned, contractor-operated

**Figure 2. SMCA Industrial Base IPT Organizations**



**Figure 3. Strategic Planning Process, Level 1 Process Map Using Six Sigma Principles**

- *Objective 3.2.* Maintain a financially viable industrial base.

**Goal 4.** Modernize utilized manufacturing capacity.

- *Objective 4.1.* Increase manufacturing readiness to meet current and future requirements.
- *Objective 4.2.* Promote Six Sigma, Lean and flexible manufacturing practices.

**Goal 5.** Operate efficiently and effectively.

- *Objective 5.1.* Reduce ammunition life-cycle costs.
- *Objective 5.2.* Maximize customer satisfaction.

**Overarching Strategies**

The IPT also developed seven overarching strategies to support the new vision as follows:

- Acquisitions will determine and posture the production base.
- Acquisitions and investments will be synchronized to ensure required manufacturing capabilities remain available.
- Industrial base considerations will be factored into the acquisition process.
- The industrial base infrastructure will be sized to maximize operating efficiencies and to reflect DOD planning guidance and economic realities.
- Private industry, as the principal ammunition supplier, will be provided incentives for investing in and sustaining the production base.
- Systems acquisition will be used to the maximum extent practicable.

The ammunition industrial base supply chain is a vast global network of critical core competencies, capabilities and capacities that provide the required raw materials, components and assembled end items for military training and combat.

Several IPT brainstorming sessions and the application of Six Sigma affinity diagramming and quality function deployment techniques generated our strategic vision, goals and overarching strategies. Simply stated, our vision is to create *“A responsive, innovative and efficient manufacturing base capable of meeting national security requirements while preserving critical core competencies and relying to the maximum practical extent on competition and private ownership.”*

**Goals and Objectives**

In addition, strategic objectives were formulated for each goal, followed by the expected outcomes and performance measures as follows:

- Goal 1.** Balance industrial base and acquisition management risk.
- *Objective 1.1.* Ensure critical core competencies and capabilities are available to meet requirements.
  - *Objective 1.2.* Balance cost, schedule and performance with “need-to-have” capability.
  - *Objective 1.3.* Establish right-sized ammunition industrial base.

**Goal 2.** Transform to meet current and future requirements.

- *Objective 2.1.* Reduce GOCO AAP operating costs/footprint and dispose of excess AAP capacity.
- *Objective 2.2.* Increase manufacturing capability and readiness.
- *Objective 2.3.* Determine effective requirements process and replenishment definition/strategy.
- *Objective 2.4.* Implement an integrated data environment (IDE) to facilitate optimizing acquisition planning and industrial base preparedness.

**Goal 3.** Incentivize industry to reinvest in capital equipment and processes.

- *Objective 3.1.* Increase industry investment in equipment and facilities.

Objectives →	Outcomes →	Strategies*
<p><b>Objective 1.1</b> — Ensure critical core competencies and capabilities are available to meet requirements.</p> <p><b>Objective 1.2</b> — Balance cost, schedule and performance with need-to-have capability.</p> <p><b>Objective 1.3</b> — Establish right-sized ammunition industrial base.</p>	<p>a. Industrial base is prepared to respond to all requirements.</p> <p>b. Increased industrial base stabilities.</p> <p>c. Improved surge capabilities.</p> <p>d. Possible increase in ammunition unit price.</p>	<p>a. Synchronize ammunition procurements core competencies and manufacturing capabilities.</p> <p>b. Use science-based production and prototyping for attaining surge capabilities and emergency requirements.</p> <p>c. Pursue feasibility and overall business case for GOCO AAP sell, long-term lease and/or consolidation focusing on preserving critical capabilities. (Pending BRAC outcome.)</p> <p><small>*Truncated list of strategies</small></p>

**Figure 4. Strategic Goal #1 – Balance Industrial Base and Acquisition Management Risk**

capabilities, utilized capacities and supplier deficiencies. Deficiencies centered on supplier infrastructure and manufacturing inefficiencies, limited availability of critical components or raw materials, single qualified suppliers (see related information on single point failures in the sidebar on Page 65) and unavailability of manufacturing technology, capability and capacity to meet future advanced munitions needs.

Using the baselining activity and other assessments, lists of strategies for attaining each strategic goal and

- Opportunities for greater Joint service activity will be identified and implemented.

**Metrics**

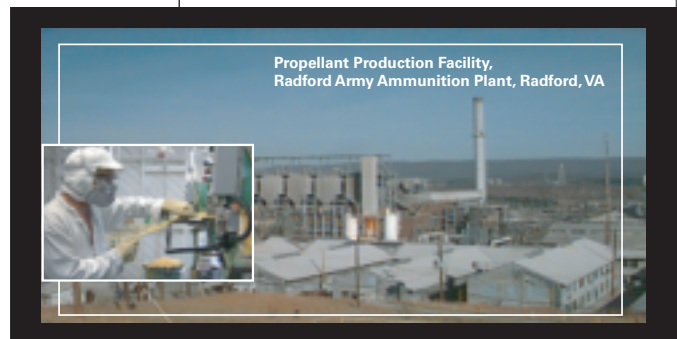
In addition to the performance measures for the strategic goals and objectives, overarching metrics were developed to characterize and baseline the state of the industrial base and to measure the effectiveness of implemented strategies. Because of the magnitude of the data involved, data collection will be a significant challenge requiring maximum use of an ammunition IDE. The overarching industrial base metrics follow:

- Operational — overarching and technical. Overarching: munitions readiness ratings by ammunition family for capability, capacity and availability to meet current and emergency requirements. Technical: supplier production delivery adherence, percent capacity utilization, facility condition, minimum sustaining rate and single point failures.
- Quality — requests for waiver submitted, quality deficiency reports and percent tests passing lot acceptance tests.

- Financial — corporate financial risk assessment.
- Facility Safety — number of Occupational Safety and Health Administration violations.
- Environmental — violations, national priorities list/hazardous rating score and off-site contamination.
- Supplier Assessment Rating — customer satisfaction (cost, schedule, performance and business relations).

**Tactical Strategy Formulation**

The strategic planning process evolved from “overarching” to “tactical” following significant baselining activities involving data collection and assessment of ammunition requirements,



Operating Contractors	Manufacturing Capabilities
Alliant Techsystems Lake City, MO	Small-Arms Manufacturing
Alliant Techsystems Radford, VA	Propellant Manufacturing (Rocket, Artillery, Tank, Medium Caliber; NC for Small Caliber)
American Ordnance Iowa	Load, Assemble & Pack (LAP) — Tank/Artillery, FASCAM
American Ordnance Milan, TN	LAP — Mortars, 40mm Cartridges; C-4 Extrusion
Chamberlain Manufacturing Scranton, PA	Large Caliber — Artillery/Mortar Metal Parts
Day & Zimmerman Kansas	LAP — Sensor-Fuzed Weapon; Mortar/Artillery
Day & Zimmerman Lone Star, TX	LAP — Grenades, Initiators, Detonators, Mines, Cargo Munitions
Day & Zimmerman Mississippi	Semiactive — Cargo Metal Parts
Norris Inc. Riverbank, CA	Steel/Brass Cartridge Cases, Grenade Metal Parts
Ordnance Systems Inc., BAE Holston, TN	Energetics — HMX, RDX
Valentec Louisiana	Semiactive — Large Caliber Metal Parts

**Figure 5. Operating Contractors’ Manufacturing Capabilities**



objective were developed. To turn the strategies into a manageable and implemental plan, a hierarchical prioritization process (HPP) based on an expert system computer model was used to perform parallel comparisons of strategic goals and objectives to their corresponding tactical strategies. The HPP quantifies the relative importance of each strategy to achieving the most important goals and objectives, effectively determining which strategies should be a priority and which could be consolidated or eliminated. This process condensed 50 strategies to less than 30.

The strategic planning events' connectivity and logic flow is illustrated in Figure 4 on Page 62. For each strategic goal, the IPT developed objectives, expected outcomes, tactical strategies and performance measures.

**Organic Industrial Base**

The organic industrial base consists of 11 GOCO AAPs and three GOCO plants that were constructed during the World War II era. The operating contractors and a summary of their manufacturing capabilities are shown in Figure 5 on Page 62.

**Overarching AAP Strategies**

In a March 2003 memorandum, the Secretary of the Army (SECARMY) directed no GOCO AAP consolidation or divestiture implementation other than as part of the FY05 Base Realignment and Closure Process (BRAC). Thus, the SMCA Industrial Base IPT developed the following

overarching AAP strategies in preparation for BRAC's conclusions:

- No GOCO AAP consolidation or divestiture implementation other than as part of the FY05 BRAC process without SECARMY approval.
- Reduce AAP cost of ownership.
- Reduce excess physical capacity and infrastructure.
- Identify and implement opportunities for greater Joint service activity.

The HPP quantifies the relative importance of each strategy to achieving the most important goals and objectives, effectively determining which strategies should be a priority and which could be consolidated or eliminated.

In addition, the AAP facility-use contracts will be aligned with the FY05 BRAC timelines to the maximum extent practicable. Following the BRAC decisions, the feasibility and overall business case for sale, long-term lease and/or consolidation of capabilities to maximize efficiencies will be pursued.

**Conclusion**

Following Six Sigma methodologies, the SMCA Industrial Base IPT developed a strategic plan that establishes a management framework

for posturing the ammunition industrial base supply chain to effectively respond to current and future conventional ammunition requirements. The plan is an important communication tool to all industrial base stakeholders. Further, it is understood that strategic planning is an ongoing process requiring constant evaluations and that all strategies are subject to modification to adjust to conditions in the surrounding global environment. Implementation of any strategic plan requires corporate and organizational

buy-in at all levels to be successful. The Ammunition Enterprise and the SMCA Industrial Base IPT have that buy-in and are making significant progress to ensure the industrial base supply chain is postured to effectively respond to current and future requirements. Progress is being made. Much more work lies ahead. As former General Electric Chairman and Chief Executive Officer Jack Welsh said, "You've got to come up with a plan. You can't wish things will get better."

**MATTHEW T. ZIMMERMAN** is the Associate PEO Ammo, Industrial Base, and is the SMCA Industrial Base IPT leader. He has a B.S. in mechanical engineering from Penn State University, an M.S. in engineering from Stevens Institute of Technology and an M.S. in technology management from the University of Pennsylvania. Zimmerman is Level III certified in program management and systems engineering.



# The Single Manager for Conventional Ammunition (SMCA) Industrial Base Assessment Tool

Al Beuster

**F**or many years, the Joint Munitions Command (JMC) and its predecessor commands have performed industrial preparedness planning for critical ammunition end items and associated components. These activities, performed for both commercial and government-owned facilities, included collecting industrial base production capability and capacity data, identifying required facility investments and establishing production planning schedules to meet peacetime and emergency surge demands. These collected data were housed in a database called the Production Base Plan (PBP).

In keeping with transformation initiatives taking place across DOD, JMC is making significant changes in how industrial preparedness planning activities are being performed. Instead

Instead of focusing on replenishment, efforts will now be directed toward capabilities-based planning and supporting current operations and the Ammunition Enterprise.

of focusing on replenishment, efforts will now be directed toward capabilities-based planning and supporting current operations and the Ammunition Enterprise. The responsibility for ammunition industrial base management will now be shared by the Program Executive Office for Ammunition (PEO Ammo) and JMC, working together as a team to support our ultimate customer — the warfighter. Planning activities will cover items previously procured by JMC and be expanded to include similar activities for each project manager (PM) under the PEO Ammo umbrella. Perhaps even more important, the PBP database will be replaced with the SMCA Industrial Base Assessment Tool (IBAT).

To develop this powerful new tool, representatives from PM Close Combat

Systems, PM Maneuver Ammunition Systems, PM Combat Ammunition Systems, PEO Ammo and JMC as well as the contractor, Decision Sciences Inc. (DSI), met to discuss what information was needed and how it would be used. While much of the previously collected data was deemed relevant, the team determined that additional data tied to acquisition and support to current operations (peacetime buys) was also necessary and needed to be collected. Other information — such as financial viability of contractors, scrap rates, environmental and safety records and ability to deliver required products on time — was also targeted for collection. The new SMCA IBAT has gone from a once every 2 years database publication to a real-time, Web-based application that is accessible to the entire ammunition community. It has numerous tools to facilitate planning such as simulation tools to calculate pacing operations and the ability to respond to various conflict scenarios.

The good working relationship between JMC, the PMs, PEO Ammo and their contractors is resulting in a highly successful effort that will benefit industrial base planners. Completion of both the database work and additional data collection are scheduled for first quarter FY05.

Tooele Army Depot conducted mobilization exercises to train the nonammunition workforce in shipping/receiving, accountability, inspection and vehicle operations in ammunition.



**AL BEUSTER** is Chief of JMC's Industrial Base Assessment Division, Rock Island, IL. He has been involved in industrial base management for the last 23 years and is an Army Acquisition Corps member.

# Mitigating Industrial Base Single Point Failure for Lead Azide

Steven J. Rosenberg, Michael Hagn, Emily Cordaro and Neha Mehta

**A** key Program Executive Office Ammunition (PEO Ammo) industrial base strategic thrust is science-based production and prototyping for meeting emergency requirements, mitigating single point failures and transferring manufacturing knowledge to industry. The PEO Ammo Industrial Base Office sponsored a research, development, test and evaluation (RDT&E) effort through its Life Cycle Pilot Process Program (LCPP) to develop a science-based production process to enable low-cost, on-site production of lead azide in a just-in-time fashion.



Lead azide containment vessel

Lead azide is a primary explosive that is essential to produce fuzes and detonators for 60mm mortar ammunition, artillery ammunition, medium caliber ammunition and hand grenades. Unfortunately, it is no longer produced in the United States and the existing stockpile represents a single point failure in the ammunition supply chain. Current requirements are being met via selective assessment and usage from the deteriorating stockpile. However, stockpile surveillance suggests possible safety issues that could impact sensitivity and performance of this highly sensitive explosive. A

long-term solution is needed to ensure an adequate supply of this critical ingredient is readily available to U.S. manufacturers.

Using a science-based, computer-controlled process developed at the U.S. Army Armament Research, Development and Engineering Center (ARDEC), Picatinny Arsenal, NJ, a team of engineers is using commercial-off-the-shelf equipment and a semicontinuous processing technique to consistently produce small quantities of lead azide. This science-based process enhances safety and demonstrates prototyping feasibility. The overall size and process simplicity will allow for technology transfer and implementation at facilities requiring lead azide to support their production mission with minimal investment.

The process's science- and computer-based nature makes it possible to fine-tune particle size in addition to ensuring reproducibility across the fuze/detonator production base as needed. Process safety is critical. Because of the small reactor size and minimal quantity of lead azide in process, safety is ensured by enclosing the reactor in a containment vessel, which is approximately 3 feet long by 2 feet in diameter. Because of lead azide's reactive nature, all process components that contact lead azide are nonmetallic and non-moving to increase safety. These components are also readily replaceable and inexpensive. A patent application is in process to make sure the government retains ownership of this critical technology.

In addition to being able to manufacture lead azide in the United States, the methodology will provide an added benefit in that the Army and

DOD will not have to stockpile and ship this highly sensitive material. Nor will new suppliers have to requalify once this Army-owned process is qualified for use.

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**STEVEN J. ROSENBERG** is the PEO Ammo Interface for the Industrial Base to ARDEC. He provides technical and management oversight for numerous PEO Ammo Industrial Base RDT&E and facility efforts. He has a B.S. in chemical engineering from City College of New York. An Army Acquisition Corps (AAC) member, Rosenberg is Level III certified in manufacturing, production and quality assurance.

**MICHAEL HAGN** is the ARDEC Business Area Manager for Project 859 LCPP providing support to the PEO Ammo Industrial Base Office. The lead azide effort is one of numerous programs conducted under LCPP. He has a B.S.M.E. from Bucknell University and a B.S. in management from Florida Technical Institute. He is an AAC member.

**EMILY CORDARO** is a Chemical Engineer in the Energetics, Warheads and Environmental Technology Directorate at ARDEC. She has a B.S. in chemical engineering from Rensselaer Polytechnic Institute. An AAC member, Cordaro is Level II certified in systems planning, research, development and engineering (SRPDE).

**NEHA MEHTA** is a Chemical Engineer in the Energetics, Warheads and Environmental Technology Directorate at ARDEC. She has a B.S. in chemical engineering from New Jersey Institute of Technology. Mehta is Level I certified in SRPDE.

# Mortars – Responsive, Accurate and Lethal

LTC Andre' C. Kirnes and Dave Super

**R**ecent U.S. combat operations affirm the importance of mortars on today's battlefield. As one Army mortarman stated following operations in Afghanistan, "Mortars were the primary organic killer. Mortars were the most responsive and most integrated fire support. They were very effective at hip shoots and at destroying enemy rocket-propelled grenade teams in urban environments." Similar comments testifying to mortars' responsiveness and effectiveness, particularly in urban operations, have come from soldiers who served in Iraq combat operations.

Our adversaries have attempted to negate our technological advantages through the use of “hugging tactics” in urban environments. They attempt to engage our forces — not to defeat them — but to harass and generate political support from the populace through increased casualties. These tactics require that our maneuver

forces have a capability to quickly and accurately respond to threats. Modern combat operations’ dispersed nature demands greater precision, accuracy, range, responsiveness, sustainability and lethality from indirect fire systems. Mortar’s inherent responsiveness to the maneuver commander makes these weapons the ideal platform on which

the Army and Marine Corps can focus their indirect fire transformation efforts.

The Product Manager for Mortar Systems (PM Mortars) works daily with the U.S. Army Infantry Center; Office of Naval Research; Marine Corps Systems Command; U.S. Army Armament Research, Development and



SPC Seth Gerkin (front) and PFC Brian Cruz, 303rd Armor Regiment, 81st Armor Brigade, fire a 120mm mortar during operations in Balad, Iraq, May 21, 2004. (U.S. Air Force photo by SSG Aaron Allmon II.)



Marines from Lima Company, Third Battalion, Second Marine Regiment, fire 60mm mortar rounds during live-fire training at a range in Northern Kuwait during *Operation Enduring Freedom* last year. (U.S. Marine Corps photo by LCPL Gordon A. Rouse.)

Engineering Center; users and other materiel developers on mortar modernization efforts. Ongoing development of precision mortar munitions, digital fire control systems for various platforms, extended range mortar munitions and lightweight mortars will further enhance battlefield

commanders' ability to conduct decisive combat operations.

PM Mortars has implemented a systems approach to determine battlefield mortar needs and maintain control over the entire mortar systems development process. All development

efforts take into account the mortar systems triad that consists of ammunition, fire control and weapons/platforms. These three entities must act as one to form a complete battlefield system. All requirements and materiel solutions for one leg of the triad must take into account the

impact on the other two legs and, ultimately, to warfighters.

**Ammunition**

The Project Manager for Combat Ammunition Systems is responsible for the XM395 Precision Guided Mortar Munition (PGMM) and the XM984 Family of Extended Range Ammunition (FERA) programs, two key programs in the ammunition arena. The PGMM gives the close-combat warfighter the first organic precision indirect fire capability. Designed to engage small targets and limit collateral damage, PGGM will be the weapon of choice for mortarmen operating in urban or restrictive areas against specified target sets.

FERA is a technology development program that, if fully funded, will reach Milestone B in FY07. The program is designed to provide a common cargo carrier for the extended range mortar. The mortar must be able to operate with currently fielded mortar systems and the next-generation mortar platform — the Non-Line-of-Sight Mortar (NLOS-M).

**Fire Control**

The Mortar Fire Control System (MFCS) is truly a success story for PM Mortars. The system was fielded to the 1st Cavalry Division and follows the Army's modularity and Unit Set Fielding plans for the entire Army mortar

inventory. The MFCS will give our heavy and Stryker forces a fully digitized, Paladin-like capability that will improve accuracy, lethality and survivability.

The LHMBC will calculate ballistic solutions for the full family of mortars, reducing the time from mission receipt to round-on-target from 8 minutes to 90 seconds or less.

Ongoing development of precision mortar munitions, digital fire control systems for various platforms, extended range mortar munitions and lightweight mortars will further enhance battlefield commanders' ability to conduct decisive combat operations.

achieving a fully functional lightweight mortar fire control capability that is comparable to the heavy MFCS variant. The LHMBC will calculate ballistic

The need for timely and accurate ballistic calculations has made the M23 mortar ballistic computer obsolete. Efforts are underway to incorporate an up-to-date ballistic calculator that leverages Army common hardware — the Lightweight Hand-held Mortar Ballistic Computer (LHMBC). The LHMBC (see photo on Page 49) is taking an incremental approach to

solutions for the full family of mortars, reducing the time from mission receipt to round-on-target from 8 minutes to 90 seconds or less.

**Weapons and Platforms**

PM Mortars manages the full life cycle for all dismounted mortar platforms and works closely with PM NLOS-M, Stryker Brigade Combat Team and PM Combat Systems to provide fire control solutions and technical support. In addition, PM Mortars is also pursuing initiatives to make the Army's light forces more lethal and effective. For example, the Arms Room Concept (ARC) has been introduced to give Rangers and light

forces the 120mm Mortar system. The ARC lets the commander tailor capabilities to each operational situation to meet mission requirements. A lightweight dismounted mortar weapon is also in development under PM Mortars as one of several solutions to ultimately lighten the soldier's load. The new mortar can be deployed and activated quickly so warfighters can travel greater distances with a lighter system that has equal or greater firepower.

Every combat action in the last century has seen the effective use of mortars. It is clear that mortar systems are relevant on today's battlefield and will be key combat multipliers in Future Force operations. As PM Mortars pursues innovative, technologically driven mortar systems that are relatively easy to use and highly effective, we are proud to honor our motto: "Committed to Serving the Warfighter."

LTC ANDRE' C. KIRNES is the PM Mortar. He has an M.B.A. in economics from Middle Tennessee State University. He is an Advanced Program Manager Course graduate and is Level III certified in program management.

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# New Stockpile Management Tools Support Army Readiness

BG James W. Rafferty, Jay Sloat and Cindy Lenger

**S**tockpiles of ammunition exist worldwide. Managing this stock ensures that U.S. forces will have ammunition where and when it's needed. Our Soldiers' lives quite literally depend on the Army's ability to provide the highest quality, ready-to-use ammunition. Two new tools — Munitions Readiness Reporting (MRR) and Centralized Ammunition Management (CAM) — are now available to help stockpile managers perform this important task.



MRR deals with readiness — where the ammunition is and is it ready for deployment — whereas CAM focuses on requirements in the field and inventory at depots, installations and other supply points. MRR is a broader report and rating system, a tool for decision makers. Its graphic format is designed to show managers at a glance where problems lie, if any. CAM enables managers to resupply ammunition to their customers instead of customers being responsible for reordering supplies. This centralized management strategy reduces lag time for delivery, provides a continuous supply of ammunition and more consolidated shipments, all of which helps lower costs.

## MRR

Just 2 days after the Sept. 11, 2001, attacks, U.S. Army Chief of Staff (CSA) GEN Eric K. Shinseki directed the Operations Support Command's (now Joint Munitions Command [JMC]) commander, to "develop a system for munitions that will portray the Army's ability to support contingency operations." As the Army's field operating activity for the DOD Single Manager for Conventional Ammunition, JMC is responsible for producing, storing, maintaining and demilitarizing ammunition for all military services. JMC operates a global network of installations, activities and forward support elements and was the logical group to respond to the CSA's challenge. The result is MRR.

MRR deals with readiness — where the ammunition is and is it ready for deployment — whereas CAM focuses on requirements in the field and inventory at depots, installations and other supply points. JMC is responsible for producing, storing, maintaining and demilitarizing ammunition for all military services. JMC operates a global network of installations, activities and forward support elements.

As a report and rating tool, MRR measures munitions readiness using the standard methodology for measuring unit readiness, a system that is familiar to most people in the Army. *Unit Status Reporting*, as outlined in *Army Regulation 220-1*, was modified to fit munitions areas rather than particular Army units. Thus, MRR rates readiness in specific munitions categories.

With *Unit Status Reporting*, S and R ratings are assigned to items and rolled up at the battalion level. T and P ratings are then added and C ratings are subsequently developed and reported at brigade and division levels. This is a well-established, proven process within the Army.

Similarly, in reporting munitions readiness, S, R, Q and B ratings are all assigned at the item level (model level). Roll up occurs at the subcategory level (i.e., 81mm mortars), and C ratings are developed at the munitions category level (i.e., mortar). This methodology is familiar and easy to understand as modified:

- S = Munitions on hand
- R = Munitions
- T = Training

- P = Personnel
- C = Composite
- Q = Munitions quality
- B = Production base

*Army Regulation 220-1* defines "pacing" items as key to a unit's capability to

support organic weapon systems. This concept is built into the MRR as well. Training-unique items are also included, because training is a critical element in measuring unit readiness. Substitute items — items that can be used if a preferred ammunition item is not available in sufficient quantity or are not available at all — are listed and individually rated by the MRR.

In the MRR, ratings for approximately 350 active Class V items are rolled into 42 subcategories which, in turn, determine composite ratings at 12 category levels. At the roll-up levels, ratings are color-coded and displayed graphically. Four rating levels, each represented by a unique color, define the readiness range in each resource area and for category evaluations. Various analogs are built into the system to compute and aggregate ratings.

- C-1 (green): Full mission capability; unlimited flexibility.
- C-2 (yellow): Mostly mission capable; isolated decreases in flexibility.
- C-3 (red): Can undertake many, but not all missions; significant decrease in flexibility.
- C-4 (black): Additional resources required.

The MRR is a Web-based system available only over the Secret Internet Protocol Router Network also known as SIPRNET, located at <http://207.85.78.130/mrr>. MRR screens are updated quarterly. However, as data feeds come closer to real time, screens will regenerate more often. For security reasons, an actual screen cannot be depicted. On an actual screen, each subcategory is displayed as a colored block connected by a vertical line to a category block. All blocks are labeled and annotated. Both the type of ammunition (for all blocks) and the critical ratings (for red and black blocks) are noted.



Aviation Ordnanceman Second Class Phillip Vaughan assigned to the "Redvolves" of Helicopter Combat Support Special Squadron Four pulls out 7.62mm ammunition for the GAU-17 mini-machine gun to prepare for a routine gun exercise aboard an HH-60H Seahawk helicopter, April 22, 2004, at Norfolk Naval Station, VA. (U.S. Navy photo by Photographer's Mate Michael Sandberg.)

On the right side of each block, there are four small "tabs." In addition to capturing current stockpile status, the MRR is also a predictive system that projects a readiness rating 6, 12, 18 and 24 months into the future. Predictions are based on planned consumption, scheduled new production receipts of ammunition from ammunition producers and maintenance schedules. The purple dots next to some of the blocks are a Joint base indicator. For these items, the industrial base supports more than one service.

With the colors, lines, blocks and circles, MRR is very graphic and very detailed. Click on any block and more in-depth information appears, such as actual assets and requirements by model. Assets are segregated into serviceable, unserviceable/limited restoration, emergency combat use only and unserviceable. Requirements are identified as war reserve and operational projects, pipeline, training, test and current operations.

All ratings — S, R, Q and B — are provided for current status, and S (supply) and R (serviceability) ratings are provided for the future in 6-month intervals out to 24 months. In addition to worldwide views, the viewer can also select U.S. Army Pacific, U.S. Army Europe, Stryker Brigade Combat Team, Army Pre-positioned Stocks and the combatant commands.

The MRR database includes both missiles and conventional ammunition and is an Army Ammunition Enterprise product, with many agencies contributing to the data. As a tool to assist in determining munitions capability to support the warfighter, MRR is a success. It helps determine what munitions to buy and maintain and also feeds the Class V readiness data into the Army's Strategic Readiness System.

MRR went online in early 2002 but the effort is ongoing. JMC will continue to develop improvements such as an increased modeling capability to allow "what-if" scenarios, the addition of Program Objective Memorandum budget data and contingency operations views. Finally, discussion is underway to combine the Army MRR with similar systems from the other services to create a Joint platform for munitions readiness reporting.

**CAM**

CAM manages wholesale and retail ammunition as a unified whole. The JMC developed it as a result of a May 2002 briefing that the JMC commanding general delivered to the U.S. Army Forces Command commander (FORSCOM). Both

recognized the Army had not fully funded requirements for training or war reserve ammunition for at least 10 years, and that the Army needed a better way to distribute the ammunition stockpile to mitigate risk.

The JMC commander incorporated the concept into a Logistics Transformation Task Force (LTTF). As a result, JMC has used Lean and Six Sigma principles to develop an efficient, effective process to manage ammunition assets. To date, LTTF has:

- Mapped the current process with key stakeholders.
- Mapped the outloading processes at McAlester Army Ammunition Plant, OK; Crane Army Ammunition Activity, IN; Tooele Army Depot, UT; and Blue Grass Army Depot, KY.
- Implemented Six Sigma projects as part of the Ammunition Enterprise to include sourcing, the Regional Munitions Center concept and Ammunition Basic Load (ABL) process.
- Initiated process mapping in May 2004 for the OCONUS CAM process.

CAM's customer-focused process gives JMC the total asset visibility it requires and provides end-to-end tracking for the customer. The goal is to reduce the amount of ammunition stored at the Ammunition Supply Point (ASP) and move to a "just-in-time" delivery strategy. This process results in the development of relationships between the units and the Defense Munitions Centers

(DMCs) as well as an increased level of trust among stakeholders.

As a tool to assist in determining munitions capability to support the warfighter, MRR is a success. It helps determine what munitions to buy and maintain and also feeds the Class V readiness data into the Army's Strategic Readiness System.

CAM brings with it one important change — units will no longer have ammunition designated for their use alone. Ammunition requirements are aggregated and sourced at the regional level, resulting in better stock rotation, reduced transportation costs and improved distribution management.

The CAM concept begins and ends with the warfighter. Training authorizations and basic load requirements are assessed against stock on hand to determine correct stockage levels. Currently, there is one process for regular monthly forecasted training and an abbreviated process for unforecasted mobilization training requirements. Today, the Army resupplies 18 CONUS sites, former FORSCOM, U.S. Army South,

Military District of Washington and U.S. Army Medical Command installations.

In July 2004, resupply to an additional 15 former U.S. Army Training and Doctrine Command installations was completed. National Guard Bureau milestones are also being finalized. CAM is currently supporting unforecasted mobilization training at 100 percent.

Additionally, the command has organized into four regions, similar to the Installation Management

The CAM concept begins and ends with the warfighter.

Training authorizations and basic load requirements are assessed against stock on hand to determine correct stockage levels.

Agency. JMC DMCs and the ASPs fall within each region. The supplier (ASP) and the customer (unit) build a working relationship that increases cooperation and builds trust. The regions and their corresponding relationships are not set in stone. They will require continual analysis to determine optimum support.

The Strategic Munitions Distribution Network concept works hand-in-hand with CAM. CAM transportation initiatives include:



Pallets of 2,000-pound aerial bombs await transport to the Iraqi theater of operations from McAlester Army Ammunition Plant. (Photo by Jerri Mabrey.)



A McAlester Army Ammunition Plant forklift driver moves a pallet of 2,000-pound aerial bombs that were produced to support *Operation Iraqi Freedom*. (Photo by Jerri Mabrey.)

- Consolidation of truckloads going to the ASPs. Fewer trucks with more tons per truck will result in cost savings after the stockpile is fully redistributed. Full truck load cost is \$120/ton versus less than load cost at \$933/ton. JMC is aggressively working toward an optimal regional distribution plan.
- Load planning for advance notice of inbound trucks to ASPs.
- Identification of future workload planning for the DMCs and ASPs.

### ABL

An ABL planning tool is under development that will help define regional stockage levels. JMC and FORSCOM worked with Blue Grass Army Depot and the 3rd Infantry Division (Mechanized), Fort Stewart, GA, to develop a baseline and test a process comparing a unit's ABL requirement against JMC assets. The process began with outputs from the Department of Army Ammunition Requirement Tool identifying the unit's validated requirement. The baseline will provide the quantity of ammunition by item, the outload configuration (pallet, crop, container), the deployment destination (port, airport) and the expected time phasing. Once this baseline is defined for all units by region, it will be provided to higher headquarters for determination of "protect levels" and identification of

associated risks. The results will be used as input to the overall CAM Distribution Model. Information analysis will provide the program executive office/product managers with asset profiles on key programs for incorporation into procurement appropriation cycles.

In a separate effort, a CAM distribution model is being developed to support a regionalization strategy for ammunition training, basic load and war reserve. The National Level Ammunition Capability (NLAC), developed by Science Applications International Corp., is the system chosen for this effort. NLAC is a Web-based, Oracle® relational database currently used by key Joint and service logistics staffs, and interfaces with Army, Navy, Marine Corps, Air Force and U.S. Transportation Command databases to provide Joint worldwide asset visibility. Much of the data required for the CAM distribution model already resides in NLAC. Support with the contract vehicle and funding from HQDA and the Army Materiel Command greatly facilitated progress on the model. By using requirement data for basic load and training, along with the Joint worldwide asset posture, estimated delivery of a baseline distribution plan is summer 2004.

Moving ahead, incorporating "what-if" capability and developing the OCONUS

and Joint distribution processes will continue. The model's utility will allow the Army to balance its assets by region, direct production/reset/retrograde, redistribute excess munitions effectively and minimize ASP storage space requirements. It will also help determine where new production contracts will ship future ammunition supplies and feed into the procurement appropriation cycle.

HQDA strategy calls for the Army to have enough ammunition on hand to meet requirements in peacetime, support two major regional contingencies and replenish the stockpile following those conflicts. Major concerns are that there is not enough ammunition on hand to meet this demand and that the current ammunition stockpile is becoming outdated with significant shortages for modern "smart" munitions for current and future conflicts. These concerns reinforce the need for tools like MRR and CAM to assess the readiness of what we have and make informed decisions as to where it is most needed.

**BG JAMES W. RAFFERTY** is the JMC Commanding General, Rock Island, IL. He holds a B.A. in history from Syracuse University. His military education includes the Army War College and the Army Command and General Staff College.

**JAY SLOAT** is a Systems Management Specialist in JMC's MMR Division. He has a B.A. in psychology from Cornell College and more than 20 years of ammunition production and supply experience.

**CINDY LENGGER** is JMC's Chief for Centralized Ammunition Management at Rock Island. She has a B.S. in law enforcement administration from Western Illinois University and is pursuing a master's in leadership. Lengger is Level II certified in production, quality and manufacturing and is Level I certified in logistics.

# How the Army's MRR System Computes Readiness Ratings

Jay Sloat

**T**he Munitions Readiness Reporting (MRR) system is fed by many data sources. Assets and requirements are the intrinsic inputs. MRR assets are worldwide, less War Reserve Stocks for Allies, and include both serviceable and unserviceable munitions. Condemned assets are not included. Currently, production deliveries capture FY03 and prior year undelivered Army programs.

MRR requirements are war reserve and annual training. For a training-unique item, the training pipeline provides inventory incrementally to support training continuity. It is currently defined as 150 days or 41 percent of annual training requirements.

Hierarchies are built for the **S**, **R**, **Q** and **B** resource areas at the item level. For example, an **S1** rating indicates enough assets are on hand to satisfy at least 90 percent of the requirement, while an **S2** indicates availability of assets to requirements in the range of 80-89 percent. Assets are divided by the respective requirements to compute percentages.

Continuing with this methodology, for **R** ratings, the numbers of serviceable assets are measured against total on hand quantities for the same item. As an example, an **R1** rating indicates at least 90 percent of the total assets measured are in serviceable condition.

A consistent approach is used to define the **Q** and **B** rating criteria. **Q** ratings use a formula considering all condition codes, percent not inspected and reliability factors, while **B** ratings result from analogs that consider component production risk, load, assembly and pack rates, as well as various other materiel and source factors. Like **S** and **R** ratings, **Q** and **B** rating increments are associated with percentage ranges.

As with the color key legend for the **C** composite ratings, color indicators for **S**, **R**, **Q** and **B** ratings run from green, the

best rating, descend through yellow to red and end in black, the least desirable score.

Separate business rules exist for rolling the four item level ratings into subcategory rates and for rolling the subcategories into composite rates. Composite ratings at the category level are determined by the worst-case subcategory rating. Worst-case ratings at sublevels generally tend to bias the overarching score. Munitions pacing items are key to munitions support of specific weapon systems. These pacing items can also have a weighted influence in the MRR.

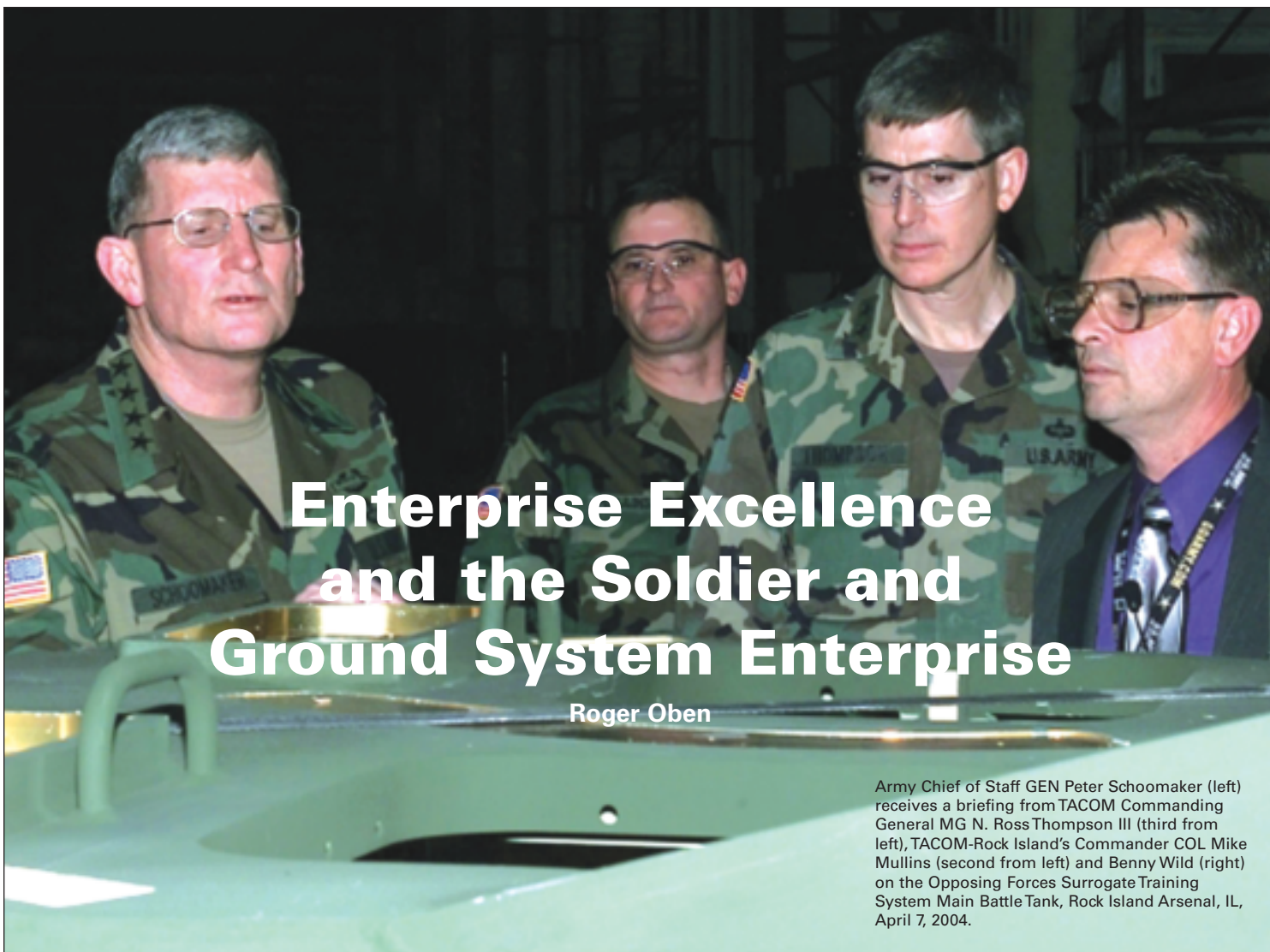
All details associated with rate computation are available from the JMC, and points of contact are provided on the MRR Web site. This system is available on the Secret Internet Protocol Router Network (SIPRNET) at <http://207.85.78.130/mrr>. The MRR is designed to portray readiness status and risks at a glance.

**JAY SLOAT** is a Systems Management Specialist in JMC's MRR Division, Rock Island Arsenal, IL. He has a B.A. in psychology from Cornell College and more than 20 years of ammunition production and supply experience.



31st Maintenance Squadron Airman First Class Brian Nelson uploads 20mm target practice ammunition onto the universal ammunition loading system at Aviano Air Base, Italy, June 30, 2004. (U.S. Air Force photo by Airman First Class Scherrie K. Gates.)





## Enterprise Excellence and the Soldier and Ground System Enterprise

Roger Oben

Army Chief of Staff GEN Peter Schoomaker (left) receives a briefing from TACOM Commanding General MG N. Ross Thompson III (third from left), TACOM-Rock Island's Commander COL Mike Mullins (second from left) and Benny Wild (right) on the Opposing Forces Surrogate Training System Main Battle Tank, Rock Island Arsenal, IL, April 7, 2004.

**MG N. Ross Thompson III currently commands the U.S. Army Tank-automotive and Armaments Command (TACOM) in Warren, MI. TACOM, a major subordinate command of the U.S. Army Materiel Command (AMC), champions the deployment of Enterprise Excellence and Lean/Six Sigma in both the command's manufacturing and service/administrative processes.**

Thompson brings extensive operational command and staff experience from platoon leader through brigade command. He served in the 82d Airborne Division, 4th Infantry Division (Mechanized) in Germany; 19th Theater Support Command in Korea; commanded the 27th Main Support Battalion in the 1st Cavalry Division;

and commanded the 45th Corps Support Group at Schofield Barracks, HI. Prior to commanding TACOM, Thompson was the Military Deputy Director, Program Analysis and Evaluation Directorate, Office of the Deputy Chief of Staff for Programs, HQDA.

The following interview — conducted April 20, 2004 — highlights the development of Enterprise Excellence at TACOM and the formation of the Soldier and Ground System Enterprise.

**Q:** Recently we heard about the “Enterprise Excellence” concept and understand that the “Soldier and Ground Systems Enterprise” goal is to provide a new and innovative path to support Joint warfighters. What is Enterprise Excellence, and how will the Soldier and Ground System Enterprise benefit the warfighter?

**Thompson:** Enterprise Excellence is designed to help us provide the best possible support to the Joint warfighter. As Army Chief of Staff

GEN Peter J. Schoemaker noted, both the global war on terrorism (GWOT) and Army transformation demand that “our individual and organizational approach to our duties and tasks must reflect the seriousness and sense of urgency characteristic of an Army at war.” Enterprise Excellence optimizes quality, cost, schedule and risk across processes, products and organizations. It uses a holistic approach for improving and focuses leadership, management and technology on the enterprise’s critical systems and processes. It brings a sense of urgency to improving our systems and our support. We’ve been at war and transforming, while learning to use best business practices such as lean thinking, balanced scorecards and activity-based costing and management to help us better support Joint warfighters, innovate and seek continuous measurable improvement.

**Q:** How did Enterprise Excellence get started?

**Thompson:** Providing some background will clarify Enterprise Excellence. Almost two years ago, AMC depots, arsenals and ammunition plants collectively began implementing lean thinking to improve our competitiveness, meet a sense of urgency and greatly improve materiel support to Joint warfighters. Additionally, lean thinking was a proven way to help us navigate through the changes we faced because of Army transformation and the GWOT. Lean thinking developed from the Toyota Production System. It is a disciplined approach to problem solving, along with a “bag of tools” — an array of leadership and management techniques — that focuses on getting to the root of problems to identify waste in a process, and then works to remove that waste. When you remove waste, you increase speed and efficiency. We’ve begun to see

some promising results in AMC through our lean efforts.

The following are examples of how lean thinking resulted in substantial process improvements:

- The Reciprocating Engine line at Anniston Army Depot, AL, improved productivity 31 percent; Tank Turbine Engine line improved labor efficiency 14 percent, resulting in \$8.8 million in savings for one year.
- The Heavy Truck line at Red River Army Depot, TX, improved productivity 20 percent; Track and Road Wheel lines improved productivity 57 percent.
- The PATRIOT Launcher line at Letterkenny Army Depot, PA, decreased FY03/04 costs by \$3 million and is projected to save approximately \$9 million from FY05 to FY09.
- The Apache and Black Hawk Helicopter Engine line at Corpus Christi Army Depot, TX, increased production quantities 23 percent and decreased turnaround time by 62 percent.
- Lean methods also contributed to providing HMMWV Armor Protection Kits to support GWOT. From funding to first delivery — 7 weeks — with the delivery schedule accelerated by 90 days. This was done at seven AMC organic industrial base installations in TACOM, the Aviation and Missile Command (AMCOM) and the Joint Munitions Command (JMC).

About that same time we also developed a balanced scorecard during work to implement the Army’s Strategic Readiness System, designed to provide our leaders objective feedback to ascertain whether we’re achieving our strategic objectives. Balanced scorecards help us understand where to

focus our resources and efforts, such as our lean implementation, to solve problems that could preclude us from reaching our objectives and supporting the warfighters.

Another important methodology we began practicing was activity-based costing and management to measure the performance of resources, activities and cost objects in achieving customer value. So with these three best business practices, we started to realize there’s a better way to make decisions, manage and lead. Lean thinkers call this, “learning to see.” Well, the more we learned, the more we saw our deficiencies across all our products and processes. We hadn’t really focused on Six Sigma — a methodology and tool set that works to increase quality and effectiveness. But with both Lean and

Six Sigma, we saw opportunities to drive our efficiency and effectiveness to new levels. Peter Drucker said that “effectiveness is doing the right things,” and “efficiency is doing things right.” You need both, effectiveness and efficiency.

Lean thinking is a disciplined approach to problem solving, along with a “bag of tools” — an array of leadership and management techniques — that focuses on getting to the root of problems to identify waste in a process, and then works to remove that waste. When you remove waste, you increase speed and efficiency. We’ve begun to see some promising results in AMC through our lean efforts.



Thompson delivers opening remarks during the 13th Annual Logistics Symposium, March 2004, at the Dearborn Hyatt Regency in Dearborn, MI.

Building on our lean deployment, we wanted to intensify our efforts to institutionalize a culture of innovation and continuous improvement. We started a “bottom-up” approach to implementing lean in 2003 through forming lean deployment cells in our depot lines, business processes and staff sections. But as we progressed on our lean journey, we saw the need to complement that with a “top-down” approach and began formal, institutionalized Lean/Six Sigma training, starting with our top executives and senior managers. They’re getting “Executive Black Belt” training. I’m going through the training also. You can’t just dictate this from a senior level. The culture change must be led. We began training in March 2004. Eventually, all our managers will receive formal “green belt” training. Some will become Lean/Six Sigma “black belts.” This is aggressive and demanding, but it’s the right thing to do to meet the challenges of fighting the GWOT and transforming. That’s how Enterprise Excellence came into our lexicon.

**Q:** How does Enterprise Excellence work?

**Thompson:** Enterprise Excellence takes us farther down the path we began in 2002 and 2003 to bring these leading edge practices — used today in the most competitive commercial enterprises — to TACOM and its partners. The Enterprise Excellence Framework is a holistic imple-

mentation of tools employed to inculcate a culture of innovation and continuous improvement to an organization. Mike Joyce, LM21 Vice President at Lockheed Martin’s operational excellence program, describes the kind of operating excellence we want to achieve as taking the smart path to change, which includes cutting waste, introducing Enterprise Excellence tools and making fact-based decisions, versus taking the “stupid” path — cutting services to meet budget targets without fully analyzing cost, waste or capability; or the “lazy” path of “salami slicing” or cutting a certain percentage to apply resources elsewhere.

The “lazy” path is how I sometimes view the DOD programming and budget processes — allocating inputs, not focusing on output metrics and harvesting funds from programs by just cutting them to “reinvest” in higher priorities.

The Enterprise Excellence Framework includes using Lean and Six Sigma, and also includes something called “Voice of the Customer,” a system that seeks to know and understand the full scope of our customer’s needs and then cost-effectively satisfy those needs.

Also important to Enterprise Excellence is something called a “Quality Management System” (QMS) in which we, as an enterprise, make a commitment to fact-based decision making and continuous measurable improvement. A QMS provides the management system to integrate Lean, Six Sigma, Voice of the Customer and balanced scorecard so they all work together to leverage each other’s strengths and compensate for weaknesses. A QMS can include standards such as International Organization for Standardization

(ISO) 9001:2000 or Malcolm Baldrige Award criteria to achieve Enterprise Excellence. The QMS also becomes intrinsic to the strategic planning, decision, execution and feedback cycles.

Enterprise Excellence is a big change — fighting a war while transforming is a big change — and we know that this change is stressful and demanding on our people, so TACOM also includes a Leadership Competencies Program to our Enterprise Excellence framework. We could not have begun this Enterprise

Excellence journey without first focusing on the “people” dimension. Our Leadership Competencies Program — ongoing for about 2 1/2 years now — aims to develop our workforce’s and management’s ability to adapt to change and cope with the stress and

Balanced scorecards help us understand where to focus our resources and efforts, such as our lean implementation, to solve problems that could preclude us from reaching our objectives and supporting the warfighters.



demands by fostering desired behaviors such as leadership, teaming, communication, employee support, strategic thinking and a positive organizational climate. To adopt new ways of thinking, we needed to adopt new ways of acting.

**Q:** You have started this in TACOM. But “enterprise” implies other organizations and cross-functional process understanding. Will this involve other organizations?

**Thompson:** Through a Soldier and Ground System Enterprise, we intend to bring Enterprise Excellence to our diverse Soldier and Ground System Community — Army and Joint. We intend to cut across organizational boundaries and institutionalize collaborative teams among the AMC commands, which include TACOM; AMCOM; the Communications-Electronics Command; JMC; the Research, Development and Engineering Command; the U.S. Army Field Support Command; and the U.S. Army Security Assistance Command. We will also include the Program Executive Offices (PEOs) for Ground Combat Systems, Combat Support and Combat Service Support, Ammunition and Joint PEO Chemical and Biological Defense; the Army Test and Evaluation Command (ATEC); U.S. Army Training and Doctrine Command (TRADOC); Defense Logistics Agency; other Joint organizations and commercial industry. This will achieve what LTG Joseph L. Yakovac Jr., Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology, referred to in his *Army AL&T* Magazine January-February 2004 interview as “interdependency.” In fact, my G-3 is leading a Lean/Six Sigma Black Belt project that uses Enterprise Excellence methods and tools to develop the Soldier and Ground System Enterprise

infrastructure to achieve that interdependency. That infrastructure will go far toward instilling, as the MILDEP describes in his interview, “a culture that will encourage people to work together across various domains.” As we progress through our lean deployment and formal Lean/Six Sigma training with black and green belt projects, we’ll build the necessary partnerships and teams, and construct the Soldier and Ground System Enterprise infrastructure maps.

**Q:** Why do we need a Soldier and Ground System Enterprise? What’s its purpose?

**Thompson:** In the book, *The Lexus and the Olive Tree*, Thomas Friedman describes the Cold War system as “being built around weight,” but that today’s “Globalization System is built around speed ... the fast eat the slow.” Global stability is in our Nation’s interest and our Army helps preserve that stability. As the Army’s senior leadership describes the future, we must have a campaign quality Army with a Joint and Expeditionary mindset. Our Army needs speed — Joint speed — global speed. Not just in the materiel sense, but in approaching all DTLOMSPF (doctrine, training, leader development, organization, materiel, soldiers, personnel and facilities)-based problems to achieve warfighting capability solutions. In Lean/Six Sigma you find that speed improves quality, quality improves speed and speed and quality reduce cost. This is counterintuitive in the DOD culture that we see today. The Soldier and Ground System Enterprise will foster cross-organizational interdependency, providing the infrastructure to attain speed and enhancing

continuous adaptation to our stressing and demanding Joint and global environment. The Soldier and Ground System Enterprise will develop and focus on innovative, new ways of achieving Enterprise Excellence.

**Q:** What principal organizations will participate in Soldier and Ground System Enterprise efforts? What contributions will they collectively make?

**Thompson:** From my perspective, the Soldier and Ground System Enterprise comes from a diverse community that influences soldier systems, ground combat systems, ground support systems and services across Army and Joint organizations. It’s a partnership of key players with significant roles that include:

Building on our lean deployment, we wanted to intensify our efforts to institutionalize a culture of innovation and continuous improvement.

- PEOs of Ground Combat Systems, Combat Support and Combat Service Support, Soldier, Ammunition and Joint Chemical and Biological Defense.
- Research, Development and Engineering Command, particularly the Tank-Automotive Research Development and Engineering Center; Army Research and Development Center; Natick Soldier Center; and Edgewood Chemical and Biological Center, MD.
- TACOM’s Integrated Logistics Support Center and Acquisition Center.
- TACOM’s Ground System Industrial Enterprise with their Joint Manufacturing and Technology Centers at Rock Island Arsenal and Watervliet, NY, Joint Maintenance Centers at Anniston and Red River and the Expeditionary Logistics Center at Sierra, CA.
- TRADOC Combat Developers and Futures Center.

- ATEC.
- Combatant commanders and other Joint service commanders.
- Defense industry partners — both large and small companies.
- Possibly allied and coalition member militaries and industries.

Collectively, huge potential for contributions exists. We see tremendous opportunity to continuously improve support to the Joint warfighter. Not only by leading the development of new technologies and sustainment processes, but by modernizing our logistics support systems and improving acquisition support to program managers and PEOs. Enterprise Excellence has great benefit to our industrial capabilities, but can also greatly improve our service and administrative processes, too. Our Joint forces employ substantial ground systems; 141 allied and coalition partners also employ Soldier and Ground System Enterprise supported equipment. Both DOD and Army transformational programs include Soldier and ground systems.

**Q:** You talked about Enterprise Excellence requiring the need to learn new ways of thinking, develop new abilities and enhance skill sets. What type of training and development is required, how can Soldier and Ground System Enterprise community members learn and what should leaders do to support the learning?

The Soldier and Ground System Enterprise will foster cross-organizational interdependency, providing the infrastructure to attain speed and enhancing continuous adaptation to our stressing and demanding Joint and global environment. The Soldier and Ground System Enterprise will develop and focus on innovative, new ways of achieving Enterprise Excellence.

**Thompson:** Enterprise Excellence will help us evolve to a culture of innovation that can be brought about through several courses of action. Our course of action was to employ both the “bottom-up” and “top-down” methods I spoke of earlier. This included workforce and

management participation in quite a few Lean Value Stream Analyses and “Kaizens,” called Rapid Improvement Events, led by world-class lean practitioners. We also included a lot of lean self-study and on-the-job training (OJT) by many of my motivated people, and we now include a formalized institutional training program of Lean/Six Sigma.

Really, Enterprise Excellence is providing us a new way to manage, make fact-based decisions and change our internal culture. We also feel it’s critical that the senior leaders go through the same training that is provided to midlevel managers and other associates, both in the classroom and through OJT on lean events and Lean/Six Sigma projects. We are also insisting that interns, apprentices and co-op students get involved as well when they complete their initial training requirements.

Through everyone’s involvement, we want to enlist their commitment to transforming and reshaping our 21st century workforce.

A reference list follows this article and lists the texts I feel are essential to study. Self-study and self-improvement equals proactive support. People at every level



During a visit to Red River Army Depot last year, Thompson received several briefings demonstrating lean success stories and lean initiatives pioneered by the depot. Pictured left to right are: Deputy Commander Felix McClellan, Supervisor Willie Houff, Thompson and Depot Commander COL Michael Cervone.

in the Soldier and Ground System Enterprise must proactively work toward achieving individual and institutional excellence. We really believe that as we reshape our workforce, learning and understanding Enterprise Excellence tools like Lean/Six Sigma and embracing our leadership competencies will enhance one’s ability to succeed in our changing culture and contribute the best possible support to the Joint warfighter. Examples of some of the Lean/Six Sigma Black Belt projects our partners are initiating to build the Soldier and Ground Systems Enterprise infrastructure follow:

- Command Commodity Standard Systems Inventory.
- Modernizing industrial capabilities across the organic base.
- Future Combat Systems Manned Ground Vehicle Production Study Project.
- Army Working Capital Fund Capital Investment Program.
- Omnibus Services Contract process.
- HEMTT (Heavy Expanded Mobility Tactical Truck) RESET process.
- HMMWV Recapitalization Program.
- TACOM Resource Planning, Programming, Budgeting and Execution process.

- TACOM Information Technology Process, Products and Services.
- Civilian career program management.

**Q:** You've spent a large part of your career in battalions, brigades and divisions, and commanded a Main Support Battalion and a Corps Support Group. From the customer's perspective, when brought fully to fruition, tell us what the results of the Soldier and Ground System Enterprise would look and feel like.

**Thompson:** The ideal state — and we think it's an achievable state — is a Soldier and Ground System Enterprise infrastructure that supports Army expeditionary leaders, Joint force commanders and combatant commanders with quicker solutions to the "M" in DTLOMSPF — problems they encounter as they attempt to turn inside an enemy's decision cycle and gain strategic and operational momentum while planning, preparing for and conducting Joint and combined operations. We see interdependent Soldier and Ground System Enterprise partners collaborating to rapidly define problems and make fact-based decisions while developing and selecting courses of action, thereby supplying quicker solutions to problems. We see this accomplished with a sense of urgency and speed, focused on quality, cost and schedule, and while understanding and mitigating the risks. Although we often focus our efforts on acquisition and logistics communities, the DOD requirements system and Planning, Programming, Budgeting and Execution System (PPBES) are also ripe for applying Enterprise Excellence tools, with even greater potential benefits.

Enterprise Excellence is providing us a new way to manage, make fact-based decisions and change our internal culture.

**Q:** Do you have any final comments?

**Thompson:** We have been discussing the use of Enterprise Excellence tools in the acquisition and logistics processes. However, there is equally as much to be gained by using these tools in the DOD requirements and PPBES processes. There are a number of individuals in DOD who have started down this path, as I mentioned already, but it is not comprehensive enough in my view. Having spent six years in the Pentagon, I learned that there is more

emphasis on meetings than results. We need more speed and higher quality output in the requirements and PPBES processes to better support our combatant commanders and Joint warfighters. When the Enterprise Excellence tools are properly applied in all these areas — acquisition/logistics, requirements and PPBES — DOD will get more

warfighting capability for the resources allocated by Congress. Thanks for the opportunity to discuss Enterprise Excellence with you.

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## REFERENCES

*\*Lean Thinking: Banish Waste and Create Wealth in Your Corporation*, James P. Womack and Daniel T. Jones, Free Press, Copyright 1996, 2003, ISBN 0-7432-4927-5.

*\*Lean Six Sigma for Service*, Michael George, Dave Rowlands and Bill Kastle, McGraw-Hill, Copyright 2003, ISBN 0-07-141821-0.

*\*What is Lean Six Sigma?*, Michael L. George, ISBN 0-07-142668-X.

*\*The Power of Six Sigma*, Subir Chowdhury, Dearborn Trade, Copyright 2001, ISBN 0-7931-4434-5.

*\*The Toyota Way: 14 Management Principles From the World's Greatest Manufacturer*, Jeffery K. Liker, McGraw-Hill, Copyright 2004, ISBN 0-07-139231-9.

*\*The Quality Management Forum*, A Peer-Reviewed Publication of the Quality Management Division of the American Society for Quality:

-*Enterprise Excellence: Six Sigma and Lean Production*, Harry Jackson, Normand Frigon and Lawrence Barkau.

-*Creativity Plus Knowledge Equals Innovation*, Douglas Smith.



# Transforming Army Acquisition

Stephen Blanchette Jr.

**A** rmy acquisition is moving away from protracted schedules to get materiel to the Soldier sooner. Where problems and existing solutions are well matched, timelines can be shortened dramatically. The future, however, may lie in new ways of doing business altogether. Between these extremes, the Army is looking introspectively to fix the system and help programs that are now underway.

The world has become a very different place since Army transformation began in 1999. The continuing global war on terrorism, and ongoing operations in Iraq and Afghanistan, have heightened the need to accelerate delivery of new capabilities and technologies to deployed Soldiers. Yet, for all the DOD acquisition reform attempts in recent years, the timelines for delivering major systems to warfighters, with few exceptions, have not been shortened appreciably. Many systems still take nearly a decade to field. This article looks at some of the efforts that are changing the acquisition business model and making it more responsive to Soldiers' needs.

### Rapid Acquisition Examples

The Stryker is one such combat system. Stryker's family of 10 vehicles was created to provide Stryker Brigade Combat Teams (SBCTs), the Army's new rapid deployment capability, more staying power than our current light infantry forces.

By taking advantage of existing technologies, the intent was to equip the first SBCT by the end of 2001. However, the radical change in philosophy embodied by Stryker — a wheeled vehicle rather than a traditional tracked vehicle — was enough of a departure from convention that the decision to acquire it became a hot political dispute that resulted in program delays. Another critical factor, the Stryker concept required more development and testing than was originally planned for at the outset of the program in late 2000. Even so, deliveries began in 2002, and the first SBCTs to see action arrived in Iraq in late 2003, a significant improvement over typical major weapons programs that keep Soldiers waiting years for the actual equipment to be fielded.

The Rapid Equipping Force (REF), which began in 2002, represents another improvement in getting materiel to the field. As noted in a February 2004 *National Defense* article, the REF focuses on solving specific problems for individual units rather than fielding equipment that has been developed to meet the general needs of the larger force. REF bridges the gap between suppliers and commanders with immediate needs. The REF's success has earned it an expanded mission to help assess technologies that may be ready for the battlefield now or in the future.

While the REF and the Stryker program demonstrate that the acquisition process can be sped up when the right solutions are already available for current needs, they do not tell us much

about how the Army can develop new, large-scale solutions to meet future capabilities.

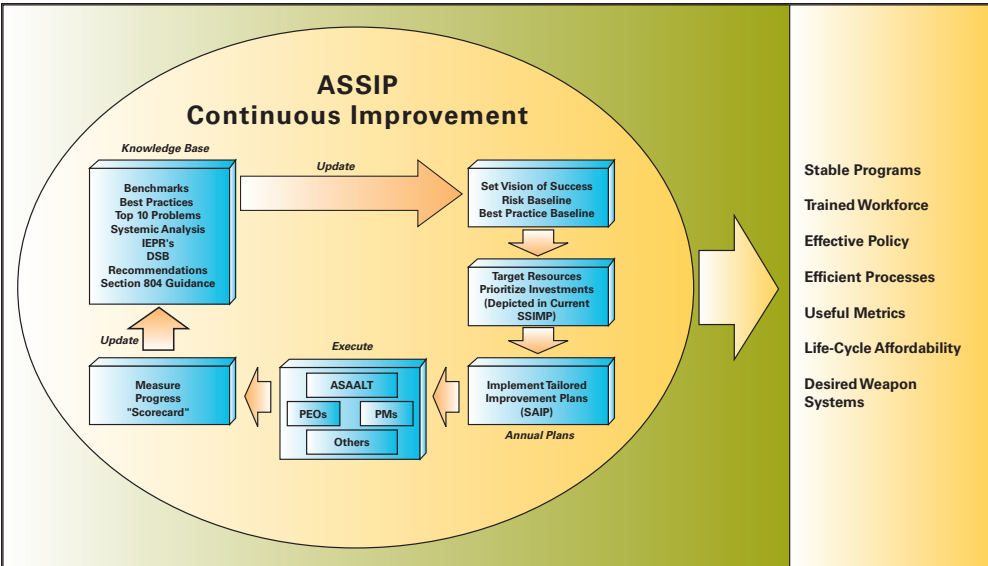
The REF focuses on solving specific problems for individual units rather than fielding equipment that has been developed to meet the general needs of the larger force. REF bridges the gap between suppliers and commanders with immediate needs.

### FCS: Model for the Future

The Future Combat Systems (FCS) program is the Army's biggest acquisition challenge ever. The centerpiece of Army transformation, the FCS program aims to produce sophisticated new weapons and a completely reenvisioned fighting force that leverages information technology to dominate the battlespace as never before. The program is an enormous undertaking, which normally would mean a protracted development cycle. Instead, the Army intends to develop the 18 constituent systems — and the network to connect them — in less time than it has taken to develop just one system in the past.



Stryker is a shining example of how quickly Army acquisition has transformed — from broad concept as a new family of Infantry Carrier Vehicles to actual deployment in combat operations in only 4 years.



- Stable Programs
- Trained Workforce
- Effective Policy
- Efficient Processes
- Useful Metrics
- Life-Cycle Affordability
- Desired Weapon Systems

**Key**

IEPR	Independent Expert Program Review	PM	Program Managers
DSB	Defense Science Board	SSIMP	Strategic Software Improvement Master Plan
PEO	Program Executive Officers	SAIP	Software Acquisition Improvement Plan

**Army Strategic Software Improvement Program (ASSIP) Process to Products**

The needs being satisfied by FCS are very fluid, and some of the proposed technologies are immature. These factors necessitated an evolutionary acquisition and spiral development approach for program execution. In late September 2003, Army Chief of Staff Peter J. Schoomaker indicated that he wants the program to be a proving ground for new technologies, especially networking technologies, that can be “spiraled in” to existing Current Force systems.

The program’s unprecedented scope and technical sophistication also propelled the Army into seeking new ways to manage the acquisition

process. As a result, the government and industry execute FCS as a collaborative effort, with Boeing Co. and Science Applications International Corp. teamed in the pivotal role of Lead Systems Integrator (LSI).

The LSI model is a paradigm shift away from more traditional approaches. On the FCS program, many “big-picture” technical and management decisions previously made by a government program office instead fall to the LSI. The Army, while still maintaining an oversight role, works as a partner with the LSI team to promote a true collaborative spirit. A hallmark of this approach is its inclusiveness: the program has sought

out the best suppliers from across industry to join in providing solutions.

This collaborative spirit is embodied in the program’s Software Steering Committee, which is composed of recognized experts from the government, industry and academia — including Carnegie Mellon’s Software Engineering Institute (SEI). Unique among Army programs, the committee ensures that software acquisition receives appropriate “upfront” focus to identify and resolve program issues that impact, or may be impacted by, the software and program timelines.

This is particularly noteworthy on programs where software is the critical element for success. The committee, with its broad representation, is able to evaluate the cutting edge in software development and champion the use of state-of-the-art techniques and processes to help reduce program technical risks. This consultation level rarely occurs in traditional, less open, prime contractor acquisition models.

Will the FCS program’s spiral and collaborative approach, with the strong lead taken by industry, become the model for future Army acquisitions? A November 2003 white paper produced by the *Objective Force Task Force* titled *The Army in 2020*, predicts that “interdependent partnerships between the Army and industry” will be “the norm,” so expectations are high as the program executes its system development and demonstration phases.

The FCS program is developing a family of vehicles that will provide unmatched capabilities at the system-of-systems level.





1st Cavalry military police in Iraq probe a suspected improvised explosive device using the MARCbot, a DTRA robot modified with a camera and boom for video-recon applications. (U.S. Army photo courtesy of Exponent<sup>®</sup>)

So, if the LSI model is the future of Army acquisition, what can be done now to help current programs incorporate technology infusions from FCS while still being responsive to combatant commanders and their Soldiers? The first step in answering that question is to understand where Army acquisition is today. SEI is working with the service to do just that.

### Army Strategic Software Improvement Program

In 2002, Army Acquisition Executive/Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) Claude M. Bolton Jr. recognized software had become the pervasive element in everything that the Army buys — from aircraft to bullets. Anticipating a DOD-wide mandate from Congress to establish improvement programs for software-intensive system acquisitions — what would become *Section 804* of the *Bob Stump National Defense Authorization Act for FY 2003* — and understanding the challenges facing the Acquisition, Logistics and Technology Workforce in such an environment, Bolton proactively partnered with SEI to create ASSIP. His goal — institutionalize improved business and development processes, ultimately leading to systems

that cost less, field sooner and perform better. The figure on Page 84 depicts ASSIP's continuous improvement process.

### Benchmarking for Improvement

In a key ASSIP initiative, SEI is building an understanding of Army acquisition practices to “baseline” the state of Army software-intensive system acquisition. Termed “Benchmarking for Improvement (BFI),” the process seeks to elicit practices that have been successful on individual programs as candidate benchmarks for broader application. BFI also helps determine where existing higher-level policies impede program progress, or where gaps in policy cause ambiguity and increased risk. The primary technique used in the BFI process is direct program engagements, supplemented by surveys of key Army acquisition professionals, and interviews of other experts.

By understanding the baseline state, SEI can help find promising technologies available industrywide to foster Army acquisition system improvements. Programs participating in benchmarking receive several benefits:

- The opportunity to influence, without attribution, higher-level policies that affect how missions are accomplished.
- Immediate feedback about the Army's current procurement practices.
- Early adoption of improvement strategies.

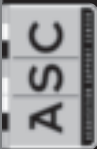
The programs also benefit from continued expert consultation through an ongoing relationship with SEI to monitor the successes and shortcomings of improvement strategies.

While SEI works to classify the Army's current acquisition system and recommend changes, initiatives such as the REF and programs like FCS and Stryker are already experimenting with new ways of doing business. As the Army moves to adopt what Schoomaker terms a “Joint and Expeditionary Mindset,” the acquisition process will continue to be influenced. Although the future direction of Army acquisition may continue to change, it is clear that transformation has taken hold. With a renewed emphasis on Soldiers, efforts underway seek to ensure that the Army remains relevant and ready as a critical component of the Joint Force. The nexus of all these efforts promises an exciting future, one where the Army acquisition system meets the Soldier's needs and expectations, on time, every time.

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## From the Outgoing Acquisition Support Center Director



CAREER DEVELOPMENT UPDATE

**W**ith this column, I bid you all a final farewell! It has been my distinct honor and privilege to serve as the U.S. Army Acquisition Support Center's (ASC's) Director for the past two years. I have enjoyed my tenure and this tremendous opportunity to work with each of you. You are the lifeblood — the very soul — of the Army Acquisition Corps (AAC), and I salute you for your tireless efforts and endless innovation and creativity in providing the highest levels of support and services to our Soldiers and commanders in the field.



I am honored that Claude M. Bolton Jr., Army Acquisition Executive and Assistant Secretary of the Army for Acquisition, Logistics and Technology, has asked me to become his Chief of Staff at the Pentagon. I thank everyone on the ASC team and the entire acquisition community for their dedicated support during my tenure. I know you will welcome **COL Genaro J. Dellarocco** who assumed authority as the new ASC Director on July 16, 2004. It has been a pleasure to work with you in support of our great Soldiers and Army. I urge you to continue to make a difference every day in all you do.

When ASC was chartered as a staff support agency it consisted of smaller, disparate agencies. As a team we pulled together to make a difference to Soldiers by supporting the Army's acquisition professionals. I've pushed the ASC team very hard these past few years — we accomplished many goals and my team proved time and again its willingness and ability to serve our great Army's most challenging requirements. It's my pleasure to highlight a few of the ASC team's latest accomplishments.

**AAC Accessions.** I challenged my proponency officers and the Acquisition Management Branch to spread the word about AAC opportunities and professional development and actively seek greater numbers of qualified AAC applicants. The goal was high but the funding was not. Their creative efforts brought a flood of applicants — more than 900 — the likes of which the AAC has never seen before. The selection board chose from among the best the Army has to

offer. This influx of talented young officers will ensure a strong cadre of AAC leaders for the future.

The **Career Management Division** has totally revamped the **Competitive Development Group** program. It has also created a Web page that lists acquisition-related thesis topics submitted by our program executive officers (PEOs) and acquisition commanders for acquisition professionals in training courses or pursuing advanced degrees. The division has also been closely involved with rewriting the *Defense Acquisition Workforce Improvement Act* policies, developing the Uniformed Army Scientist and Engineer Program and implementing AAC Transformation Campaign Plan initiatives.

**Customer Support Offices (CSOs).** ASC's three regional CSOs, National Capital and Central West Region, Northeast and Central East Region and Southern and Western Region, provide day-to-day support for the 40,000-plus Acquisition, Logistics and Technology Workforce members. Of note, each CSO sponsored, or is sponsoring, one or more "Meet the MILDEP" events in addition to hosting Defense Acquisition University courses; Acquisition Career Management; and Acquisition, Education, Training and Experience Program events and other associated educational and career development programs. They also placed interns in permanent government civilian positions and assisted in formulating, staffing and implementing landmark acquisition policy initiatives.

The **Operations Division** has spearheaded ASC's various building renovations over the past year and a half, improving quality of life for our employees. They have also provided leadership in the daily administration of office requirements and improved many of our office staff action processes. Operations also was charged with responsibility for the Deployment Cell, which identifies volunteers to support *Operations Iraqi* and *Enduring Freedom* efforts.

The **Program Structure and Information Analysis Division** conducted an in-depth Military Acquisition Position List (MAPL) Review and MILDEP Review of all Command Select Positions for LTG Joseph L. Yakovac Jr. and the PEOs. This division also planned the highly acclaimed 2003 Acquisition Senior Leaders' Conference (SLC) in Seattle, WA, and has raised the bar even higher for this year's Acquisition SLC adding a Combined Arms Live-Fire Exercise as part of this year's equipment demonstration. This invitation-only event was held Aug. 9-12 in Louisville and Fort Knox, KY, and drew more than 400 participants.



ASC's **Human Resources Division (HRD)** supported HQDA's command selection and slating lists and the 12 PEOs, direct reporting program managers and their program management offices (PMOs) with critical and timely personnel management and training. HRD was instrumental in providing civilian personnel assistance to the Iraq Coalition Provisional Authority Support Group and helped execute ASC's MAPL Review.

The **Resource Management (RM) Division** provided online resource management training for all PEOs and PMOs. RM has supported growing mission requirements during the past year while at the same time undergoing new budgeting and resource management processes. RM also executes major command-level manpower- and budget-related Program Objective Memorandum matters within the Army's PEO structure and other ASC Table of Distribution and Allowances elements.

The **Strategic Communications Division** has made great strides in developing an integrated branding campaign and strategy through its comprehensive Communication and Outreach Plan for ASC. Improvements included redesigning ASC's Web site (<http://asc.army.mil>) and *Army AL&T* Magazine, extensively upgrading ASC's tradeshow booth and kiosk and establishing a Communications Working Group to actively provide and solicit information from representatives from all ASC divisions. This process has resulted in cross-fertilization of ideas to better understand and promote the organization's diverse programs. It has also established a Web-based repository for the Army Acquisition Lessons Learned Management System (ALLMS) at <https://apps.rdaisa.army.mil/allms/> and the ALLMS Thesis Data Base. The division continues to forge strategic public affairs, marketing and communications links with the PEOs/PMOs, other key target markets and the Army.

The **Logistics Management Proponency Office (CP-13/-17)** has been busy promoting short- and long-term training opportunities for civilian logistics professionals and recruiting interns for various intern programs.

The **Contracting Career Program Office (CP-14)** recently executed the Secretary of the Army Awards for Excellence in Contracting ceremony on May 25, 2004, in Orlando, FL. CP-14 has been working two new initiatives: a pilot business manager course and a memorandum of agreement for an Army-Defense Contract Management Agency Developmental Exchange Program. They continue to put much energy and creativity into program promotion, recruitment activities/events and program

orientation to a younger, recent college graduate audience through their FAST TRACK Program.

These are but a sampling of ASC's superior contributions to the Army in just the past few months. In closing, I want to take this opportunity to say "Thank you for a job done exceptionally well!" I salute every member of the U.S. Army Acquisition Support Center for supporting our brave men and women at the "tip of the spear." Your efforts make a difference and I'm proud to have led such a dedicated and professional workforce. I want to wish you and your families the very best. God bless each of you. God bless our Soldiers and civilians, and may God continue to bless the United States of America.



**COL Mary Fuller**  
Director  
Acquisition Support Center

## Dellarocco Succeeds Fuller in ASC's First Change of Leadership Ceremony

*Debbie Fischer-Belous*

The U.S. Army Acquisition Support Center (ASC) held its first-ever change of leadership ceremony July 16, 2004, at the Defense Acquisition University's Howell Auditorium. LTG Joseph L. Yakovac Jr., Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT), presided, bidding farewell to outgoing director COL Mary Fuller and welcoming COL Genaro J. Dellarocco.



COL Genaro J. Dellarocco accepts responsibility as ASC Director from LTG Joseph L. Yakovac Jr. during the Change of Leadership ceremony.



LTG Joseph L. Yakovac Jr. bids farewell to departing ASC Director COL Mary Fuller.

Master of ceremonies Michael I. Roddin, ASC Strategic Communications Director, welcomed attendees and briefly explained, “The military change of leadership ceremony dates back to the beginning of our Nation’s history and provides for the orderly transfer of organizational responsibility from one Army leader to another.” He added that ceremonies such as this are deeply rooted in military tradition dating back to the ancient Roman era.

Following Roddin’s introductory remarks, the official party entered, followed by an invocation by Chaplain (MAJ) Robert E. Philips. The National Anthem then played and the outgoing and incoming directors presented gifts to their spouses, thanking them for their continued support, encouragement and partnership.

Yakovac then commented on ASC’s importance to the future of Army acquisition. He explained how ASC has been, and will continue to be, instrumental in focusing on people and all aspects of civilian and military Army Acquisition Corps (AAC) leadership. He commended Fuller for her critical role in carrying out his goals for the AAC as both ASC Director and the Deputy Director of Acquisition Career Management (DDACM). “This job is not easy nor glamorous,” Yakovac added.

Yakovac said that he chose the incoming director based on past experience as Dellarocco’s boss. “I was impressed with Gino’s ability to work well with people and get the job done,” said Yakovac. “He was one of the best project managers in the Army — perhaps in DOD.” According to Yakovac, Dellarocco’s strengths will be important to “putting Army acquisition into the 21st century in support of today’s truly Joint expeditionary Army.”

Following his remarks, Yakovac presented the Legion of Merit to Fuller for her exceptionally meritorious service as

ASC Director and DDACM. Fuller also received the Bronze Order of Mercury Award, which recognizes long-term significant contributions to the U.S. Army Signal Regiment.

Dellarocco then officially assumed authority for directing ASC through the Exchange of Colors, a symbolic act during which the outgoing director relinquishes responsibility to his or her superior who, in turn, passes that authority to the incoming director.

In bidding farewell, Fuller thanked Yakovac and the other attendees and in particular noted her husband’s support and humor during her years as ASC Director. She added that the ceremony came on the last day of her 27th year of Army service. She credited ASC employees with many accomplishments such as establishing the Uniformed Army Scientist and Engineer Program, implementing Army acquisition transformation, improving the Naval Postgraduate School distance-learning program and creating a thesis database. Fuller’s new assignment is Chief of Staff for the Honorable Claude M. Bolton Jr., Army Acquisition Executive and ASAALT.

Dellarocco, whose previous assignment was Project Manager for Force Projection at the Program Executive Office for Combat Support/Combat Service Support in Warren, MI, remarked that Fuller would be a hard act to follow. He thanked his wife, Karen, for her support, briefly outlined his management philosophy of putting “People First!” and expressed gratitude to Yakovac for the opportunity to command again.

The ceremony closed with the *Army Song* and departure of the official party. Guests walked through a receiving line to express farewell wishes to Fuller and her husband, LTC Gerald F. Monin (U.S. Army, retired), and to welcome Dellarocco and his wife to the ASC family.

*Debbie Fischer-Belous is Senior Editor of Army AL&T Magazine. She earned a B.A. in fine arts from Syracuse University.*

### **ALLMS – Wisdom of a Thousand Minds at Your Fingertips**

*Betisa G. Brown*

Don’t let invaluable knowledge and lessons learned walk out the door! A decade of downsizing efforts and the retirement of approximately 25 percent of Army acquisition workforce

members within the next 5-10 years can wreak havoc on the Army Acquisition Corps (AAC) knowledge base if we don't act quickly. Even if the AAC were not facing attrition of this magnitude, "islands of information" could cause our acquisition workforce to sink in a sea of repeated mistakes, wasted resources, duplicated efforts and reinvented wheels. How can we prevent this from happening? The Acquisition Lessons Learned Management System (ALLMS) has your answer.

In case you haven't noticed, the information technology era has changed the competitive landscape in both the commercial sector and military. Industry has learned to use advances in technology to transform disparate bits of data into meaningful information that helps them win the profit war. The U.S. Army has access to the same state-of-the-art technology. Why not harness this powerful source to turn pockets of acquisition-related data into timely, relevant information that flows across multiple organizations — information that can make the AAC more responsive and successful in fulfilling warfighter requirements? Technology can help us capture the priceless wisdom of thousands.

Sponsored by the U.S. Army Acquisition Support Center (ASC) and managed by ASC's Strategic Communications Division, ALLMS is a Web-based repository of acquisition-related lessons learned, observations, best business practices, papers and articles. ALLMS enjoys the support of Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology LTG Joseph L. Yakovac Jr. and is home to nearly 500 lessons learned and research-related papers. ALLMS aims to connect program executive offices and program management offices through information sharing, providing for a collaborative environment where AAC professionals can draw on the experiences of others while sharing their lessons learned and best practices with the rest of the acquisition community. Furthermore, ALLMS acts as a conduit for research material on acquisition policy and programs for outreach to AAC professionals. Take a moment to visit ALLMS at <http://asc.army.mil>:

- Click on **Portal** on the top bar.
- Choose **Army Acquisition Lessons Learned** from the **Quick Links** menu on the right.
- Click on **ALLMS** live link embedded in the first paragraph.
- Click on **Registration** to fill out the form and submit.

Once an ALLMS analyst approves your registration, you will be able to search among acquisition papers, articles and lessons learned, or submit your own materials for posting.

Since ALLMS' inception in 2001, the world has changed dramatically. With our Nation at war against terrorism, our mistakes and shortcomings come with a much higher price. With that in mind, and in compliance with the MILDEP's order, ASC is revamping ALLMS into a more integral part of the AAC collaborative knowledge environment. In the next 12 months, ALLMS will be overhauled to bolster its content and to become more user-friendly. For instance, the new ALLMS will provide AAC professionals pursuing advanced degrees with a repository of thesis topics from which to choose and the capability to directly submit their completed theses to the database. Furthermore, for the sake of accuracy and completeness, the new and improved ALLMS will have in place provisions so that submittals of lessons learned can be reviewed by the supervisor for precision and completeness before being published on the ALLMS Web site.

ALLMS is a valuable source of information for AAC professionals, but it is dependent on the acquisition community's input to stay current, pertinent and replete. Bottom line: the MILDEP and ASC Director are calling for your lessons learned, best business practices, information papers, articles, research studies, success stories and, perhaps, not-so-successful stories. Your submittals can save time, money and, more importantly, our Soldiers' lives. So please go to the ASC Web site at <http://asc.army.mil>, register and submit your observations. Your comments on how to improve ALLMS are also most welcome. You can reach an ALLMS analyst at (703) 805-2441, DSN 655-2441 or e-mail [asc.allms@asc.belvoir.army.mil](mailto:asc.allms@asc.belvoir.army.mil). We look forward to hearing from you — let your knowledge and experience make a difference today!

*Betisa G. Brown is the ALLMS Analyst for ASC's Strategic Communications Division. She has a B.S. in industrial engineering from North Carolina State University and an M.S. in management of technology from the University of Alabama in Huntsville.*

## AAC Transformation Campaign Plan

*Nicole Perella*

Top Army Acquisition Corps (AAC) members sprang into action March 31, 2004, at the AAC Transformation Change Leadership Team kick-off session, orchestrated by Change Project Team Leader MAJ Joy Kollhoff, U.S. Army Acquisition Support Center (ASC). As fellow team members gathered,

an excited buzz spread throughout the conference room. This was the first of many planning sessions for the team and the group awaited the arrival of Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) LTG Joseph L. Yakovac Jr.

On Feb. 12, 2004, Yakovac released a memorandum to key AAC players. The memorandum announced the MILDEP's ambitious vision to align the AAC with the *Army Transformation Roadmap 2003*. The MILDEP's memorandum provided important guidance to be followed closely and referenced often to transform the AAC into a core capability within the Army and Joint warfighting communities.

The MILDEP kicked off the meeting with a story about how he was "drafted" into the AAC in 1991. He then told the Change Leadership Team that he was looking to them for ideas and decisions on how to best transform the AAC to better support Soldiers, combatant commanders and the Army as a whole.

"Times have changed," Yakovac remarked. "In 1991 our world was calm. Now the footprint has turned into one of war and we must be more Joint in our focus than ever before." The MILDEP's strategic goal was to empower the team to make a true and fast difference — to help him transform Army acquisition by aligning and horizontally integrating AAC transformation with the Army's overall transformation campaign. Within that goal, Yakovac instituted three Strategic Objectives:

- Establish an Army acquisition **core capability** to develop, test, field, buy, insert and support materiel and service solutions across full-spectrum military operations — from all-out war to defending the homeland.
- Develop flexible acquisition officers and civilian leaders who possess a **diverse and well-rounded background** in the supporting functions and phases of acquisition, and are prepared to lead any complex, multifunctional acquisition command, agency, organization or team.
- Develop a civilian workforce that is **expert, relevant and ready** to support the acquisition mission along the full spectrum of military operations — from all-out war to defending the homeland.

Touching on many relevant subjects, some of the hot topics discussed were the current and future career paths for both civilian and military Acquisition Workforce members, military-to-civilian conversion and AAC Workforce educational requirements.

The Change Leadership Team focused on how to develop greater strength within the AAC by instituting an increased blend of military and civilian acquisition leaders. "The mix is essential," Yakovac explained. "The Army Acquisition Corps needs both sides — military and civilian — to play equal parts as leaders and overall players in the workforce."

He left every team member with a challenge — use your own experiences and create ideas for changing and transforming. "If you put the idea on the table, I will ask you to lead the change and to make it happen," Yakovac continued. "The next step is making AAC Transformation a reality — that is our most difficult task."

For more information on AAC Transformation, please contact MAJ Joy Kollhoff at (703) 805-1251 or [joy.kollhoff@us.army.mil](mailto:joy.kollhoff@us.army.mil).

*Nicole Perella provides contract support to ASC through BRTRC's Technology Marketing Group. She earned a B.S. in psychology and advertising from Syracuse University.*

## **NCR's AL&T Workforce Met the MILDEP – And Was Impressed!**

*Whitney F. Koeninger*

On April 16, 2004, LTG Joseph L. Yakovac Jr., Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (AL&T), addressed a full house at Defense Acquisition University's Howell Auditorium, Fort Belvoir, VA. The room was filled with acquisition workforce military and civilian personnel who came to meet the MILDEP and hear his reasons for recent acquisition process changes.

Since Yakovac assumed the MILDEP position Dec. 1, 2003, his priority has been examining how the Army Acquisition Corps (AAC) manages military and civilians alike. "I am trying to put the 'personal' back in personnel," Yakovac stated. Yakovac and other acquisition leaders are developing a plan to reshape the AAC as a whole, allowing the acquisition community to stay in tune with Army transformation and the Army's 17 focus areas.

Some procedures have already changed. "I am not senior rating project managers (PMs) because that is not my leadership style.



LTG Joseph L. Yakovac Jr. addresses the crowd at the "Meet the MILDEP" event held June 22, 2004, at the U.S. Army Tank-automotive and Armaments Command, Warren, MI. (Photo courtesy of Karen Sas, NCI.)

The person who rates you should be the person who gives you orders and sees you every day." Yakovac is hoping that this process will place the right people in the right positions, and that they will ultimately contribute to the AAC's betterment.

In recent months, the new MILDEP took a week out of his schedule to review more than 1,600 Military Acquisition Position Listing (MAPL) jobs to get an idea of available positions in the acquisition workforce. "Some of these job descriptions were written 10 years ago and are not accurate," Yakovac explained. The AAC promises a wide variety of opportunities and Yakovac is determined that people get the job that they think they signed up for. After reviewing the MAPL job descriptions, Yakovac either kept the position, downgraded it, converted it to a civilian position or simply deleted it. "The impacts of this realignment won't be seen until 2005. I am not going to make people move out of cycle because I took their job away," he continued. In the future, Yakovac will conduct more reviews to make sure the right jobs are available and in the organizations that need them most.

The MILDEP is also focused on providing AAC members with a spectrum of experience. Instead of pinpointing officers into specific fields, Yakovac wants a wider breadth of opportunities for them to explore. "I want you to get the experience you need to operate anywhere. I want you to have a foundation to get a PM job — not a specific PM job — but any PM job," Yakovac stated. Plans to fulfill this goal include having officers change jobs more frequently and switching them around within their assigned regions. "The Acquisition Corps must be an organization that is able to adapt, and I will reward people who are willing to take on a challenge," Yakovac remarked.

As the afternoon's session came to an end, Yakovac declared, "I've held a variety of assignments throughout my career. I

know enough to help you be successful." Yakovac informed the crowd that he and acquisition leaders are looking for ideas on how the acquisition community can run more smoothly. "We're not trying to change this by ourselves; your suggestions are welcome."

The National Capital Region's (NCR's) "Meet the MILDEP" event allowed the AL&T Workforce to understand what Yakovac has done and will do in the future. The MILDEP is scheduled to visit other regions to talk to and get to know the rest of the acquisition workforce community. He spoke at the Program Executive Office for Simulation, Training and Instrumentation, Orlando, FL, on May 26; the U.S. Army Tank-automotive and Armaments Command, Warren, MI, on June 22; the Colonel's Call at the Pentagon on July 7; and the U.S. Army Communications-Electronics Command, Fort Monmouth, NJ, on July 21. In addition, he will visit Picatinny Arsenal, NJ, on Sept. 15.

The MILDEP is coming to a location near you. Don't miss the opportunity to meet him. For more information about "Meet the MILDEP" events and locations, go to [http://asc.army.mil/events/conf\\_mildepevents.cfm](http://asc.army.mil/events/conf_mildepevents.cfm).

*Whitney F. Koeninger is the Manuscript Editor for Army AL&T Magazine and provides contract support to ASC through BRTRC's Technology Marketing Group. She earned a B.A. in English from Virginia Polytechnic Institute and State University.*

### **ATAP Provides Educational Funding**

Are you looking to go back to school to finish your undergraduate degree? Need to complete your business hours? Want to pursue a master's degree but need financial aid? Then apply for the Acquisition Tuition Assistance Program (ATAP).

ATAP is a robust program open to all eligible Acquisition, Logistics and Technology Workforce members who are interested in pursuing business hours or associate or bachelor's degrees. Additionally, Army Acquisition Corps members and Corps Eligible employees who are Level III certified may request ATAP funding for graduate degrees in business, scientific or technical specialties. Selection into ATAP is through a competitive board process that is normally conducted biannually by the U.S. Army Human Resource Command (AHRC).

Education funded through ATAP must be pursued through a nationally or regionally accredited school. Participants may attend their institute of choice within their local commuting area or participate in online classes. Students should complete courses during nonduty hours unless supervisor approval allows for duty-hour completion.

AHRC is now soliciting applications for the next board, tentatively scheduled for Oct. 12, 2004. The announcement opened June 1, 2004, and will close Sept. 3, 2004. The announcement is posted at [https://www.perscomonline.army.mil/opfam51/ATAP\\_Summer04.html](https://www.perscomonline.army.mil/opfam51/ATAP_Summer04.html). Completed applications and all supporting documentation must reach HRC no later than 4 p.m. on the closing date. The ATAP board will not consider incomplete or incorrect packages. However, applicants will be notified if this occurs.

Applicants provide an application package for their desired course of study — 12-24 semester hours of business, associate degree, bachelor's degree or master's degree. Each course of study must underpin an acquisition function. Funding for a master's degree or business hours at the master's level is limited to \$1,500 per course (\$7,500/year), and funding for a bachelor's degree is limited to \$1,000 per course (\$5,000/year). Students must complete graduate-level courses with at least a grade of "B" and at least a "C" for undergraduate-level courses. Reimbursement is required if the grade standards are not met.

Finally, participation in ATAP requires a payback of time to the acquisition workforce. Exact payback regulations are listed on the *Request, Authorization, Agreement, Certification of Training and Reimbursement (DD Form 1556)*. However, the payback length is usually three times the length of the training period.

Questions on the ATAP announcement and application process can be directed to your regional Acquisition Career Manager (ACM). Applicants are highly encouraged to speak to an ACM to ensure package completeness prior to application submission. A list of regional ACMs can be found at <http://asc.army.mil/programs/atap/acmlistings.cfm>.

Workforce members can find additional information about ATAP at <http://asc.army.mil/programs/atap/default.cfm>. Within the ATAP Web site, see the ATAP Policy and Procedures, which describes the program in more detail.

Any administrative questions about the ATAP board should be directed to Cathy Johnston at HRC at (703) 325-2764 or [cathy.johnston@us.army.mil](mailto:cathy.johnston@us.army.mil).

Administrative questions about ATAP should be directed to National Capital Region Customer Support Office ATAP Coordinator Scott Greene at (703) 704-0132, (703) 704-0134 (fax) or [scott.greene4@us.army.mil](mailto:scott.greene4@us.army.mil).



## AHRC Notes

### FY05 COL/GS-15 PM/AC Board Results

The U.S. Army Human Resources Command's Acquisition Management Branch (AMB) recently completed an analysis of the FY05 Colonel (COL)/GS-15 Project Manager (PM) Acquisition Command (AC) Board results for Army Acquisition Corps (AAC) officers and civilians. The following summary provides the results and indicates possible trends.

#### Overall Results

Board members reviewed 62 AAC officer and civilian files. These files included 41 active duty officers and 21 civilians. From this population, the board selected 22 principals for PM and AC. These principals included 21 officers and 1 civilian. Results by year group (YG) for AAC officers are as follows:

YG	1978	1979	1980	1981	1982	1983	1984
Officers							
Considered	2	0	2	4	26	4	3
Selected as							
Principals	0	0	0	2	14	3	2

#### Who Was Selected?

Sixteen (76 percent) of the Army officer principals were selected on their first time considered. The civilian was selected on his first look. Sixteen (76 percent) of the Army officers selected are Senior Service College (SSC) graduates. Five of the Army officers selected will attend SSC during academic year 2004-2005. The civilian selected is also an SSC graduate. All of the officers and the civilian served as lieutenant colonel (LTC) or GS-14 PMs/ACs.

#### General Observations for Military

Officers are generally selected for COL PM/AC the first time considered after SSC completion and successful LTC PM/AC.

Eighty-five to 90 percent of the selectees on the previous three command boards were selected their first time considered.

A very successful product management tour, coupled with successful performance in a major headquarters staff (Army or Joint staff) position is a common formula for PM selection. Contracting officers require extensive contracting training and experience, combined with a very successful contracting command. Again, success in a major headquarters staff position enhances overall file strength toward selection. Successful LTC PM/AC for this board is defined as 94 percent of an officer's command Officer Evaluation Reports (OERs) rated above center of mass.

### General Observations for Civilians

Previous program office experience at the critical acquisition position level continues to be the most important element for civilians to be competitive for PM/AC. However, there is no evidence that consecutive or repetitive program office tours better qualify an individual for PM selection. Civilians who compete for PM positions must show diverse work experience. This includes service in organizations with different missions. While boards recognize the difference between civilian and military careers, it is incumbent on civilian applicants to stress the depth and breadth of the experience they have. It is critical that civilians identify — and highlight in their resumes — their accomplishments in leading and managing human and fiscal resources, materiel acquisition and project milestones. Each applicant's resume and Acquisition Career Record Brief assignment history should match.

Civilians must continue to stress to their supervisors and senior raters the importance of writing meaningful comments on both performance evaluations and Senior Rater Potential Evaluations (SRPEs). Comments on evaluations that quantify the achievements and address an employee's leadership skills are critical. Senior rater comments are particularly useful to a board in assessing an applicant's likelihood for success as a PM. AMB recommends that, regardless of an individual's intent to apply for a board in any given year, employees request an SRPE annually. Successful applicants typically have more than two SRPEs in their file. AMB will include in board files all SRPEs provided.

Overall file strength, combined with successful performance in supervisory and managerial positions, enhances selection chances. Because command selection is so competitive, it is essential that acquisition officers and civilians pay close attention to their board file's components to ensure that accurate information is presented to enable board members to make

an informed decision. The trend continues to be for command boards to select acquisition professionals with a diverse acquisition background, coupled with a successful LTC/GS-14 PM/AC.

Congratulations to the following selectees for FY05 COL/GS-15 PM/AC. *Editor's Note: Ranks listed were current as of the December board date.*

Bezwada, Haribaber	CIV
Coffman, Thomas Dwayne	LTC(P)
Cook, David Alan	LTC(P)
Dever, Douglas Allen	LTC(P)
Hansen, Jacob Bernard	LTC(P)
Harrington, Gale Alicia	LTC(P)
Hazelwood, Donald Alexander	LTC(P)
Hollingsworth, Larry Dale	LTC(P)
Kendrick, Robert III	COL
Knudson, Ole Albert	LTC(P)
Koster, John Leo	LTC(P)
Lipsit, Carl Alan	LTC(P)
Miller, Scot Charles	LTC(P)
Mullin, Edward Leroy	LTC(P)
Paquette, Derek Joseph	LTC(P)
Parker, William Ernest	LTC(P)
Pennycuick, Richard Butler	LTC(P)
Sears, George Albert II	COL
Wheeler, Kenneth Alan	LTC(P)
Wolfe, Daniel Glenn	COL
Yarborough, Michelle Faith	COL

### FY05 LTC/GS-14 PM/AC Board Results

The U.S. Army Human Resources Command's (AHRC's) Acquisition Management Branch (AMB) recently analyzed the FY05 Product Manager (PM)/Acquisition Command (AC) Board results and overall command opportunity for Army Acquisition Corps (AAC) officers and civilians. The selection board was held Dec. 4-12, 2003, and the selection list was released June 10, 2004.

### Overall Results

Board members reviewed 260 AAC member files and selected 51 principals for PM, AC or contracting command. Selectees included 49 acquisition officers, one Medical Service (MS) Corps officer and one acquisition civilian. The overall selection

rate was 20 percent. The military selection rate was 21 percent (50/241), and the civilian selection rate was 5 percent (1/19). Officer results by year group (YG) are as follows (not inclusive of revalidated or MS Corps officers): YG89 — 1, YG88 — 8, YG87 — 25, YG86 — 11, YG85 — 3, YG84 — 1.

### Who Was Selected?

The one civilian and more than 91 percent of the selected officers previously served as assistant or deputy PMs, or in equivalent functionally qualifying positions. Additionally, more than 46 percent of the selectees have served on a major headquarters staff such as the Office of the Secretary of Defense; Assistant Secretary of the Army for Acquisition, Logistics and Technology; Defense Contract Management Agency or Army Materiel Command. Nine of the 10 officers (90 percent) selected as contracting commanders had at least 2 years' contracting experience. Ninety-eight percent of the selectees have a master's degree, and three officers also have a Ph.D. Ten acquisition officers did not attend resident Command and General Staff College but completed the nonresident course.

### General Observations

Consistently strong evaluations were common among selectees. The average number of *DA Form 67-9 Officer Evaluation Reports (OERs)* was 5.2 for selectees, 5.3 for alternates and 5.5 for officers not selected as a principal or alternate. The average number of above-center-of-mass OERs under the *DA Form 67-9* was approximately 3.9 (76.8 percent) for selectees, 3.1 (58.8 percent) for alternates and 1.9 (35.7 percent) for officers not selected as a principal or alternate. The trend for first-look selection continued for military officers.

The civilians selected as principals and alternates had very strong comments on their performance evaluations and Senior Rater Potential Evaluations (SRPEs). In addition, they had previously been selected for either the Competitive Development Group Program or Senior Service College, or had performed duties as a deputy project/product manager.

Before future PM/AC boards convene, it is imperative for officers to personally "scrub" their Officer Record Brief and Official Military Personnel File (OMPF) to ensure accurate information is conveyed to board members. Approximately 180 days prior to the board convening, officers should check OMPF online at [https://www.perscomonline.army.mil/feature\\_sites.htm](https://www.perscomonline.army.mil/feature_sites.htm) and click on the OMPF icon. Officers will need their Army Knowledge Online user name and password to access the OMPF.

Traditionally, the board meets in December each year. Until the automated board process is fully operational, AMB will review files for officers in the zone of consideration 30-45 days prior to the board convening date. Officers should replace official photos — in electronic Department of the Army Photograph Management Information System and hard copy — that are more than 3 years old. Attention to detail on the photo and in the file may make a difference, so review files early and make corrections to be most competitive.

Captains and majors should seek career-broadening experiences to become competitive for future selection as a PM or AC. Officers should seek jobs that offer experiences in contracting, program management, combat development and testing. With a limited number of positions in program offices and noncontingency contracting organizations, AHRC will continue to rotate captains and majors at 36-month intervals to ensure a sufficient pool of experienced and qualified officers for future PM and AC positions.

Civilians should ensure that their application packages are complete and contain all required documents. Special attention should be given to ensuring that Acquisition Career Record Brief (ACRB) data are accurate. Assignment dates reflected on the ACRB should match dates shown on the résumé. Current ACRBs may be obtained from Acquisition Career Managers (ACMs) and submitted with application packages. Discrepancies — such as missing evaluations — should be explained. Remember that the application package reflects your career and defines your training, education and experience to the board. Civilians must also stress to their supervisors the SRPE's importance. Weak or lack of definitive comments may negatively impact the board's selection decision. AHRC ACMs are the best sources of information with respect to board preparation.

Congratulations to the following lieutenant colonels, promotable majors and GS-14 PM/AC selectees! *Editor's Note: Ranks were current as of the December board date.*

Alexander, Scott Edward	AC	MAJ
Anderson, Thomas Joseph	AC	MAJ
Bassett, David George	AC	MAJ
Bosse, Scott Paul	AC	MAJ
Bosworth, Brian Eliot	AC	MAJ
Card, Dennis Alan	AC	LTC
Chicoli, John Albert	AC	MAJ
Chyma, Timothy Darrin	AC	MAJ
Clayson, Edward Thomas	MS	LTC



Cummings, Brian Patrick	AC	MAJ
Cummings, Steven Francis	AC	LTC
Davis, Christopher Patrick	AC	MAJ
Dimarco, Andrew John	AC	MAJ
Field, William Edgar	AC	MAJ
Fuller, William Scott	AC	MAJ
Guthridge, George Amos III	AC	MAJ
Haider, Ruth Ann	AC	MAJ
Hirschman, Keith Alan	AC	MAJ
Hitz, Stephen Ernest	AC	LTC
Hummel, Michael Lawrence	AC	LTC
Jacobs, Ronald Jr.	AC	LTC
Johnston, Robert Jon	AC	MAJ
Kilgallon, John	AC	LTC
Lane, Edward Joseph	AC	MAJ
Lemondes, John Jr.	AC	MAJ
Mansir, Martin Joseph	AC	LTC
Mason, Patrick Howard	AC	LTC
McVey, Wade Leonard	AC	MAJ
Morris, Jeffrey Scot	AC	LTC
Paul, Richard	AC	CIV
Payne, Thomas Lancaster	AC	LTC
Pincoski, Mark James	AC	MAJ
Pope, Joseph Kevin	AC	MAJ
Pulford, Scott Alan	AC	MAJ
Puthoff, Frederick Anthony	AC	MAJ
Rettie, Craig Lorimer	AC	MAJ
Rodgers, Kenneth Patrick	AC	LTC
Rush, Christian Edward	AC	MAJ
Sanders, William Alton	AC	LTC
Schafer, Joseph Hughes	AC	LTC
Shipe, Richard Thomas	AC	LTC
Steinbugl, Louis Frank	AC	LTC
Stoddard, Kevin Patrick	AC	MAJ
Switzer, Michael Robert	AC	LTC
Visconti, Albert John	AC	MAJ
Voigt, Jeffrey Ralph	AC	MAJ
Wason, John Duane	AC	LTC
Wells, Charles Andrew	AC	MAJ
Wiley, Danny Alford	AC	MAJ
Williams, Julian Roosevelt	AC	MAJ
Zarbo, Michael Eugene	AC	LTC



## News Briefs

### Pouches Change Drinking Practices for Soldiers

Pouches that can be resealed are changing the way troops drink. Drink pouches developed by the DOD Combat Feeding Directorate at the U.S. Army Soldier Systems Center in Natick, MA — in partnership with packaging companies Pactech in Rochester, NY, and Kapack in Minneapolis, MN — allow warfighters to pour water into a package holding a powder mix, shake and consume the beverage from the opening. If they want to save some for later, the plastic zipper seal holds it in.

Field data showed that almost half of the Soldiers are not consuming the Meal, Ready-to-Eat (MRE) beverage base mix because of the inconvenience of using and cleaning the canteen cup, said Lauren Milch, a physical scientist at Combat Feeding who managed package development. Pouring the mix into a canteen full of water is prohibited according to Army doctrine, so the packages are frequently thrown away unopened.

“The 12-ounce beverage pouch is the first project from the Individual Combat Ration Team’s Improved Packaging for Combat Rations program aimed at reducing packaging and increasing consumption,” explained Vicki Loveridge, a senior food technologist and project officer for improved packaging. “Including a resealable plastic bag was a partial solution, but the drink pouch takes care of everything by replacing the current dry mix package with a disposable drinking vessel,” she continued.

Originally intended to replace the MRE beverage base mix, the beverage pouches could be used for any of the military ration beverages or liquid foods, such as dairy shakes. For hot cappuccino or cocoa, the pouch was designed to fit into the flameless ration heater. “A rectangular drink pouch with a plastic zipper was evaluated in 1991, but it was shelved because the cost was considered ‘extravagant’ at 25 cents apiece,” Loveridge noted.

In the last 3 years, researchers developed prototype pouches with nonreclosable tear-off spouts, reclosable sports-type pull caps and twist-off caps that were studied along with the final package design. “We wanted something reusable, and



The Individual Combat Ration Team's new 12-ounce beverage pouch. (Photo courtesy of Soldier Systems Center.)

they didn't want or need a pouch to stand up, just a way to set it down," Loveridge explained. "The extra expense of a stand-up pouch was unnecessary, and it's a harder pouch to keep from cracking."

In the first twist-off cap pouch evaluation in 2001, 91 percent of the troops consumed their beverages, but the twist-off cap was too bulky and expensive. The latest prototype has a tear-off portion just above a resealable interlocking plastic zipper on top and slight hourglass shape for easy holding. "What's very different from what you see at the grocery store is the zipper with a multilaminar foil and 3-year shelf-life requirement," Loveridge said. "It's difficult to incorporate a zipper without compromising the foil."

With four studies already showing substantial percentage increases in the number of troops using the beverage pouch, another field test is scheduled to determine how warfighter performance improves with increased hydration.

An order of 7,000 beverage pouches has been placed for two Combat Feeding developmental products — the Remote Unit Self Heated Meal and First Strike Ration. An electrolyte-based drink powder beverage pouch was approved for four varieties of the MRE menu and could be fielded as soon as September 2004. "The drink pouch is something they really need, and it's designed to add minimal cost," Milch interjected. "We hope it takes off in popularity like the miniature bottles of Tabasco sauce and flameless ration heater."

For more information about the Soldier Systems Center, go to <http://www.natick.army.mil>.

## PM DWTS Connects Logisticians of 3ID With CSS VSAT

*Stephen Larsen*

When the Army's Product Manager for Defense Wide Transmission Systems (PM DWTS) conducted training and fielded the Combat Service Support Very Small Aperture Terminal (CSS VSAT) satellite communications systems to the 3rd Infantry Division (3ID) Soldiers at Fort Stewart, GA, on May 5, 2004, it was more than just part of the Army G-4's initiative to "Connect the Logician."

"In Iraq, it becomes a force protection issue," said MAJ Angel Nieves, the CSS Automation Management Officer for 3ID. "We can take Soldiers off the road and minimize the time they're in harm's way."

"This product will save lives because logistics people won't have to make extended road trips for communications," said Rick Forrest, a former U.S. Marine Corps sergeant major, who headed the PM DWTS fielding team. "'Connect the Logician' is more than just a slogan — it's a lifesaver."

"This is a paradigm shift. CSS VSAT will fundamentally change the way support operations are executed in the Army," MAJ Michael Devine, PM DWTS, explained to 3ID Soldiers as he opened his initial training session. "It will give you the capability to reach back and touch information systems at home — right there where you stop. And it will reduce 'sneaker net' and make it safer," he added, referring to the practice in which Soldiers must save logistics data on a disk and then drive or walk the disk to another location.

"I came out of the tactical environment to help develop solutions," said Devine, telling the group about his deployment to Kosovo in 1999 as a Brigade Signal Officer with 7th Corps Support Group during *Task Force Hawk*. He related to them how, initially, he had no means to transmit logistics data until he received a satellite-based communications 'flyaway' package from PM DWTS, a proponent of Project Manager Defense Communications and Army Transmission Systems.



### Employing a Global Network

Devine showed the Soldiers how the CSS VSAT system provides Non-Classified Internet Protocol Router Network (NIPRnet) access via satellite to CSS users almost anywhere in the world through a global network that connects remote users to one of several hub stations around the world. After Devine's introduction, Forrest's fielding team conducted classroom instruction and then hands-on training, during which the Soldiers experienced firsthand how easy it is to assemble, operate and then disassemble the CSS VSAT system, which is packed in only five transit cases.

The CSS VSAT system includes built-in Global Positioning System (GPS) receivers, a motorized satellite antenna and a laptop computer that runs the CSS VSAT software program — enabling individuals with little or no satellite communications training to set up a satellite communications link and acquire NIPRnet access almost anywhere in the world. The system software determines current antenna location, determines the satellite to be used, configures the modem and automatically positions the antenna via GPS.

The system can be connected to either a local area network via a hub, router or switch, or to a wide area network via a wireless interface, such as the Combat Service Support Automated Information Systems Interface (CAISI), another PM DWTS product that allows the terminal operator to be displaced by up to 4 miles from the antenna, greatly increasing Soldier survivability.

### The Future is Now

“We’re not reinventing the wheel, we’re repackaging COTS [commercial-off-the-shelf equipment],” remarked Devine. This first fielding to the 3ID was with prototype terminals, to be followed by fielding of production terminals starting in August 2004, and to be completed by this September, thereby better supporting 3ID's transformation.

Nieves was impressed by how spiral, rapid development — with improvements to follow — was giving his Soldiers much-needed communications capability now. “In less than a year, we have the capability. It’s not a pipe dream somewhere, it’s in the hands of Soldiers,” Nieves emphasized.

The Army rapidly deployed a limited number of CSS VSAT systems during *Operation Iraqi Freedom*. The systems received high marks from BG Charles Fletcher Jr., the Army's Assistant Deputy Chief of Staff for Logistics (G-4), in his remarks at Industry Day, Program Executive Office for Enterprise Information Systems in Arlington, VA, on March 17.



Soldiers got hands-on training in assembling, operating and disassembling the CSS VSAT satellite communications systems when PM DWTS fielded the equipment to the 3ID at Fort Stewart. (U.S Army Photo by Bob Fowler.)



A contractor from the PM DWTS fielding team instructs 3ID Soldiers on the CSS VSAT System's numerous capabilities.

"VSAT was a lifesaver," said Fletcher. "And CAISI, we didn't realize how critical it would be until we got it set up and found we were no longer tied to all this wire we were stringing. The 4th ID used it extensively; the 101st Airborne Division used it extensively," he continued. "That's why we're pushing very hard now to make it the standard Army system. Our system centerpieces for the 'Connect the Logistician' initiative are VSAT, CAISI and satellite communications in a lighter version — the comms backbone to really empower logistics," Fletcher concluded.

"This is going to become our division standard for transmission of logistical data," said Nieves. Echoing his remarks, Forrest quipped, "This is 'tip of the spear' technology, the first of its kind to 'Connect to the Logistician.'"

Bill Flynn, a Logistics Assistance Representative with the U.S. Army Communications-Electronics Command, summed it up as he observed the training and CSS VSAT system hand-off to the 3ID. "This is historic," said Flynn. "Every after action report from Iraq cried out for this, noting a lack of communications for logistics. This solves it. Not just a little bit, but a lot."

*Stephen Larsen is the Public Affairs Officer for PEO EIS at Fort Monmouth, NJ. He has more than 20 years of experience writing about Army systems. He holds a B.A. in American studies from the College of Staten Island of the City University of New York.*

## PM DSCS-T Weathers 50-mph Winds to Install Satellite Terminals in Aleutians

*Stephen Larsen*

The Army's Product Management Office for Defense Satellite Communications Systems – Terminals (PMO DSCS-T) had to meet an accelerated schedule and brave 50-mph winds to provide a DSCS satellite communications terminal. This was necessary to meet a Missile Defense Agency (MDA) requirement on Shemya Island, AK, near the Aleutian Island's western end.

The MDA requires the terminals to provide long-haul voice, data and video communications to support their ground-based midcourse defense (GMD) mission as they develop, test and deploy the Ballistic Missile Defense System, which provides a layered defense against ballistic missiles of all ranges in all phases of flight.

MDA's original requirement was for PM DSCS-T to provide two 38-foot diameter AN/GSC-52 terminals at Eareckson Air Station on Shemya. The first terminal was to be operational June 1, 2004, and the second by Sept. 1, 2004. In addition, MDA required PM DSCS-T to provide another AN/GSC-52 terminal at Fort Greely, AK, also to be operational by Sept. 1, 2004. Then, MDA accelerated their testing schedule and required a long-haul connection by April 1, 2004.



When the MDA accelerated its testing schedule and required a long-haul connection by April 1, 2004, PM DSCS-T provided, as an alternative, a new "D" version of an AN/TSC-86 terminal — with dual 20-foot diameter AS-3199 antennas to transmit and receive two satellite areas simultaneously.

The Army's PM DSCS-T continues work in installing two 38-foot diameter AN/GSC-52 terminals at Eareckson Air Station on Shemya Island, near the western end of the Aleutian Islands.



“This new requirement did not allow for the transportation and installation time for the first AN/GSC-52 to be available,” said Dan Singleton, installation team leader for the project for PM DSCS-T, which is part of PM, Defense Communications and Army Transmission Systems (PM DCATS). Singleton added that PM DSCS-T provided, as an alternative, a new “D” version of an AN/TSC-86 terminal — with dual 20-foot diameter AS-3199 antennas to transmit and receive two satellite areas simultaneously.

Singleton said PM DSCS-T had the AN/TSC-86D components flown to Shemya and “expeditiously installed,” allowing successful transmission traffic for MDA’s April test mission.

“In the event of any delays in the installation schedule caused by transportation or weather problems, the AN/TSC-86D can also assume the mission of the second AN/GSC-52 at Shemya,” said Singleton, stressing that weather is a huge factor in this project.

### Land of the 50-mph Fog

Shemya is not exactly the garden spot of the world. While the temperature remains fairly constant throughout the year, averaging 39 F, the highest recorded wind speed in the state of Alaska, 139 mph, was recorded on Shemya. The wind speed drops below 30 mph only during June and July. Aircraft pilots refer to it as “the land of the 50 mile-per-hour fog” — something to which Singleton can personally attest.

“Five times, we tried to fly there, but couldn’t due to high winds or lack of visibility,” said Singleton. “Sometimes the airplane would go halfway and come back, sometimes it would go all the way but couldn’t land.”

Still, Singleton said, PM DSCS-T is using a combination of surface ships for larger items and aircraft for smaller items and will have the two AN/GSC-52s installed and passing transmission traffic by the required June 1 and September 1 dates.

The PM DCATS GMD team — led by Steve McClintock, Assistant PM GMD; Victor Ferrer, Terminal Acquisition

Team Leader; and Singleton — all give credit to the team supporting them. This team includes the U.S. Army Information Systems Engineering Command, which engineered the interconnect facility; Tobyhanna Army Depot, which fabricated the AN/TSC-86D; and Harris Corp., which is building the AN-GSC-52s and unique shelters for them.

The installation at Shemya is part of the Army's AN/GSC-52 Modernization Program, which started in 2000. Under the program, PM DSCS-T has modernized 30 of 65 terminals, including upgrading radio frequency equipment, antenna motors and control, monitor and alarm systems. The upgrades will extend the life of the terminals by approximately 15 years.

PM DCATS, located at Fort Monmouth, NJ, is part of the Program Executive Office Enterprise Information Systems, headquartered at Fort Belvoir, VA.

*Stephen Larsen is the Public Affairs Officer for PEO EIS at Fort Monmouth, NJ. He has more than 20 years of experience writing about Army systems. He holds a B.A. in American studies from the College of Staten Island of the City University of New York.*

### **Lab Tackles Problem of Military Stress Fractures**

Stress fractures caused by repetitive pounding activities of physical training take a toll on enough of the military population, specifically recruits, that a major research program, Bone Health and Medical Military Readiness, was started in 1997 to address the problem. Armed with the latest research tools acquired in the past year, the Bone Health and Metabolic Laboratory at the U.S. Army Research Institute of Environmental Medicine (USARIEM), located at the U.S. Army Soldier Systems Center in Natick, MA, is ready to examine its piece of the puzzle.

“The program’s goal is to ultimately eliminate stress fractures,” said MAJ Rachel Evans, a research physical therapist and Director of Bone Health Research. “Stress-fracture cases have been reported since the late 1800s and today are one of the most common and potentially debilitating overuse injuries seen in military recruits, particularly women.”

Stress fractures are overuse injuries that occur when muscles transfer the overload of strain to the bone, most commonly

in the lower leg, and cause a tiny crack. “They’re tricky to see on an X-ray and disrupt physical training, sidelining troops while costing DOD as much as \$100 million annually in medical costs and lost duty time,” explained Evans.

The program is funded in part by Congress through the advocacy efforts of both the National Coalition for Osteoporosis and Related Bone Diseases and the American Society for Bone and Mineral Research, and managed by USARIEM. Overall, the research is multifaceted, examining factors such as gait mechanics, impact attenuation and genetics. USARIEM research physiologists are studying specifically how exercise and nutrition influence stress fractures.

“A systematic approach to the study of stress fracture was needed but hadn’t been done,” Evans remarked. “With this focused effort, and recent breakthroughs in technology, we’re hoping to come up with science-based strategies to identify individuals at risk for stress fracture, and then prevent their occurrence through innovative training interventions.”

COL Karl Friedl, USARIEM Commander, earlier in his career led a bone health study at Fort Lewis, WA, and said the understanding of bone physiology is significantly advancing and has widespread ramifications on health. “There has been no program in DOD that paid attention to bone health in the past,” Friedl continued. “Anything we can provide has the potential to save millions of dollars and enhance readiness through reduction in lost duty time, attrition from the military and medical cost-avoidance. We want to avoid occupationally induced stress fractures now, and osteoporosis and osteoarthritis later.”

Noninvasive methods of studying bone health at USARIEM started in the early 1990s with the first Dual Energy X-ray Absorptiometry (DEXA) machine to measure bone density. Still in the lab, the older DEXA machines have been superseded by the superior software and scanning times in a new Prodigy fanbeam bone densitometer, according to Robert Mello, a research physiologist and the Lab Director.

The Prodigy scans total body bone density in 5-inch instead of 1-inch increments, increasing precision and cutting scan time from 30 minutes to 6 minutes. Improved software provides a clearer picture of total body composition and bone mineral density.

“We can look at regional areas of interest, such as sections of the tibia, forearm or hip,” Mello said. “Before you had to scan an entire area — just to have this capability is a major

advance.” The Prodigy also allows researchers to scan small animals to study bone health.

While the Prodigy gives a front-to-back, 2-dimensional view, the peripheral quantitative computerized tomography machine allows researchers to analyze 3-D cross sections of spongy and outer bone. It’s designed to reconstruct a volumetric model of bone, from which bone density and, for the first time, bone geometry, can be determined. “We can now look at cross-sectional images where stress fractures are most common,” Evans said. “There’s also software to quantify muscle mass at that point.”

Another scanning instrument is the hand-held ultrasound bone sonometer, which examines bone quality by measuring the speed of sound of ultrasonic waves axially transmitted along the bone. The results can then be used as an aid in bone strength assessment. “We can identify bones that may be at risk,” Mello said. “The big thing is the portability so that it can easily be taken to the field.”

To help understand the relationship between muscle mass and bone strength, the lab purchased an isokinetic dynamometer to assess muscle strength and endurance for the major joints of the body, except the neck.

“Although research is focused on preventing stress fractures in the military, the information learned can apply to any population of physically active people to help prevent stress fractures,” stated Evans.

### Upcoming Studies

Four studies by USARIEM are planned in the next year to try to answer how muscle structure and function relates to bone quality. Researchers will examine whether differences in bone density and geometry exist between the right and left tibia, and then look at how that changes through physical training. One objective is to find out the proper training balance, to see where bone strengthening ends and weakening begins.

A third study will look at the effect of three 12-week exercise programs — aerobic training, strength training and a combination of the two — against a sedentary control group. “We want to look at what factors might build up bone,” Evans continued. “Maybe we can put recruits on a program before they go to basic training to ward off potential problems.”

Building on what they’ve learned in the experimental study, the plan is to transfer that information to actual basic

combat training units to examine what risk factors, such as slender bones or low bone density, predispose trainees to injury. Evans and Friedl gave examples of expected outcomes from current projects that USARIEM is managing. Soldiers with high risk for fracture may simply stand on a platform for 15-minute daily treatments of low-frequency vibration to stimulate bone development. Recruits might benefit from specific guidance on physical training, and calcium and vitamin D supplementation resulting from studies now being conducted with Navy basic trainees.

Various studies at USARIEM could lead to new recommendations on zinc and protein content in operational rations to optimize bone health. Even basic biology studies, such as one that demonstrated a refractory period in response of bone cells after mechanical stimulation, may affect military training with science-based advice to break up physical training into more than one session per day to maximize the benefit to bone health.

For more information about the Soldier Systems Center or USARIEM, go to <http://www.natick.army.mil> and <http://www.usariem.army.mil>.



Assistant Secretary of the Army for Acquisition, Logistics and Technology and the Army Acquisition Executive (AAE) Claude M. Bolton Jr. hosts the Acquisition Senior Leaders’ Conference, an invitation-only conference, each year. This year’s conference was held Aug. 9-12, 2004, in Louisville and Fort Knox, KY.

The 2004 conference theme was Army Acquisition Corps — *Supporting the Fight, Improving the Force and Building the Future*. Conference focus areas included Army transformation, the criticality of interacting with the U.S. Army Armor Center and School to prepare mounted force warriors for full-spectrum combat operation and the Army Acquisition Corps commitment to provide soldiers with systems critical to decisive victory now and in the future.

The conference highlighted the Army's G-staff for a "hot-seat" panel that enabled invited attendees to interact and ask pertinent questions. In addition, a "Strategic Partner Panel" was held with panel members that included the Army Materiel Command, Army Test and Evaluation Command, Defense Contracting Management Agency, Defense Logistics Agency and Defense Information Systems Agency. On Aug. 12, 2004, attendees ventured to nearby Fort Knox for a live-fire exercise, equipment static display and demonstration area.

Conference attendees were specifically invited by the AAE. Invitees included approximately 300 Army program executive officers, program managers, acquisition commanders and many of the Army's senior leaders.

If you have questions regarding this year's conference, contact Joan Sable at (703) 805-4357, DSN 655-4357 or [joan.l.sable@us.army.mil](mailto:joan.l.sable@us.army.mil). Information is also available online at [http://asc.army.mil/events/conferences/2004/slc\\_about.cfm](http://asc.army.mil/events/conferences/2004/slc_about.cfm).

## Conferences

### 2004 Network Centric Operations Conference

The 2004 Network Centric Operations (NCO) conference *Supporting Operations Abroad and in the Homeland* will be held Sept. 20-23, 2004, in Atlantic City, NJ. Sponsors are the U.S. Army Communications-Electronics Command and Fort Monmouth chapters of the Armed Forces Communications and Electronics Association, the Army Aviation Association of America, the Association of Old Crows and the Association of the U.S. Army.

The conference provides exhibits, tutorials and discussion on many aspects of NCO, including protocols for wireless networks, the impact of NCO on homeland security and on the battlefield, information operations in a networked environment and smart antenna systems. To register or for additional information, go to [www.NetCentricOps04.com](http://www.NetCentricOps04.com).

## Worth Reading

### Transforming Government Supply Chain Management

Edited by Dr. Jacques S. Gansler and Robert E. Luby Jr.  
Rowman & Littlefield Inc.  
Lanham, MD, 2003



National experts in supply chain management announced a series of recommendations in a new book, *Transforming Government Supply Chain Management*, which could dramatically increase the federal government's ability to deliver services more quickly and more reliably, while also generating billions of dollars in savings to taxpayers. The book is a collaborative project of the Center for Public Policy and Private Enterprise and the IBM Center for the Business of Government. It is edited by Dr. Jacques S. Gansler, Interim Dean and Professor at the University of Maryland School of Public Affairs, and Robert E. Luby Jr., Partner at IBM Business Consulting Services. Gansler previously served as the Under Secretary of Defense for Acquisition, Technology and Logistics. He is the Roger C. Lipitz Chair at the Center for Public Policy and Private Enterprise. Featured prominently in the book is the role of information technology in planning, tracking, ordering, controlling inventories and moving products.

"The intent of this book is to speed up the public sector's transformation to the best supply chain management techniques in use by the private sector," Gansler explained.

"There is an urgent need to improve the government's ability to deliver its broad range of products and services, particularly in the area of responding to threats of domestic terrorism and international conflicts."

The book looks at essential techniques to enable government to achieve standards that the commercial sector has already mastered. It incorporates findings from a series of dialogues between top government officials and top business leaders from companies including General Electric, Boeing Co., Cisco Systems, Caterpillar, Visa USA and Covisint. Senior government representatives also participated.



“The key to modernizing supply chain management in the private sector has been internal and external digital integration, including new linkages between logistics, procurement and finance operations,” said Luby, a long-time consultant for DOD and Defense Supply Centers and Defense Supply Chain Leader with IBM Business Consulting Services.

The authors say the government can and must do more to adopt available and proven tools for implementing a modern supply chain. These include:

- Instant, worldwide communications
- Interoperable, flexible and secure information technology
- Remote diagnostics and automated decision-making aids
- Modern, high-speed transportation

*Transforming Government Supply Chain Management* presents examples and case studies showing how public and private sector organizations have successfully implemented modern, information-based supply chain management techniques. For example, as customers move through checkout lines at Wal-Mart®, sales information is transmitted to suppliers, truckers and warehouse workers so they can make real-time ordering and shipping decisions. Barriers to using world-class supply chains — such as those operated by Wal-Mart and Fedex® — in government agencies are identified and specific recommendations provided for removing these barriers.

Public-sector supply chains, such as DOD’s logistics systems, average about 4 weeks for an order — when parts are on the shelf — and are not highly dependable or very flexible. The book’s recommendations address key issues to transform government supply chain management so that it achieves the best in commercial organizations, delivering services and products on demand, with an order-to-receipt time in 2 days or less, with near-perfect probability and considerable robustness to respond to unexpected contingencies and surge requirements.

Streamlining and modernizing government supply chains can be expected to result in substantial cost savings as well as delivery-time improvements. By comparison, commercial firms have found that significant supply chain improvements can lower costs by 10 to 30 percent. DOD spends more than \$80 billion annually on logistics support. In this case, even a 10 percent savings would free up \$8 billion annually for other pressing needs such as military equipment modernization.

## Call for Major Reform

The book presents a plan for how government can dramatically reform its supply chain management practices, including:

- Removing cultural barriers by making supply chain management transformation a top priority, engendering trust in the system, motivating employees to accept change and developing a partnership between the public and private sectors.
- Overcoming legal barriers like the “50/50” rule for staffing government depot work, mandatory paperwork, micro-purchasing requirements and preferential contracting rules.
- Tackling administrative hurdles by simplifying business case requirements and aggressively implementing information systems and information security.
- Addressing resource obstacles by upgrading information technology (IT) systems and providing sufficient funding.
- Transforming government logistics by catalyzing leaders; directing interoperability; implementing the right metrics; using commercial software, hardware and services; analyzing available logistics data; and implementing continuous improvements.

Also described in the book’s case studies are successful government initiatives such as the National Science Foundation’s (NSF’s) high-performing financial management system. By integrating grants management and human resource systems, NSF cut the time between its grant awards and receipt of funds from 2 to 3 months to just 48 hours.

In another government success story, the defense medical logistics community implemented a suite of IT applications and other supply chain tools, cutting inventory from 380 to 10 days and order-to-receipt time from 20 days to 24 hours. The savings were estimated to be \$1.2 billion within the first 4 years.

Gansler said, “Despite these successes, there has not yet been governmentwide implementation. We hope this project will provide the tools needed for government agencies, trainers and educators to fill that gap.”

## How to Obtain the Book

*Transforming Government Supply Chain Management* is published by Rowman & Littlefield Publishers Inc. It is available for purchase from online bookstores and from Rowman & Littlefield at [www.rowmanlittlefield.com](http://www.rowmanlittlefield.com).

## Contracting Community Highlights



### TACOM Acquisition Center Answers Army's Call for Help

*Daniel Mehney*

*Editor's Note: Mehney, the TACOM PARC, originally prepared this article for presentation to the TACOM acquisition workforce. With minor modifications for publication in Army AL&T Magazine, the article is printed in its entirety.*

## Rebuilding Iraq



**T**his issue's feature article highlights the Army's efforts to support the Coalition Provisional Authority's (CPA's) requirements to rebuild Iraq. When the Army was designated as the Executive Agency to provide contracting support in the rebuilding efforts for the Iraqi infrastructure, I immediately solicited support from many agencies to form a team that would be broad in scope to meet the contracting challenges that awaited us. I asked Daniel Mehney, the Principal Assistant Responsible for Contracting (PARC), U.S. Army Tank-automotive and Armaments Command (TACOM), to spearhead the team. Mehney provides the team with a wealth of knowledge and expertise in system acquisition and the source-selection process, ensuring that the Army provides the requisite support during a very critical period to rebuild Iraq.

The initial contract requirements for this effort totaled approximately \$18 billion dollars, were best-value competitive contracts requiring several source selections and the timeline to execute was set at 100 days or less. Mehney and his team of contracting professionals worked with the other agencies and awarded 10 contracts with a revised program total of \$5 billion dollars in an unprecedented 90-day timeframe to support the CPA requirements. I commend Mehney and his team for demonstrating true professionalism in effectively executing this urgent requirement to support our Nation at war. Here's Mehney's story in his own words.

**Ms. Tina Ballard**  
Deputy Assistant Secretary  
of the Army  
(Policy & Procurement)

Since mid-November 2003, I have been working on a special assignment from Washington, DC, managing the contracting and source-selection activity that is awarding the first round of design/build construction contracts to rebuild Iraq's infrastructure. These contracts will put in place construction projects in Iraq for electrical; public works; water and water resources; security, justice and safety; transportation; communications and building; and housing and health. I would like to share with you some of the experiences I've had during this time and their relationship to our business.

In November, the Army asked for TACOM's and other commands' assistance in bringing systems acquisition and source-selection experience to execute what was originally expected to total 17 construction contracts to rebuild Iraq's infrastructure. These 17 contracts were originally valued at approximately \$18 billion, but have subsequently decreased to 10 contracts and \$5 billion — still a very substantial workload.

The procurements were to be best-value competitions accomplished by numerous organizations, including six source-selection authorities and a similar number of evaluation boards. Additionally, an oversight board was established at Fort Belvoir, VA, to provide for the source-selection orchestration and coordination. To staff the contracting and source-selection activities, a team was assembled that varied in size throughout the project from 15 to, at its peak, more than 150 people operating from 12 geographic sites. The team members came from all segments of the government: the CPA, Army Corps of Engineers, Army Materiel Command (AMC), Navy Facilities Command, Defense Logistics Agency, Defense Contract Management Agency, Defense Contract Audit Agency and the Defense Acquisition University.

These construction projects will go far to stabilize Iraq, and are critical both to Iraq's citizens and to the U.S. government. It was no surprise that, as events unfolded, I noted again and again the importance of the work done every day — both within TACOM's Acquisition Center and in other

government organizations' acquisition centers. The nature of our work is absolutely critical to the success of our Army and in meeting the administration's objectives.

To address the contracting needs for reconstruction efforts in Iraq, DOD came to the Army, and the Army subsequently asked the TACOM acquisition community for support. The Army selected TACOM because of its expertise in managing major programs, and because they know we can manage diverse teams and oversee complex source selections. The tasks we were given were to plan the procurements, develop the solicitations, orchestrate the process and execute the resulting contracts. These actions were to be accomplished within a 100-day window.

Once we started, it became apparent that only limited preliminary work had been completed to develop an acquisition strategy and individual project statements of work. Because of the limited preparatory work, there was a demand on the time and capabilities of each team member that went well beyond normal expectations. The hours were long and the work complex throughout the entire process.

The team created a Contracting Center from nothing and without existing infrastructures or processes. In addition to that considerable challenge, we faced the inevitable frustrations of ever-changing customer needs. In our case, these needs included the often conflicting expectations and priorities of the administration, Congress, CPA, Iraqi citizenry and the Army's management structure. While these frustrations may differ in degree, they do not differ in kind from the ones you experience on a daily basis in your relationships with your customers. This forcible reminder has refocused me, and I'll appreciate your frustrations more readily as you are dealing with them.

The team members drawn from the various contracting communities were experienced, committed and professional at all levels, and the results clearly demonstrate what can be accomplished when our government asks. My participation in this process has provided me a broader appreciation of the talent and commitment that the defense contracting community has when it comes to accomplishing our Nation's goals and objectives.

The procurements were to be best-value competitions accomplished by numerous organizations, including six source-selection authorities and a similar number of evaluation boards. Additionally, an oversight board was established at Fort Belvoir, VA, to provide for the source-selection orchestration and coordination.

This experience also reminds me that within our contracting organization we regularly see this same dedication, spirit and commitment on programs such as Stryker, Future Combat Systems and our fielded combat and tactical systems. We see it in the installation support, sustainment and research and development contracting missions as well as in the contracts that are written and negotiated in our arsenals and depots. The TACOM Acquisition Center is recognized year after year for the quality and effectiveness of its workforce, and we all take pride in that accomplishment.

In offering these comments, I hope to remind you — as I have been reminded — that we are working to support our customers with high-quality, responsive products and services in everything we do. I also want to remind you that we function as a part of a bigger whole, operating as a part of the Army and DOD's acquisition community. What we do is critical to our Army's success and to our Nation's success in the international community.

Requests for our assistance will continue and, most likely, increase in the future. We should be prepared to help where and when we are most needed. The Army relies on us to handle all acquisition phases that fall within TACOM's mission. Because we do this well, we are sometimes asked to lead, or participate, in acquisitions outside our normal mission. Fortunately, the fact that we do our work so well means we can respond to extraordinary — as well as to ordinary — demands.

We all know our mission is critical and that TACOM's contracts result in the design, production, deployment and sustainment of equipment that much of the world sees on the nightly news. Our Acquisition Center, spanning seven geographic sites, has earned a superb reputation among our customers, AMC and Army senior leadership. Today's Army relies on us and, as the Army continues to change, it will continue to rely on us for contracting and acquisition management services.

In fulfilling the CPA's contracting mission requirements, the acquisition team received 88 proposals from business firms operating in the United States and in other countries. Four contracts were awarded without discussion and six required discussion prior to award. All 10 contracts were awarded

within the 100-day window. The awards were made — and debriefings were conducted for unsuccessful offerors — with no protests lodged relative to any of the awarded contracts. Immediately after award, the 10 contracts were transferred for administration and management to the Army's contracting office in Iraq. The office established at Fort Belvoir during the source-selection process was disbanded after the 10 Iraq infrastructure contracts were awarded. However, several members of that office have remained involved with the Iraq support mission and are now performing contracting missions in Iraq. We also wish to acknowledge additional procurements for the program management piece of this Iraq support effort, which was executed concurrently by the Pentagon Renovation Procurement Office. These procurements resulted in seven contract awards that were also executed in the same timeframe without protest.

*Daniel Mehney, TACOM PARC, submitted this article.*

### Army Contracting and Acquisition CP-14 Intern Training Program

The Army's Contracting and Acquisition Management Development (Intern) Program (CMDP) is a robust, sequential career development program that underpins the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) goal of cultivating contracting business managers. The CMDP is an entry-level, civilian career ladder program providing a solid foundation in the skills, processes and competencies required of contracting professionals throughout their careers.

Interns enter federal service under Federal Career Program 14, 1102 series (CP-14-1102) as full-time employees eligible for all benefits offered to the federal workforce. Accepted participants must possess a baccalaureate degree with a minimum of 24 academic hours in business-related courses.

Specialized training during the intern program is accomplished through formal instruction, on-the-job training, rotational cross-training and informal in-house training.

Successful management-training program completion leads to a full-performance federal acquisition career with the potential to move into mid- or high-level management positions. Graduates are well on their way to satisfying the requirements for Level II and Level III certification in the Contracting career field under the *Defense Acquisition*

*Workforce Improvement Act*, which in turn can lead to a classification of Corps Eligible or full Army Acquisition Corps membership.

The U.S. Army Acquisition Support Center is pleased to recognize the following FY03 Army CP-14 intern graduates. Congratulations to all!

#### Army Contracting Agency

Adams, Albert	Seckenheim, Germany
Belcher, Leisa	Fort Eustis, VA
Cafilisch, Christian	Fort Huachuca, AZ
Calderon, Ivette	Fort Huachuca, AZ
Chieffo, Jacob	U.S. Military Academy, West Point, NY
Farrell, Mike	Information Technology E-Commerce and Commercial Contracting Center (ITEC4), Alexandria, VA
Gates, Rufus	Fort Eustis, VA
Goodwin, Teresa	Fort Eustis, VA
Harris, Gloria	Fort Bragg, NC
Jackson, Michael	Fort Huachuca, AZ
McDell, Doretha	Fort Lee, VA
McFarlane, Patrick	Fort Lee, VA
Meheinbeck, Sarah	Fort Carson, CO
Murdi, Halyna	Fort Eustis, VA
Myers, Flora Marie	Fort Gordon, GA
Purpus, Mary	Fort McCoy, WI
Reinhart, Shawn	Weisbaden, Germany
Sharp, Dawn	Fort McCoy, WI
Spain, Terry	Fort Bragg, NC
Spaulding, Janet	ITEC4
Strang, Margaret	Fort Eustis, VA
Takamiya, Laurie	Presidio of Monterey, CA
Thomas, Umetria	Fort Bragg, NC
Torres, Ricardo	Fort Benning, GA
Tugman, William	Seckenheim, Germany
Ward, Doreen	Fort Eustis, VA
Williams, Charles	Fort Benning, GA
Wojciechowski, David	Fort Bliss, TX

#### Army Materiel Command

##### *Army Field Support Command*

##### *Rock Island, IL*

Carrell, Robert (Clay)	Thompson, David
McDonald, Carl	Weerasinghe, Don
Pagan, Roselyn	

*Aviation and Missile Command**Huntsville, AL*

Cameron, Elaine	Pearson, Donna
Clarke, Elbert	Pearson, Lester
Copeland, Matthew	Phillips, Charles
Crittenden, Emily	Ritchey, Valeria
Meradry, Lachara	Whitman, Constance

*Communications-Electronics Command**Fort Monmouth, NJ*

Affinito, Jason	Sweeney, Colleen
Colyard, Janet	Sweet, Gerald
Patel, Pinkesh	

*Tank-automotive and Armaments Command (TACOM)**Anniston, AL*

Carlston, Linda

*TACOM-Picatinny, NJ*

Arber, Jennifer	Gleason, Eric
Archbald, Kendra	Johnson, Ron
Candia, David D.	Nash, Kelly
Cramer, Geoffrey	Scherr, Beth
Duffy, Jackie	Turner, James
Etro, Dave	Yim, Anna
Galicki, Josh	

*TACOM-Rock Island, IL*

Breitbach, Ryan	Deanda, David
Chelstrom, Cynthia	

*TACOM-Warren, MI*

Bean, Jeffrey R.	Nalley, Betty J.
Burrows, Todd R.	Nelson, Elaine O.
Casimiro, Joseph	Pilkowski, Sharon A.
Euseary, Marilyn B.	Polcyn, Gregory A.
Gregory, Michelle A.	Riese, Dorothy Y.
Iler, Karen M.	Roth, Deborah L.
Kowalski, Elizabeth J.C.	Zielinski, Joyce
Mowery, Madeleine	

**U.S. Army Robert Morris Acquisition Center  
Aberdeen Proving Ground, MD**

Russell, W. Tony



## Looking for Career Broadening Opportunities? Then Look No More!

The Contracting Career Program Office is again offering an excellent training event. Because of popular demand, the office has added another opportunity for Contracting and Acquisition Career Program (CP-14) members to attend *The Commercial Business Environment — A Primer for Department of Defense Managers*. The class is scheduled for Nov. 28-Dec. 10, 2004, at the Darden Graduate School of Business Administration, University of Virginia, Charlottesville, VA. Applications for this class are due by Oct. 15, 2004.

Additionally, the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology is offering 1-year developmental assignments to all DA CP-14 employees at the GS-12 level (or Acquisition Demonstration broadband equivalent). The Contracting Career Program Office funds travel and temporary duty costs. For details, see the Oct. 31, 2003, memorandum titled *FY2004/2005 Competitive Professional Development (CPD) Announcement for the Contracting and Acquisition Career Program (CP-14) (Updated)*.

For further information on either of these opportunities, contact Sally Garcia at (703) 805-1247, DSN 655-1247 or e-mail [sally.garcia@us.army.mil](mailto:sally.garcia@us.army.mil). You can also find information online at <http://asc.army.mil/programs/cp/opportunities.cfm>.

## Contracting Successes

**AMCOM Awards Contract for Development of the JCM Weapon System.** The U.S. Army Aviation and Missile Command's (AMCOM's) Joint Common Missile (JCM) Team, led by Contracting Officer Blannie Batts, awarded a System Development and Demonstration (SDD) Cost Plus Incentive Fee contract award May 5, 2004, to Lockheed Martin Corp., Orlando, FL, for development of the JCM weapon system. The JCM represents the next generation of an extended-range, advanced technology, air-to-surface, multiple-sensor missile system for deployment on rotary-wing and fixed-wing platforms.

The SDD contract covers 4 years and will be executed in two phases: Phase I, a 14-month risk mitigation effort; and Phase II,

An exterior view of two of the medical hold buildings shortly after delivery.



which completes SDD system integration/demonstration requirements. The Department of the Army is the JCM program's lead service. The program is managed by the Common Missile Project Office, Program Executive Office for Tactical Missiles. JCM weapon system development will be conducted as a joint program with the Department of the Navy, and a cooperative program with the United Kingdom.

**Army Contracting Agency (ACA) Southern Region.** The ACA Southern Region, Fort Stewart, GA, Directorate of Contracting (DOC) is recognized for a successful venture between the U.S. Army and a Native American-owned business, Chickasaw Nation Industries (CNI) Inc. Nineteen medical hold buildings were leased under the provisions of an urgent project directed by the Fort Stewart Directorate of Public Works in cooperation with the Huntsville Corps of Engineers.

CNI Inc. completed delivery of the Fort Stewart medical hold buildings March 22, 2004, under the terms of a 12-month operation lease. The 19 relocatable buildings each house 16 soldiers and provide occupants laundry and basic cooking areas. The



Mitchell Wasson, left, Fort Stewart DPW, accepts the keys to the portable buildings from Richard Laden, CNI Project Administrator, while Willie Barnett, Fort Stewart DOC, looks on.

buildings will be used during the current surge of mobilization and demobilization activity at Fort Stewart to house soldiers who are on limited duty resulting from medical conditions or wounds.

### The DAR Council Corner

We welcome Barbara Binney, Office of the Deputy Assistant Secretary of the Army (Policy & Procurement), as the new Army Defense Acquisition Regulatory (DAR) Council Policy Representative and extend our sincere appreciation to Ed Cornett, Army Materiel Command, for serving as the Army's DAR Council Policy Representative for the past 6 months. We also welcome Marilyn Harris, Intelligence and Security Command Principle Assistant Responsible for Contracting (PARC), as the new Army member of the Contract Placement Committee and extend our appreciation to Tom Bushnell, Defense Contracting Command-Washington, who previously served as the Army committee member.

In *Army AL&T's* March-April 2004 issue, Cornett explained how to participate in the acquisition policy process. In addition to the weekly DAR Council highlights that are sent to the PARCs, policy chiefs and the Army committee members, *Army AL&T* includes a DAR Council Corner to keep the contracting community abreast of DAR Council actions. We are open to your ideas and suggestions of useful items for this column. E-mail your comments to Binney at [barbara.binney@saalt.army.mil](mailto:barbara.binney@saalt.army.mil). Because of the magazine's bimonthly publication schedule, keep in mind that these items or topics may not appear for approximately 2 to 3 months after submission.

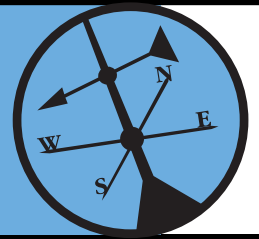


### Correction

In the March-April issue of *Army AL&T* Magazine, the article *Moving Technology Forward — Mobile Parts Hospital Manufactures Replacement Parts in Kuwait* should have stated that the Mobile Parts Hospital manufactured pintle assemblies and attaching locking pins for 5.56mm Squad Automatic Weapons. We regret this error.

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These exciting opportunities are open to military and civilian members of the Army's Acquisition, Logistics and Technology Workforce. Information on available opportunities can be found in the AETE/ATAP Catalog at <http://asc.army.mil/pubs/aete>. For more information on the application process, visit <https://www.perscomonline.army.mil/OPfam51/ambmain.htm>.

**Don't miss out on this great opportunity to get ahead in your acquisition career – be sure to apply today! Applications are accepted until Sept. 3, 2004, and the Selection Board will meet on/about Oct. 12, 2004. Please contact your Acquisition Career Manager (ACM) for additional assistance and information. You can find a regional list of ACMs at <http://asc.army.mil/contact/acms.cfm>.**

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- **Enterprise Excellence and the Soldier and Ground System Enterprise**
- **The Industrial Base Challenge – Delivering the Right Ammunition, at the Right Place, at the Right Time**
- **Transforming Army Acquisition**



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