

ARMY AL&T

April-June 2010



JOINT SYSTEMS AND EQUIPMENT



UNITED STATES ARMY
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ACQUISITION SUPPORT CENTER

From the Army Acquisition Executive

ASAALT Welcome and Introduction



This column is an excellent way for me to communicate on a regular basis with the Army's Acquisition, Logistics, and Technology (AL&T) community. I have been reading this award-winning publication for many years and find it to be a valuable resource. With this issue, I would like to share a few things that are uppermost in my mind as I take on my new leadership duties.

At the outset, let me state that I am ready to contribute experience, dedication to duty, and ethical discipline during my tenure as the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASAALT). I am deeply honored by the trust the President of the United States placed in me by nominating me to serve as the ASAALT; by the confirmation of my nomination by the U.S. Senate, particularly members of the Senate Armed Services Committee; and by the confidence placed in me by the Secretary of the Army.

It is a great privilege for me to be given this opportunity to lead you, the dedicated professionals of the Army's 41,000-member AL&T Workforce, a community charged with equipping and sustaining the world's most capable, powerful, and respected Army. It is you, the men and women of the Army AL&T community—military and civilian—who will see that policies get implemented, that systems are procured and fielded with the latest technology, and that our Soldiers maintain their decisive edge for current and future expeditionary operations.

As background, I have been in the AL&T business for 43 years. I served 34 years on active duty as an Army officer, both in peacetime and combat. My first acquisition job was as a member of the source selection team for what was then called SAM-D (Surface-to-Air Missile, Development)—now the Patriot missile system. My most recent technology job was chairing the Board on Army Science and Technology for the National Academies and the National Research Council.

In 1991, I was selected as the first director of the U.S. Army Acquisition Corps, and I became convinced that the key to program management success is people. I still believe that today. I also

believe that technology makes a difference on the battlefield. For this reason, the interaction between the technologist and the warfighter must be virtually continuous. Our leadership must aggressively pursue innovative solutions and stimulate an information

exchange among warfighters, industry, academia, and Army technologists. I also believe that logistics demands intensive management and close cooperation between operational forces and the sustaining base.

I am pleased that this issue of *Army AL&T Magazine* is dedicated to joint systems and equipment. In the last 8 years, we have seen all services working together to support successful combat, peacekeeping, and humanitarian operations. Our U.S. military is the finest in the world, in part, because our leaders and service members have embraced joint warfighting. For example, in response to deadly improvised explosive devices in Iraq and Afghanistan, it took just 10 months for the Army and the U.S. Marine Corps to define requirements, procure, and field the Mine Resistant Ambushed Protected vehicle to significantly enhance force protection.

These are very hard times economically, so it's even more important today to manage our acquisition systems, including our joint systems, very carefully. The Army must obtain maximum value for its investment. We must ensure that our programs are healthy and that any problems are identified at the earliest possible stage so program adjustments can be made to keep them healthy. By building more discipline, oversight, and transparency into the process, we are better able to provide services, deliver mature technologies, and rapidly procure the equipment that our Soldiers require and deserve.

In going about your daily work, I ask that you do so with integrity, honor, and courage. These qualities are of overriding importance in successful enterprises. The honor and integrity to do what is right for our programs and, ultimately, our Soldiers, is only matched, in my mind, by the courage to stand and speak the truth because it is your responsibility to do so.

I look forward to working with you to keep the Army strong, up-to-date, efficient, and effective.

Dr. Malcolm Ross O'Neill
Army Acquisition Executive



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April-June 2010

ACQUISITION, LOGISTICS & TECHNOLOGY

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Program Executive Office (PEO) Integration Aligns Joint Weapon Systems Across Brigade Combat Teams (BCTs)

Sam Tricomo

Page 4

Features

Joint Program Executive Office Chemical and Biological Defense (JPEO-CBD) Provides Joint Weapon Systems Total Life-Cycle Management

LTC Vincent Johnston

Page 7



Joint Combat Identification (ID) Marking System (JCIMS) Continues to Save Lives

Brandon Pollachek

Page 11

DOD Biometrics—Lifting the Veil of Insurgent Identity	14
Jody Kieffer and Kevin Trissell	
Joint Light Tactical Vehicle (JLTV) Prototype Builds Underway	18
Kris Osborn and Ashley John	
Mine Resistant Ambush Protected (MRAP) All-Terrain Vehicles (M-ATVs) Deploy to Afghanistan Through Joint Service Efforts	22
Barbara Hamby	
The Joint Cargo Aircraft (JCA)—Transfer of an Acquisition Category (ACAT) 1D Program to the U.S. Air Force (USAF)	26
COL Anthony W. Potts and Roderick A. Bellows	
UH-60 Recapitalization (Recap)—Black Hawk's Cornerstone for Fleet Sustainment	30
COL L. Neil Thurgood and Zachary A. Best	
UH-72A Lakota—A Key Component of Army Aviation Modernization	33
COL L. Neil Thurgood and LTC David Bristol	
Joint Integration of Unmanned Aircraft Systems (UAS)	36
Kellyn D. Ritter	



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April-June 2010

ACQUISITION, LOGISTICS & TECHNOLOGY

Features

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Fire Support Command and Control (FSC2) Team's Continued Quest for Optimal Joint Fires

Dr. Gary Notte

Page 40

Army Insensitive Munitions Board (AIMB) Aids in Weapon Systems' Development and Acquisition

Kirk E. Newman

Page 44



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Picatinny Insensitive Munitions (IM) Efforts Paying Dividends

Rene Kiebler and Paul Manz

Page 48

Army Team Wins DOD Award for Satellite Communications (SATCOM) Project 51
Stephen Larsen

Project Manager Combined Arms Tactical Trainers (PM CATT)—Supporting the Reserve Component (RC) 54
COL Francisco A. Espailat and LTC Jay A. Smith

Agility in the Operational Environment—The Value of Army Science Advisors (51S) to Service and Combatant Commanders 57
LTC Rich Lonardo

The U.S. Army Chemical Materials Agency (CMA)—Making Chemical Weapons History One Milestone at a Time 60
Argie Sarantinos-Perrin

Departments

Career Development Update 63
Contracting Community Highlights 64

For more news, information, and articles, please visit the USAASC Web site at <http://asc.army.mil>. Click on the *Army AL&T Magazine* tab located on the bottom of the flash banner in the center of the page.

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.

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Joint Systems and Equipment

This issue of *Army AL&T Magazine* is dedicated to joint systems and equipment. As Dr. Malcolm Ross O'Neill, our new Assistant Secretary of the Army for Acquisition, Logistics, and Technology, stated in his column, for the last 8 years the military services have been working together to support successful combat, peacekeeping, and humanitarian operations. The below theme articles spotlight just some of the ways the U.S. Army's program executive offices (PEOs) contribute to the joint effort both in CONUS and in theater.

- *Program Executive Office (PEO) Integration Aligns Joint Weapon Systems Across Brigade Combat Teams (BCTs)* describes how PEO Integration continues to develop an incremental network integration approach to all BCTs according to the Army Force Generation Model.
- *Joint Program Executive Office Chemical and Biological Defense (JPEO-CBD) Provides Joint Weapon Systems Total Life-Cycle Management* discusses JPEO-CBD's role as the focal point for integrating CBD research, development, procurement, and fielding efforts throughout DOD.
- *Joint Combat Identification (ID) Marking System (JCIMS) Continues to Save Lives* explains how JCIMS, which is fielded to the U.S. Army and U.S. Marine Corps (USMC), provides friendly forces a capability that helps to positively identify vehicles on the battlefield and reduce the risk of friendly fire. JCIMS is managed by PEO Intelligence, Electronic Warfare, and Sensors' Product Manager ID and Meteorological Sensors.
- *DOD Biometrics—Lifting the Veil of Insurgent Identity* outlines how use of biometric information provides instant access to an indisputable means of identification. Project Manager (PM) DOD Biometrics, part of PEO Enterprise Information Systems (EIS), has numerous biometrics systems that are used regularly in theater.
- *Joint Light Tactical Vehicle (JLTV) Prototype Builds Underway* describes how the JLTV Technology Demonstration phase industry teams have begun to build government prototypes, engineering an unprecedented blend of mobility, payload capacity, and survivability. The U.S. Army-USMC JLTV program falls under PEO Combat Support and Combat Service Support.
- *Mine Resistant Ambush Protected (MRAP) All-Terrain Vehicles (M-ATVs) Deploy to Afghanistan Through Joint Service Efforts* discusses the significant milestones achieved by the MRAP Joint Program Office in delivering M-ATVs to operating forces as quickly as possible.
- *The Joint Cargo Aircraft (JCA)—Transfer of an Acquisition Category 1D Program to the U.S. Air Force (USAF)* is the success story of the JCA and actions in the ongoing transfer of the program from the Army to the USAF.
- *UH-60 Recapitalization (Recap)—Black Hawk's Cornerstone for Fleet Sustainment* describes the history of PEO Aviation's UH-60 recap program.
- *UH-72A Lakota—A Key Component of Army Aviation Modernization* discusses the rapid acquisition, production, and fielding of UH-72A aircraft as well as further enhancements to the aircraft's capabilities.
- *Joint Integration of Unmanned Aircraft Systems (UAS)* provides highlights of the 2009 Army Aviation Association of America's UAS Symposium, where military senior leaders discussed plans for UAS integration among the services.
- *Fire Support Command and Control (FSC2) Team's Continued Quest for Optimal Joint Fires* describes the role played by the FSC2 division, which falls under PEO Command, Control, and Communications Tactical's PM Battle Command, in increasing collaboration in joint fires.
- *Army Insensitive Munitions Board (AIMB) Aids in Weapon Systems' Development and Acquisition* describes how the AIMB coordinates the integration of research, development, testing, and evaluation products with the practices of acquisition managers to mitigate the inherent hazards of weapon systems.
- *Picatinny Insensitive Munitions (IM) Efforts Paying Dividends* explains how IM testing and improvement by PEO Ammunitions' PM Combat Ammunition Systems and the U.S. Army Armament Research, Development, and Engineering Center have made great strides in shell design, propellant and explosive formulation, and packaging improvements.
- *Army Team Wins DOD Award for Satellite Communications Project* relates how PEO EIS's Joint Telemedicine Network (JTMN) implementation team was honored with the DOD Chief Information Technology 2009 Team Award and describes the capabilities that JTMN provides.

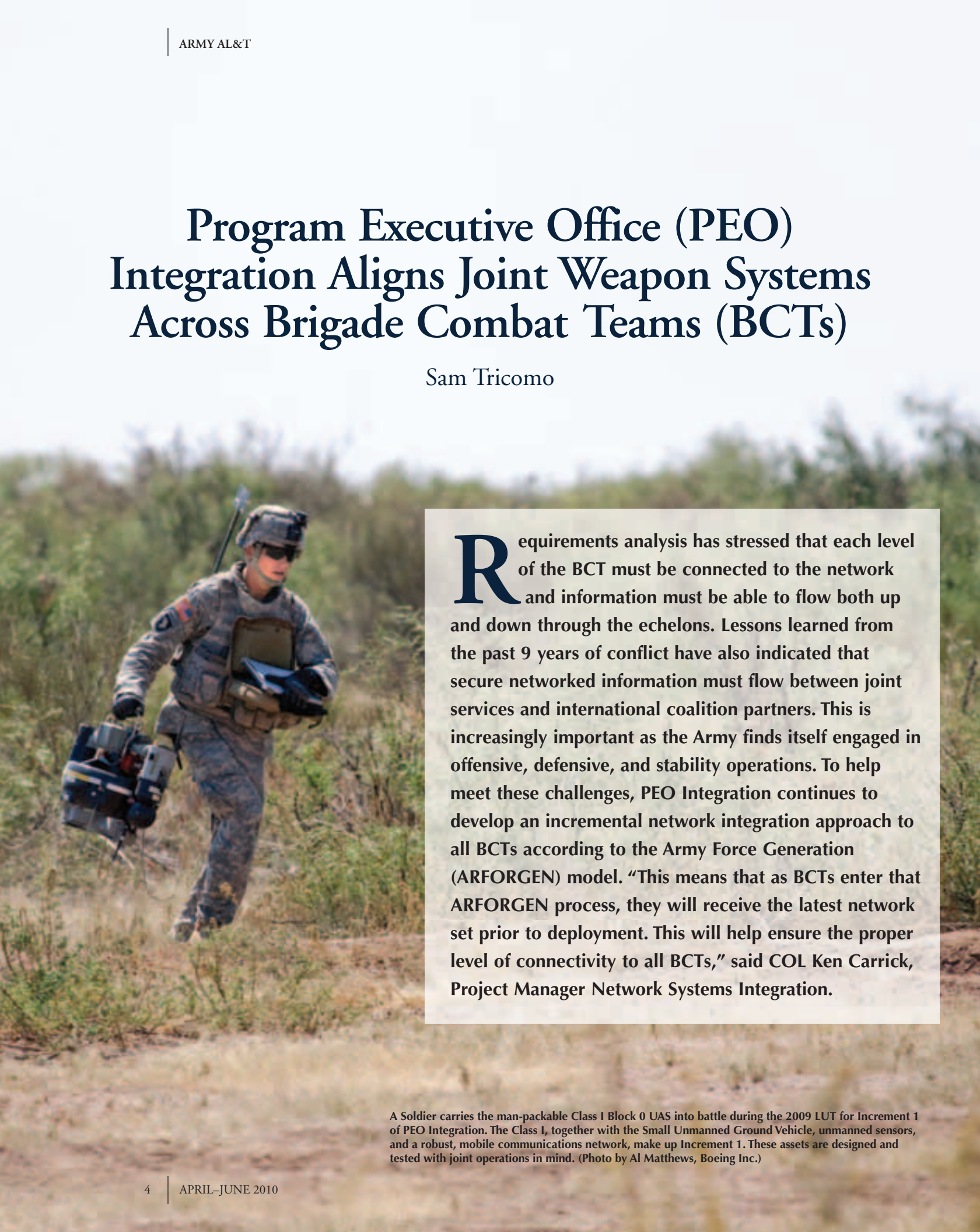
In addition to the above theme articles, other feature stories are: *Project Manager Combined Arms Tactical Trainers (PM CATT)—Supporting the Reserve Component; Agility in the Operational Environment—The Value of Army Science Advisors (51S) to Service and Combatant Commanders; and The U.S. Army Chemical Materials Agency (CMA)—Making Chemical Weapons History One Milestone at a Time.*

We hope you enjoy reading this issue of *Army AL&T Magazine*. Please also visit <http://asc.army.mil> and click on the Publications tab to view our monthly electronic magazine, *Army AL&T Online*.

Cynthia D. Hermes
Editor-in-Chief

Program Executive Office (PEO) Integration Aligns Joint Weapon Systems Across Brigade Combat Teams (BCTs)

Sam Tricomo



Requirements analysis has stressed that each level of the BCT must be connected to the network and information must be able to flow both up and down through the echelons. Lessons learned from the past 9 years of conflict have also indicated that secure networked information must flow between joint services and international coalition partners. This is increasingly important as the Army finds itself engaged in offensive, defensive, and stability operations. To help meet these challenges, PEO Integration continues to develop an incremental network integration approach to all BCTs according to the Army Force Generation (ARFORGEN) model. “This means that as BCTs enter that ARFORGEN process, they will receive the latest network set prior to deployment. This will help ensure the proper level of connectivity to all BCTs,” said COL Ken Carrick, Project Manager Network Systems Integration.

A Soldier carries the man-packable Class 1 Block 0 UAS into battle during the 2009 LUT for Increment 1 of PEO Integration. The Class 1, together with the Small Unmanned Ground Vehicle, unmanned sensors, and a robust, mobile communications network, make up Increment 1. These assets are designed and tested with joint operations in mind. (Photo by Al Matthews, Boeing Inc.)



Photos, video, and text data captured via Increment 1 assets, such as the Class 1 Block 0 UAS, are fed to Soldiers in high-mobility multipurpose wheeled vehicles with special Network Integration Kits. From there, this data and imagery can be sent to commanders in the Tactical Operations Center. (Photo by Al Matthews, Boeing Inc.)

Joint Experiments and Tests

Working within this new strategy, PEO Integration's Joint Interagency and Multinational Interoperability (JIMI) Office is continuing to work plans for joint service network experiments and demonstrations. "In today's complex operational environment, we cannot develop the network alone. Throughout the incremental development process, we will continue to work with joint service and international partners to develop relevant experimentation exercises," said Carrick. "These exercises will become the building blocks for how we will operate with the incremental network sets in joint operational environments."

During 2009, PEO Integration performed several software and hardware tests with joint services and international partners. One of the most important was the joint experiment

Earth, Wind, and Fire (EWF)—a 3-year, U.S. Army Training and Doctrine Command-based, fully integrated, joint experimentation environment between the Army and U.S. Air Force (USAF). The experiment provides qualitative and quantitative data on airspace command and control and fires deconfliction at brigade and battalion levels. Objectives met for this experiment include integrating systems developed under the former Future Combat Systems program with the Fort Sill, OK, Battle Lab Fire Simulator. PEO Integration was able to employ and evaluate System-of-Systems

Common Operating Environment (SOSCOE) technologies. SOSCOE is middleware used on tactical systems that are often mobile with potentially degraded networking over an ad hoc network. The team also exercised infantry BCT architectures and used Web services and collaboration SOSCOE tools as joint fires enablers.

Coupling Joint Programs and Enduring Partners

As lessons from past and current conflicts show, the necessity for cooperation and interoperability includes enduring partners and allies. To this end,

Throughout the incremental development process, we will continue to work with joint service and international partners to develop relevant experimentation exercises.

PEO Integration maintains persistent liaison with the USAF Electronic Systems Command and USMC to ensure our networks enable joint operations, whether it is execution of joint fires, air-ground integration, or SA.

2009 saw the success of Multinational Experiment (MNE) 3.0 between the U.S. and United Kingdom (U.K.) armies. Experimentation was conducted at Fort Monmouth, NJ, as a collaborative effort involving PEO Integration, JIMI, Joint Tactical Radio System (JTRS) Joint PEO, Tactical Communications Systems Program Administration, U.S. Army Communications-Electronics Command Software Engineering Center Support Team, and U.S. and U.K. industry teams.

“Building applications in line with multinational requirements at the onset increases the U.S. Army’s own interoperability and that between nations, their networks, and battle command applications. This eliminates stovepiped systems that inhibit communication and interoperability between systems, service branches, and other nations,” said MAJ Troy Crosby, who, at the time of the experiment, was the lead for joint and MNE efforts. “We are going to deploy or go into a theater with joint or coalition partners; it’s just the way the Army works now. So, instead of trying to work from a system and then make it interoperable with DOD’s sister services and then our coalition partners, we’re trying to build it in from the beginning.”

Experimentation involved a mix of real and simulated systems set in a scenario involving a U.S./U.K. combined expeditionary force operating in a complex environment. The experiment was structured to meet four key stakeholder objectives:

- Investigate and evaluate Future Rapid Effects System/PEO Integration

command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) interoperability and U.S./U.K. C4ISR interoperability capability options.

- Assess functional and performance characteristics of the JTRS Bowman Waveform (JBW).
- De-risk U.S./U.K. capability options using Web services.
- De-risk U.S./U.K. land environment C4ISR interoperability capability options.

Plans are ongoing for MNE 4.0 to be held in October 2010 as part of the Limited User Test (LUT) for Increment 1 of the Early Infantry BCT. In the experiment, the Early Infantry BCT infrastructure will exchange situational awareness (SA) and calls for fire messages with U.K., Canadian, and Australian systems at White Sands Missile Range, NM. This event will examine the JBW with U.K. type 1 cryptology in a radiating environment.

What’s Ahead?

Progressing forward, PEO Integration is planning for joint information exchanges during Joint Expeditionary Force Experiment (JEFX)-10/AGILE Fires with the joint USAF-Army Division Joint Air/Ground Integration Cell. The exchanges will focus on examining SA and tracking where friendly and nonfriendly forces are located on the battlefield, and includes passing images, text, fires data, and mapping capabilities among users. Also, planning continues toward integrating U.S. Marine Corps (USMC) and U.S. Navy (USN) assets into JEFX-10/AGILE Fires.

Further interoperability experimentation plans are being worked with USMC. These experiments will help identify gaps and issues with USAF, USN, and USMC systems, software, and networks that enable critical message sets and information exchange. PEO Integration maintains persistent liaison with the USAF Electronic Systems Command and USMC to ensure our networks enable joint operations, whether it is execution of joint fires, air-ground integration, or SA.

As PEO Integration continues to work across services to bring important technology to the warfighters of tomorrow, the fruits of this effort can be seen in the field today. In 2007, USN acquired 20 micro-air vehicles for evaluation in Iraq by the U.S. Multiservice Explosive Ordnance Disposal (EOD) Group. These vehicles represent precursor technology to the Class I Unmanned Aircraft System (UAS) that will be fielded as part of PEO Integration’s Increment 1 equipment set. The Class I UAS provides a networked, hover-and-stare capability to lower command echelons and its sensor platform can take still and video imagery, which provides key intelligence for precision targeting and surveillance operations. After the initial evaluation, the USN announced a requirement for 186 of the systems to be used for EOD work. The systems also proved valuable to National Guard troops. Fifteen Class I UAS were used for reconnaissance and other protection operations by members of the Pennsylvania National Guard’s 56th Stryker BCT when they deployed to Iraq in 2008, thus showing the Army’s commitment to equipping its total force with PEO Integration’s BCT modernization capabilities.

SAM TRICOMO is a Media Relations Specialist with PEO Integration. He holds a B.S. in public relations with a concentration in crisis communications from Western Michigan University.

Joint Program Executive Office Chemical and Biological Defense (JPEO-CBD) Provides Joint Weapon Systems Total Life-Cycle Management

LTC Vincent Johnston

Since 2003, one office has been the single focal point for integrating CBD research, development, procurement, and fielding efforts throughout DOD. In addition to this role, the JPEO-CBD also enhances the life-cycle management approach implemented to transform paradigms and move from multiservice support processes to a joint service sustainment strategy within the CBD program (CBDP). Led by BG Jess A. Scarbrough and headquartered in Falls Church, VA, the JPEO-CBD is increasingly involved in the operations and support (O&S) phase of the systems acquisition process by augmenting the services' statutory responsibility to equip, train, and sustain the forces.

Here, 12th Chemical Co. Soldiers, wearing fully encapsulating Level-A protection, use a chemical vapor detector to "sniff" for oxygen displacement and hazardous chemical vapors coming from a suspected clandestine lab entrance during a scenario training exercise administered by a Mobile Training Team from the U.S. Army CBRN School. (U.S. Army photo.)

Guiding Principles

Affordability, interoperability, and common operating picture are not just buzz words, but guiding principles to maximize resources and provide the Nation's warfighters with the best capabilities possible. These principles also follow the guidance of the *2006 Quadrennial Defense Review*, which emphasizes joint logistics and calls for shifting the focus from service-specific programs to joint capabilities. This approach is a necessity, as well as good business sense, and is at the center of the JPEO-CBD's life-cycle management philosophy.

Joint Project Managers (JPMs)

JPMs develop, field, and support the sustainment process of the equipment provided to warfighters. From the early stages of the acquisition process, JPMs coordinate and formulate joint sustainment support strategies. This enterprisewide involvement in the process leads to buy-in, as well as integration of valuable emerging and proven support concepts, successfully employed across the joint services.

As the materiel developer for the CBDP, the JPEO-CBD's approach to total life-cycle systems management implements multipurpose strategies to support warfighters with the most combat-effective capabilities within the most efficient business processes. These strategies are intended to modernize the portfolio, maintain the technological edge, and reduce the O&S costs to the services. Within this construct, trade space exists where considering alternative business processes or realigning priorities yield high return on investment (ROI) within the CBDP. One such approach aims at modernizing the force in areas where high ROI significantly increases readiness and decreases O&S costs to the services.

Joint weapon systems sustainment is complex, must address all the individual services' unique operational

As the materiel developer for the CBDP, the JPEO-CBD's approach to total life-cycle systems management implements multipurpose strategies to support warfighters with the most combat-effective capabilities within the most efficient business processes.

requirements, and must be "born joint" from the beginning of the acquisition process. The fastest way to achieve this goal is to accelerate the modernization pace by introducing a joint-born system with joint sustainment strategies.

Accelerating Fielding of Current Systems

Approximately 50 percent of the CBDP systems in the field today are more than 20 years old and require significant time, effort, and resources to keep them operational. The O&S costs required to maintain these systems are a tremendous burden to the services and grow every year. Compounding the problem is the impact of several "service-unique" systems that remain in the inventory. Many of these systems are low-density items and, in some cases, experience diminishing manufacturing sources and material shortages that increase the services' costs to sustain. Accelerating the fielding of newer systems increases readiness and reduces O&S costs, logistics footprint, and training requirements.

The Joint Chemical Agent Alarm (JCAD) illustrates this concept well. This system replaces up to three legacy systems in the field today: M8A1 Chemical Agent Alarm (20-plus years old), Automatic Chemical

Agent Detector and Alarm (15 years old), and Improved Chemical Agent Monitor (15 years old). The O&S cost for a JCAD is approximately \$457 per year. Conversely, the combined annual O&S cost for the aforementioned three legacy systems is approximately \$6,700 per year. Thus, for every JCAD fielded, the services' O&S bill drops approximately \$6,200 dollars per year.

Another such instance is the Joint Service General Purpose Mask (JSGPM), a lightweight, nuclear-, biological-, and



The JCAD is capable of detecting blood agents and toxic industrial chemicals, capabilities not seen in currently fielded hand-held detectors. Here, a Soldier dressed in Mission-Oriented Protection Posture gear surveys the surface of a vehicle with a JCAD. (U.S. Army photo.)

chemical-protective mask system consisting of mask, carrier, and accessories. It incorporates state-of-the-art technology to protect U.S. forces from actual or anticipated threats. The mask components are optimized to reduce their impact on the wearer's performance and to maximize their ability to interface with protective clothing. The JSGPM is replacing the M40/M42 series of masks for the U.S. Army and the U.S. Marine Corps (USMC) ground and combat vehicle operations, and the MCU-2/P series for the U.S. Air Force and U.S. Navy ground and shipboard applications.

Accelerating modernization of equipment is one aggressive measure aimed at improving capabilities, while reducing costs and logistics footprint. However, it is not the only focus of rethinking the way we do business. Another way of addressing areas to improve is through an enterprisewide approach to enhance relationships and business processes within the community.

Organizational Relationships

Joint sustainment is the most challenging part of the joint acquisition process. Successfully implementing joint sustainment strategies requires an understanding of the operating environment and proactively engaging all stakeholders early and throughout the acquisition process. Most importantly, it requires the development of relationships that foster institutional trust among all parties. To this end, JPEO-CBD regularly hosts monthly and quarterly joint reviews where stakeholders come to discuss and resolve issues, which vary from systems in the acquisition process to post-fielding

and sustainment activities. These forums create a seamless integration of responsibility and authority at all stages of an equipment's life cycle.

Working these issues and recommending these strategies is the purpose of the Joint Logistics Advisory Council for CBD (JLAC-CBD), which is chartered and composed of all stakeholders in the CBDP. Its main purpose is to recommend servicewide business process improvements that address best practices for the JPEO-CBD. The JLAC-CBD focuses on exploring total life-cycle systems management process improvements that are within the JPEO-CBD's authority to implement. Chartered in 2006, this body promotes cooperation and open communication, identifies and recommends business process improvements, and engages stakeholders throughout the acquisition process to promote joint sustainment strategies.

The Joint Materiel Release (JMR) Program is an example of the cooperative nature of this body and the significant impact its recommendations have on joint sustainment. In September 2007, the U.S. Army delegated Materiel Release Authority for CBDP to the Joint Program Executive Officer CBD, also the program's



LCpl Michael C. Myers, CBRN Defense Specialist, 3rd Marine Division, III Marine Expeditionary Force, adjusts the M50 JSGPM. The JSGPM is replacing the M40/M42 series of masks for the Army and USMC ground and combat vehicle operations. (USMC photo by LCpl Abigail Wharton.)

Milestone Decision Authority (MDA). The program's goal is to take the four separate service processes and integrate them into a single JMR process to eliminate redundancy and streamline acquisition efforts while ensuring the joint forces receive safe, effective, suitable, and supportable systems.

The JPEO-CBD ensures this happens through independent assessments known as the Joint Independent Logistics Assessment (JILA) process. When initiated early, the JILA process provides the JPM timely awareness of potential risk to the program, enabling him/her to mitigate or eliminate those deficiencies. Additionally, the JILA process provides the JPM, the warfighter, and the MDA with an unbiased evaluation of the program, allowing the MDA to determine if the system satisfies the

The JLAC-CBD focuses on exploring total life-cycle systems management process improvements that are within the JPEO-CBD's authority to implement.

safety, suitability, and supportability tenets before fielding to the services.

For its superb work, the JLAC-CBD was recognized at the 2009 U.S. Army Acquisition Corps (AAC) Annual Awards Ceremony as the recipient of the Army Acquisition Excellence Award: Transforming the Way We Do Business. This recognition is a testament to the contributions and innovation of the team in the area of weapon systems sustainment.

Information Technology (IT): Tying It Together

The JPEO's IT systems are the critical component of this strategy. Without a flexible, robust, and easy-to-use IT structure, full and open access to critical

Maximizing the investments made during wartime and increased demand periods must be balanced by deliberate study and action to ensure preparedness during future surge requirements.

CBDP acquisition information cannot exist. Without access to this data, trusting relationships cannot develop between the JPEO-CBD and its stakeholders.

At the center of this information exchange is the Joint Acquisition Chemical, Biological, Radiological, and Nuclear (CBRN) Knowledge System (JACKS). JACKS is a secure IT site that provides a single-entry point to CBRN defense equipment characteristics, capabilities, and acquisition information. JACKS is not a database, but rather a "portal" to access reliable and timely data harvested from other official logistics and capabilities systems. It provides authorized users access to CBRN equipment advisory messages, training materials, and contact information. It allows users to search and display information about CBRN equipment, including name, part number, and/or category, stock number, description, cage locations, and service-specific management instructions, as well as packaging, freight, and other critical logistics details. JACKS is a "one-stop shop" for CBRN logistics information, ties into the services' existing logistics supply management systems, and provides 24-hour help-desk information on all CBRN items.

There are challenges ahead, but the work continues at

many levels. Industrial base maintenance concerns are at the forefront of the JPEO-CBD's actions to ensure appropriate capabilities exist to respond to the Nation's needs. Maximizing the investments made during wartime and increased demand periods must be balanced by deliberate study and action to ensure preparedness during future surge requirements.

Although the JPEO-CBD's approach to implement a truly joint sustainment strategy is still emerging, the results have been positive. All the initiatives discussed have resulted in tangible cost avoidance, better business processes, and improved communications. More importantly, these initiatives are helping the JPEO-CBD evolve from the current multiservice sustainment processes to a joint sustainment process that focuses on building alliances.

Author's Note: Gabe Patricio of Patricio Enterprises and Julius Evans, JPEO-CBD Public Affairs Officer, contributed to this article.

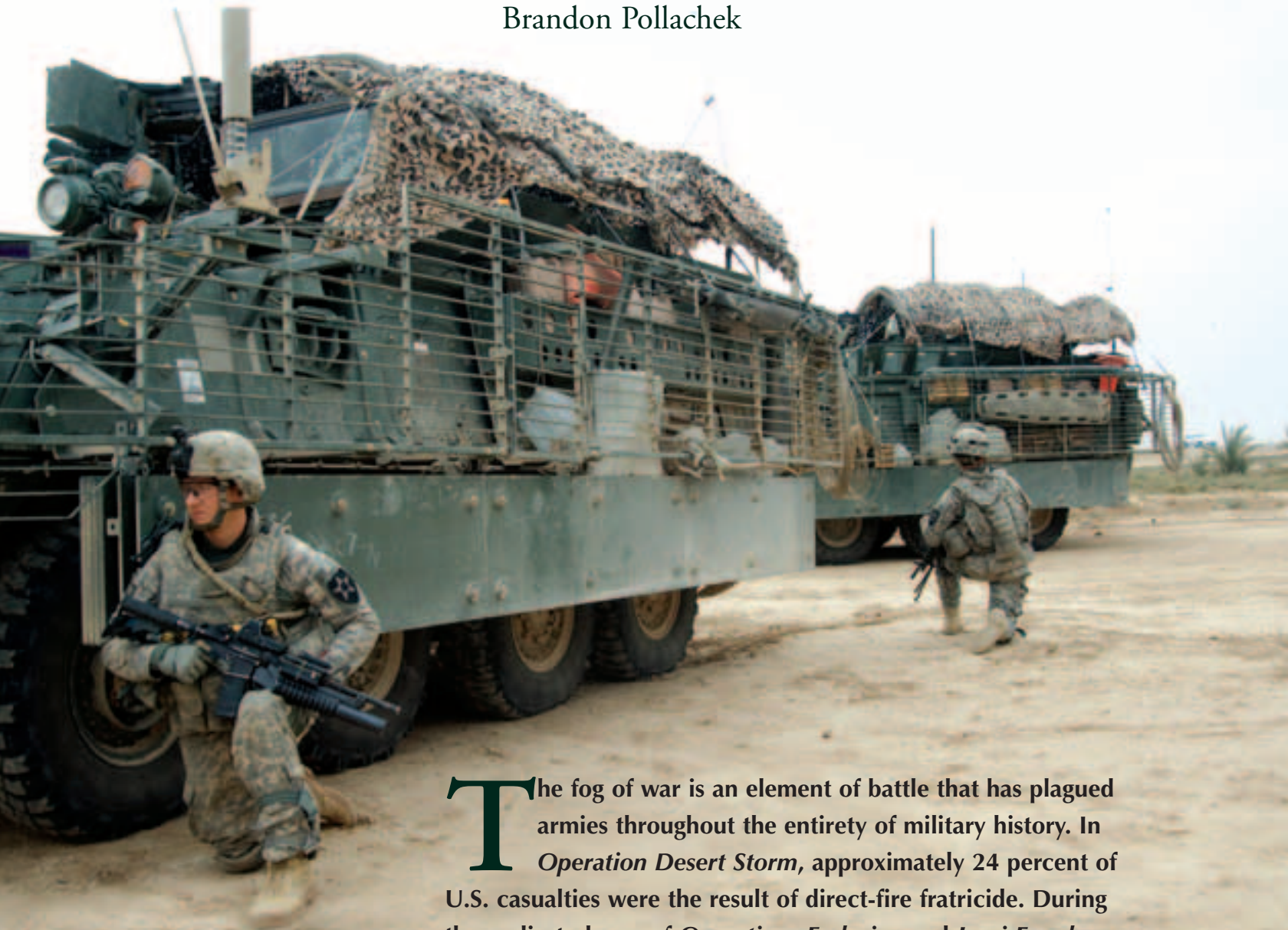
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SGT Sean Christen (right), a team leader with the CBRN Reconnaissance Platoon, Headquarters Co., Special Troops Battalion (STB), 2nd Brigade Combat Team, 82nd Airborne Division, suits up combat engineer SGT Matthew Torrence in a Level-A CBRN suit during the STB's cross-brief training. (U.S. Army photo by SSG Michael Pryor.)

Joint Combat Identification (ID) Marking System (JCIMS) Continues to Save Lives

Brandon Pollachek



The fog of war is an element of battle that has plagued armies throughout the entirety of military history. In *Operation Desert Storm*, approximately 24 percent of U.S. casualties were the result of direct-fire fratricide. During the earliest phases of *Operations Enduring and Iraqi Freedom (OEF/OIF)*, all eyes were keeping careful watch to see how ground forces would correct previous friendly fire problems.

Soldiers from Bravo Co., 5th Battalion, 20th Infantry Regiment, 3rd Stryker BCT, 2nd Infantry Division, form a security perimeter around the village of Sanajar in the Diyala province of Iraq without concern of being mistaken as a potential target by friendly forces because of JCIMS. (Photo by MC1 Kirk Worley, U.S. Navy.)



A USMC M1A1 Abrams main battle tank can positively identify friendly forces that have JCIMS with the use of IR and thermal optical technologies. Additionally, the M1A1 Abrams is also being protected from friendly fire with JCIMS installed on the platform. (USMC photo by Cpl Theodore W. Ritchie.)

JCIMS Components

The JCIMS, which has been fielded incrementally since 1995, is one solution to correcting friendly fire problems. JCIMS is managed by Product Director Target ID and Meteorological Sensors (PD TIMS) and consists of three components: Combat ID Panels (CIP), Thermal ID Panels (TIP), and Phoenix Infrared (IR) Lights. This combination, which is fielded on U.S. ground force vehicles for both the Army and U.S. Marines Corps (USMC), provides friendly forces ID through the use of IR and thermal optical technologies—a capability that helps to positively identify vehicles on the battlefield and reduce the risk of friendly fire upon their comrades.

“CIPs are passive emitters that are mounted on vehicles. When viewed

through a thermal optic, a distinctive signature is visible that helps make a more informed ‘shoot/don’t shoot’ decision at the point of engagement,” said Mike Starr, PD TIMS, Combat ID liaison to the U.S. Army Armor Center.

CIPs are the primary ground-to-ground thermal marking device for the ground force, while the TIP is the primary air-to-ground marker as it offers fixed- and rotary-winged aircraft situational awareness (SA) of the location of friendly forces on the ground. The Phoenix IR Light gives off a continuous signal, which can be viewed by forces using image intensification technologies, such as night vision goggles (NVGs). During mounted operations, the Phoenix IR beacon is used primarily by drivers of combat and support vehicles to maintain SA of where they are, relative

to the other platforms in their formation. The Phoenix IR beacon is also a resource for dismounted Soldiers equipped with NVGs and is used to mark personnel, caches, obstacles, obstacle lanes, sectors of fire, etc. When used with the appropriate tactics, techniques, and procedures (TTPs), the CIP, TIP, and Phoenix IR Light significantly reduce the chance of mistakenly engaging friendly units.

“JCIMS is compliant with the *NATO Standardization Agreement 2129*,” notes Starr. The standardization agreement, *Identification of Land Forces on the Battlefield and in an Area of Operation*, ensures that the system meets the wavelength and optic requirements for the NATO community. With various NATO ground and air forces participating in the Afghanistan coalition force, it is imperative that they be able to positively identify targets before engaging.

The JCIMS components themselves are relatively simple technologies that are fairly inexpensive. Following their introduction into the Army and USMC arsenals in 1995, the system’s capabilities have significantly improved over time.

For more than a decade, JCIMS has proven to be a simple but effective lifesaving capability for U.S. ground forces and will continue to provide the friendly force target ID needed by our warfighters to avoid incidents of fratricide.

However, the improvement is not necessarily related to changes made on the two types of panels and the Phoenix IR Light. Increased performance has been advanced by the optical technologies used to view them, such as the Long Range Advanced Scout Surveillance System (LRAS3), first and second generation forward-looking IR (FLIR), and NVGs—all of which have improved and, therefore, enhanced the ability of Soldiers, Marines, and NATO forces to identify friendly forces.

Fielding

Since first coming online 15 years ago, more than 80,000 JCIMS have been fielded for use by the Army and USMC. The systems are protecting everything from M1 Abrams tanks to high-mobility multipurpose wheeled vehicles to Stryker vehicles. Currently, the Army is installing the 3-component system on Maneuver Brigade Combat Team (BCT) vehicles in both the active component and Army National Guard. Additionally, USMC has mandated that JCIMS be incorporated onto the vehicles for all deploying Marine Expeditionary Units.

Fielding of JCIMS will continue through FY11 with 8–12 BCTs being equipped and trained each year. The U.S. Army Training and Doctrine Command institutional training centers, as well as the combat training



Soldiers with 8th Squadron, 1st Cavalry Regiment, move in a convoy in Stryker armored vehicles, to Taktehpul, Afghanistan. Their vehicles can be positively ID'd by coalition forces because of JCIMS. (Photo by TSgt Francisco V. Govea, U.S. Air Force.)

centers at Fort Irwin, CA, and Fort Polk, LA, have been equipped with JCIMS, so units can train with the actual system during maneuver exercises prior to deployments.

JCIMS Future

The future for JCIMS includes new mounting methods that will ensure the panels stay affixed to the vehicle they are protecting, which is a response to lessons learned in *OEF/OIF*. As new vehicles are introduced into the U.S. ground forces inventory, PD TIMS is planning to interface JCIMS with the Joint Light Tactical Vehicle and other modernization ground platforms.

JCIMS, which was once a quick-fix solution and the result of a Combat ID General Officer Steering Committee directed by former Chief of Staff of the Army GEN Gordon Sullivan in 1991, has become a mainstay in the Army and USMC inventory. “For more than a decade, JCIMS has proven to be a

simple but effective lifesaving capability for U.S. ground forces and will continue to provide the friendly force target ID needed by our warfighters to avoid incidents of fratricide,” said Michael Karpie, Acting Director, PD TIMS.

An additional boost for combat ID is in the works as the Army and USMC work out the requirements of the Joint Cooperative Target ID-Ground (JCTI-G) system, which would be a more robust, active cooperative target ID capability. The JCTI-G would provide Soldiers and Marines with a greater understanding of the battlefield and build upon the success that JCIMS has brought in terms of preventing fratricide. It is anticipated that the JCTI-G program will enter the Materiel Solution Analysis phase this fiscal year.

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U.S. ground forces using the LRAS3 in conjunction with the JCIMS can verify friendly forces when targeting. (U.S. Army photo.)




DAPKUS

DOD Biometrics—Lifting the Veil of Insurgent Identity

Jody Kieffer and Kevin Trissell

Every day thousands of people report to work on U.S.-controlled military installations in Southwest Asia. Today, Soldiers and Marines who guard these facilities rely on increasingly sophisticated biometric tools for identity information that protect them, their facilities, and local populations from harm.

SGT Eric Dapkus, 2nd Battalion, 1st Infantry Regiment, 5th Stryker Brigade Combat Team (BCT), 2nd Infantry Division, uses a HIIDE device during a cooperative medical engagement in the Maiwand District, Hatal, Afghanistan, Jan. 16, 2010. (U.S. Air Force (USAF) photo by SSG Dayton Mitchell.)



In the past, stolen or counterfeited badges posed a threat, but using biometric information provides instant access to an indisputable identification. Guards at U.S. installations watch as individual workers insert their badge into a reader and simultaneously place their finger on a scanner. The badge, issued by the Biometric Identification System for Access (BISA), ensures that the person is the authorized worker. His/her identity is verified by comparing the fingerprint to one saved on the badge.

BISA is just one of many lifesaving biometric systems developed and deployed by Project Manager (PM) DOD Biometrics, part of Program Executive Office Enterprise Information Systems, an Army acquisition organization that

contributes technology tools for a wide range of defense warfighting, communications, and business missions.

Biometrics Systems

The DOD-Automated Biometric Identification System Version 1.0 (ABIS v1.0) database supports *Operations Enduring* and *Iraqi Freedom* by providing a central, authoritative repository for biometric records. It catalogues biometric data taken from detainees, enemy combatants, and other non-U.S. persons of interest. The prototype system was put into operation at the end of 2004, with the current ABIS v1.0 deployed in early 2009. ABIS v1.0 far surpasses the original prototype ABIS in both reaction time and capability. While

the original database stored and matched fingerprints only, v1.0 adds capabilities for facial images, palm prints, and iris patterns, as well as fingerprints for adversary and neutral, unknown, or non-aligned population groups.

The new ABIS uses an advanced algorithm that combines partial matches of multiple biometric modalities and increases the ability of the system to supply a match without requiring human intervention, up to 28 times faster than the prototype. ABIS v1.0 accepts data from multiple collection devices and shares the information with other key U.S. military and intelligence systems.

Three PM DOD Biometrics systems are used to collect biometric data in Afghanistan and Iraq: Biometric Automated Toolset (BAT), Hand-Held Interagency Identity Detection Equipment (HIIDE), and BISA. BAT was developed in 1999 to deal with issues in the Balkans in which local nationals would cause problems on a U.S. installation, be removed, and barred from reentry, only to move to another installation and cause similar problems. U.S. officials did not have a system to establish and share history of individuals causing recurring problems on U.S. bases. Personnel at the Army's Battle Command Battle Laboratory, Fort Huachuca, AZ, responded with the BAT, a system consisting of a laptop computer with identification processing software and peripheral devices including a hand-held iris scanner, digital camera, and fingerprint reader. The laptops connect to a series of servers that ensure regular updates of vital biometric records. BAT collects and compares fingerprints, iris images, and facial photos used to enroll, identify, and track non-U.S. persons of interest to DOD.

The HIIDE, introduced in 2007, is a small hand-held, multimodal (iris, fingerprint, face) biometric collection and matching device. It is more portable than BAT, and it collects biometric, biographical, and contextual data on persons of interest and



PVT Marcus Lewis, 1st Platoon, Dog Co., 1/503rd Airborne Infantry, 173rd BCT, uses the HIIDE biometrics system to fingerprint a man in Wardak Province, Afghanistan, Feb. 2, 2010. (U.S. Army photo by SPC Deyonte Mosley.)

matches it against an internal database, downloaded directly from the BAT via a tether. The system visually indicates whether the identified person is on a watch list and can create tracking reports of biometric encounters for later intelligence analysis. It provides mobile identification solutions that enable Soldiers to identify and enroll subjects in the field quickly and accurately.

As mentioned earlier, BISA is a force protection device that collects multimodal biometric and biographical information to produce a biometrically enabled smartcard or personal identification number badge to manage access of U.S.-controlled facilities in Iraq. BISA incorporates fingerprint verification, iris matching, and palm print collection.

Biometrics Example

In one example of biometric systems at work, a local national employee of a contractor company regularly comes through the base gates of an overseas

U.S. military facility, along with hundreds of others. Because he works on a U.S. installation, his fingerprints, iris, and photo images are recorded and sent to the ABIS v1.0 database in the United States. To gain access to the U.S. installation, he presents a biometrically enabled badge for base access, which is scanned by BISA, along with his fingerprint.

Months later, an Army patrol raids a suspected insurgent safe house. Family members are evacuated and Soldiers record their fingerprints, facial photos, and iris scans while other Soldiers search the house. Everything appears normal until investigators discover a hidden room with evidence of bomb-making activity. Everyone in the house is taken to a detention center where they are questioned and deny any knowledge of the hidden room.

The Soldiers confiscate everything in the hidden room and the forensics team discovers fingerprints on the bomb-making materials. Reports from DOD-ABIS indicate the fingerprints are from two people, one who was arrested during the raid. The bomb maker is separated from the rest of the household and detained. With the



PFC Logan Ayala takes in-processing "detainee" SPC Matthew Poore's image for the BAT system during training for Headquarters and Headquarters Co., 705th Military Police Internment and Resettlement (I/R) Battalion, at the I/R training facility, Fort Leavenworth, KS. (Photo by Prudence Siebert, Fort Leavenworth Lamp.)

bomber removed from their midst, the remaining family members tell Army interrogators about the two insurgents who used the room and threatened to kill them if they said anything. With the terrorist arrested, they now feel safe enough to cooperate with the U.S. military.

The match report from ABIS identifies the second set of fingerprints as belonging to a local civilian who works at a nearby U.S. facility, our local national contractor employee. The military remotely updates the base access system to alert guards the next time the man comes to work. The next day when our local national inserts his badge and scans his finger, guards discover that he is wanted for questioning, so they take his badge and detain him.

This vignette illustrates how biometrics can be used to apprehend insurgents tied to bomb-making activities. Just as importantly, it shows how biometric information can free innocent family members from the terror of hosting insurgents so they can go about their lives in peace. In our scenario, the fingerprint match occurred quickly enough for the bomb maker to be identified and brought into custody, limiting detention time of the innocent family members.

Success

With these systems in place, insurgents have come to realize they can no longer gain easy access to U.S. facilities, and, subsequently, attacks have decreased. The key to their previous success was to remain hidden, often in plain sight, blending in with the local population. The American Soldier, unable to speak

Arabic and unfamiliar with the culture and customs of Iraq and Afghanistan, found it difficult to distinguish insurgents from the general populace. Biometrics has helped lift this veil of anonymity.

Having demonstrated their value, use of these biometric systems spread rapidly. At the end of 2009, more than 1,000 BATs and 7,000 HIIDEs were in use by the Army and the U.S. Marine Corps (USMC) in Iraq and Afghanistan, and biometric technology is widely credited with contributing to the U.S. military's success in Iraq. For example, after the much-publicized USMC operation to capture the Iraqi town of Fallujah, biometrically enabled identification badges were issued to the local population to ensure insurgents would have difficulty reestablishing themselves in the city. In 2007 and 2008, more than 1,700 matches linked individuals to improvised explosive devices in Iraq alone. The use of biometrics clearly had a positive effect on the overall effort.

This success led the Association for Enterprise Information to award the 2009 Excellence in Enterprise Integration Award to DOD-ABIS v1.0, saying, "This team of government and industry partners has given the warfighter a stronger, more reliable, and more effective tool that reduces the enemy's ability to hide among innocent civilian populations—and a tool that



The fingerprint scanner is one of three recognition tools the BAT system uses to identify an individual. (USMC photo by LCpl Thomas Provost.)

lays the foundation of a true enduring capability for DOD and its forces."

PM DOD Biometrics provides tools that enable the U.S. military to effectively establish the identity of people they encounter during military operations. As situations demanded, the PM worked quickly to deploy effective biometric devices that enhanced identity management. DOD ABIS v1.0, BAT, BISA, and HIIDE expose insurgents and remove their ability to hide in local civilian populations, enhancing safety of Soldiers and the quality of everyday life for the people of Iraq and Afghanistan.

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Joint Light Tactical Vehicle (JLTV) Prototype Builds Underway

Kris Osborn and Ashley John

JLTV Technology Development (TD) phase industry teams have begun to build government prototypes, engineering an unprecedented blend of mobility, payload capacity, and survivability. They are building a light tactical vehicle that will withstand improvised explosive device attacks, maneuver quickly through diverse terrain, and transport beneath a CH-47 or CH-53 helicopter.

Lockheed Martin JLTV prototypes demonstrate an FOV approach. As the central component of DOD's TWV strategy, JLTV will enhance the military's mix of tactical vehicles by providing a balanced vehicle solution of performance, payload, and protection with increased transportability and expeditionary mobility. (Photo courtesy of Lockheed Martin.)



Being one of the first DOD acquisition programs to embrace the principles of “competitive prototyping,” JLTV’s solid acquisition approach is proving to be successful. “Through the efforts of three contractors to build JLTV variants, we can validate requirements and reduce risk,” said COL John Myers, Project Manager Joint Combat Support Systems.

Reviews and Testing Phases

The three teams awarded contracts for the 27-month TD phase—BAE Systems, General Tactical Vehicles, and Lockheed Martin—have incorporated design revisions from their independent preliminary and Critical Design Reviews (CDRs). Independent CDRs provide the Army and U.S.

Marine Corps (USMC) with the opportunity to assess the technical maturity of each team’s design relative to the TD phase requirements.

“As we progress from Preliminary Design Reviews to CDRs, each team is further refining their design. Then, they move into the build process,” said LTC Wolfgang Petermann, Product Manager JLTV. “What the government sees coming out of the CDR is what we should see in hardware when the vehicles are delivered for testing.”

Prior to testing, a series of independent test readiness reviews will serve as a checkpoint, ensuring that the vehicles were built as designed; the idea is to make sure that what was delivered on

paper is what is subsequently delivered in hardware. “Shortly after the test readiness reviews, we will begin full vehicle testing, beginning with safety certifications,” said Petermann. “We will then move into performance and RAM [reliability and maintainability] testing. We will conduct user evaluations with Soldiers and Marines to verify requirements suitability. This is a robust test program not typically seen in a TD phase.” The prototypes will undergo 20,000 miles of RAM testing per vehicle. In addition to prototype testing, each of the three JLTV industry teams delivered armor coupons and a number of ballistic hulls for blast-test evaluation at Aberdeen Proving Ground, MD.

Industry partners have also conducted a series of subcomponent tests to include examinations of the adjustable height suspension; power integration capabilities; command, control, communications, computers, intelligence, surveillance, and reconnaissance architecture; and blast-testing of the ballistic hulls. “We have seen many mature individual technologies. The challenge will be seeing them integrated,” said Petermann. At the end of the rigorous testing schedule, the prototype vehicles will go through extensive prototype live-fire tests where they are attacked in combat-like conditions by weapons most likely to be used by current and future enemies.

The TD phase is aimed at informing and refining the requirements for the JLTV family of vehicles (FOV) through prototyping to reduce risks and lower production costs. Upon completion of the 27-month TD phase, the government will conduct a new, full and open competition for a follow-on Engineering and Manufacturing Development (EMD) phase, leading to the awarding of two contracts.

“Since one of the primary objectives of the JLTV TD phase is to demonstrate an achievable set of low-risk requirements, the program, together with the joint combat developers, is using a requirements management process to guide requirements maturation,” said Kevin Fahey, Program Executive Officer



The General Tactical Vehicles design brings an innovative and adaptable FOV and trailers with a projected commonality of components greater than 95 percent. (Photo courtesy of General Tactical Vehicles.)

The BAE Systems-Navistar JLTV prototype called the Valanx was innovatively designed especially for the warfighter. It features a modular, plug-and-play design to ensure unmatched capabilities today and into the future. (Photo courtesy of BAE Systems.)



Combat Support and Combat Service Support (PEO CS&CSS).

Through this process, the requirements, which were the starting point for the TD phase, are continually assessed for achievability through a series of knowledge point reviews based on results seen from current efforts. Simultaneously, requirements for the EMD phase are being developed using results from the TD phase coupled with inputs from ongoing operations. “We are letting ‘events’ drive the program and we are continuously incorporating the challenges posed by the current fleet,” added Fahey.

“The end result from the requirements management process will be a final approved set of requirements, which have been demonstrated and are low risk,” said Myers. Added Petermann, “Our intent is to come out with an RFP [Request for Proposal] for the EMD phase with a low-risk, executable, and affordable set of requirements. We anticipate an RFP release for April 2011,

to be followed by a contract award in fourth quarter 2011.” Following a Milestone C decision in 2013, the Army plans to purchase 55,000 JLTVs and the USMC plans to buy 5,500. Full production is slated for 2015.

JLTV Capabilities

The Army-USMC JLTV program will produce a fleet of tactical vehicles that can support a range of mission sets. “We are developing an FOV and companion trailers that can be used in any operational environment—low-intensity conflict to high-intensity conflict, and major combat operations to hybrid warfare. We have the SOCOM [Special Operations Command] requirements built into the vehicle, meaning no follow-on modifications will be necessary to accommodate their mission profiles, thus increasing commonality with the operating forces,” said LTC Ben Garza, JLTV Program Manager, USMC.

Other requirements include building a vehicle that can generate 30 kilowatts of exportable power, drive when tires are shot, accommodate scalable armor solutions, and provide extra spill liner and embedded diagnostics. “The unarmored high-mobility multipurpose wheeled vehicle used to have great payload capacity and off-road mobility,

but when you added armor, it threw it off balance,” said Garza. “We want to regain that off-road mobility we had with increased survivability, all on one transportable platform.”

Currently, there are three payload categories that cover 10 JLTV configurations. Category A, the smallest category, will have a combat transport weight of 14,322 pounds and support a 3,500-pound payload while armored. Category B is somewhat larger, supporting a 4,500-pound payload while armored. Category C supports a 5,100-pound payload while armored. The Category C vehicles will also address shelter and ambulance requirements. The entire family of JLTV is transportable by tactical assets (CH-47, CH-53, C-130), greatly reducing the burden on strategic assets such as the limited quantity of C-17 and C-5 aircraft. The JLTV FOV will have an adjustable suspension to a height of 76 inches or less to board maritime pre-position force ships.

Focused on light tactical vehicle capabilities and balancing protection, performance, and payload, JLTV is and remains a key component of the Tactical Wheeled Vehicle (TWV) strategy. “JLTV is the future of light tactical vehicles; it is a critical component of the service’s TWV strategy,” said Fahey.

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INTERNATIONAL EFFORTS INCREASE INTEROPERABILITY



Kevin Fahey, PEO CS&CSS, briefs Australian Chief of Army LTG K.J. Gillespie on Nov. 4, 2009, at Selfridge Air National Guard Base, Harrison Township, MI, highlighting the importance of demonstrating a mature, transportable, and balanced “iron triangle”—performance, payload, and protection—during JLTV’s TD phase. (Photo courtesy of 127th Wing, Michigan Air National Guard Public Affairs.)

JLTV is designed to meet the long-term strategic and operating goals of the Army and USMC; Australia is looking for the same kind of long-term solution. In January 2009, the U.S. and Australia entered into a Land Force Capability Modernization Project Arrangement for the TD phase of the JLTV. “The JLTV program has really set the framework for coalition armed forces to jointly address similar capability gaps surrounding the tactical vehicle imbalance in protection, performance, and payload ... all while increasing interoperability between our allied, friendly, and coalition partners,” said Fahey.

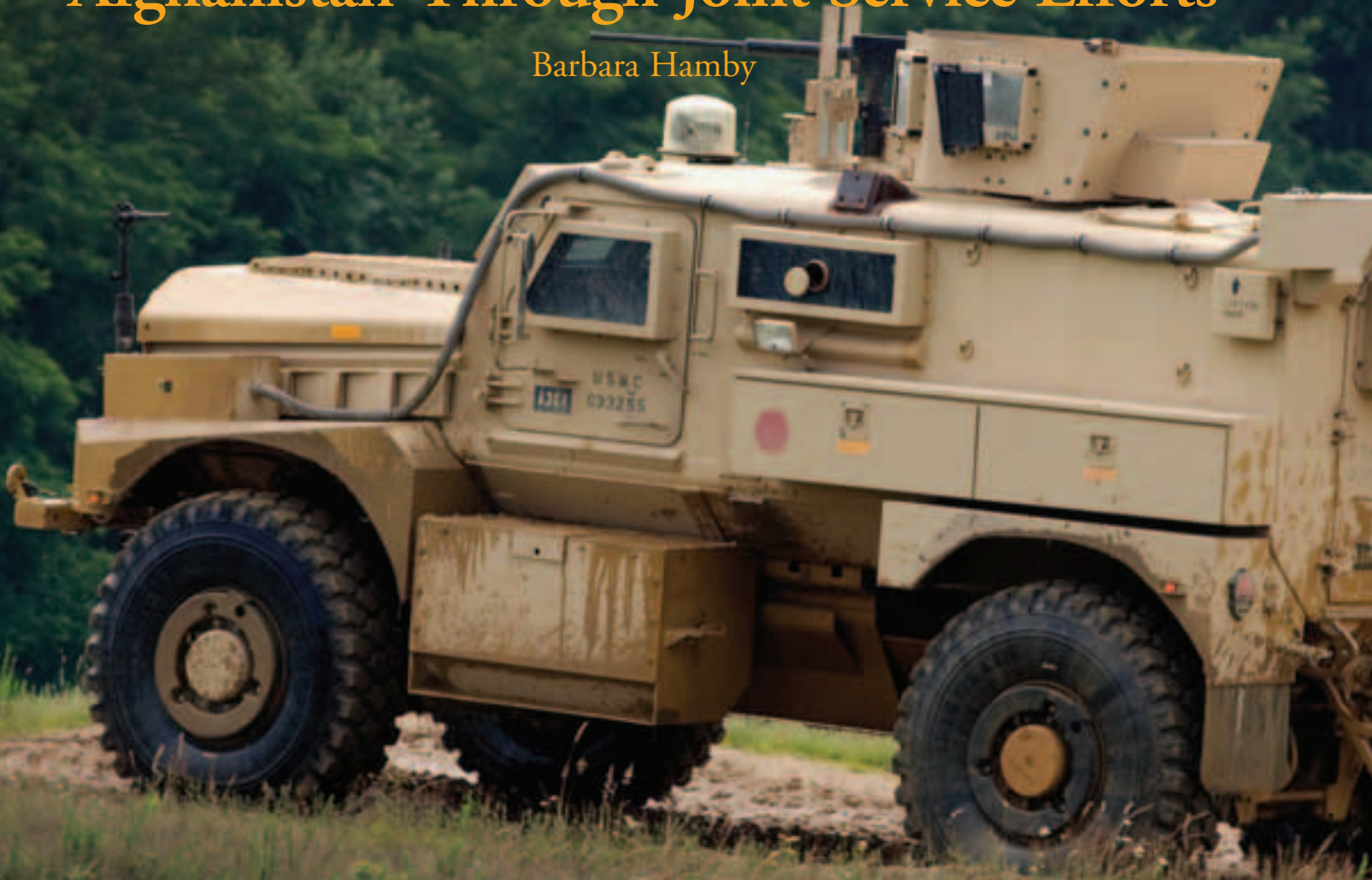
Australian prototypes are scheduled to be delivered in June 2010, about 45–75 days after the

U.S. delivery. The Australian vehicles will feature right-hand operation, and will maintain a 90-percent commonality with the left-hand operation prototypes. In addition, the Australian vehicles will not exceed a 40-pound difference.

“The commonality of vehicle configurations between the U.S. and Australia means U.S. and Australian vehicles can be deployed together, maximizing the interchangeability and effectiveness of deployed units,” said Australian LTC Robin Petersen, JLTV Cooperative Program Personnel and Systems Engineer. The U.S.-Australian collaboration is aimed at reducing risk, lowering costs, and enhancing testing and simulation for both countries.

Mine Resistant Ambush Protected (MRAP) All-Terrain Vehicles (M-ATVs) Deploy to Afghanistan Through Joint Service Efforts

Barbara Hamby



With unprecedented speed, the first of thousands of M-ATVs were issued to combat units in Afghanistan in December 2009, just 160 days after contract award. A joint service effort, the fielding of these lifesaving vehicles marked a significant milestone achieved by the MRAP Joint Program Office (JPO) to protect warfighters with a highly survivable and off-road-capable vehicle.

A Cougar MRAP modified with the ISS is put through the paces at ATC. The first ISS-capable Cougars were delivered to Afghanistan in August 2009 with good results. Other variants are quickly following the Cougar's lead and profiting from lessons learned with its improved suspension system. (Photo courtesy of MRAP JPO.)

“We pulled out all the stops to collapse the schedule and get these vehicles into theater,” said BG Michael Brogan, Commander, U.S. Marine Corps (USMC) Systems Command and Joint Program Executive Officer (PEO) MRAP Program. “We are doing everything required to ensure that they are safe, that the risk assessments are complete, and that they’re fully integrated and flown into Afghanistan.”

Rapid Acquisition

Procurement of the M-ATV grew from an urgent requirement to provide troops a survivable, yet smaller and more maneuverable, vehicle that can travel off-road and navigate Afghanistan’s difficult, mountainous terrain. Drawing from lessons learned from the procurement of baseline MRAPs for *Operation Iraqi Freedom (OIF)*, the JPO devised and executed a rapid acquisition strategy.

The core effort began in June 2008 in response to a draft Army Operational Needs Statement for a lighter MRAP that could maneuver in the *Operation*

Enduring Freedom (OEF) terrain. By August, a Request for Information was released to test the industrial base and see if the requirements were possible to develop. The government received 30 proposals. Two months later, the Joint Urgent Operational Needs Statement (JUONS) was signed and the source selection effort expanded to begin an intensive and rigorous requirements evaluation, with a Request for Proposal (RFP) released in December. The RFP provided an anticipated initial buy of 2,080 vehicles, with a maximum ceiling of 10,000.

Under this accelerated, best-value acquisition, offerors were required to meet three main screening criteria: vehicle weight was not to exceed 25,000 pounds; vehicles were to

accommodate a crew of five; and vehicles had to pass ballistics tests. In January 2009, industry responded with eight offerors submitting proposals. Those selected in the first round in February received contracts to build and deliver two test vehicles that went through ride, mobility, and ballistic testing at Aberdeen Test Center (ATC), MD. Those vehicles that met basic requirements were accepted for armor, ballistic, and mobility testing.

On April 30, 2009, the government awarded five indefinite-quantity indefinite-delivery contracts for additional test vehicles. The competition included Oshkosh Defense, BAE Global Tactical Systems, BAE U.S. Combat Systems, Navistar Defense, and Force Dynamics (a joint venture between

Drawing from lessons learned from the procurement of baseline MRAPs for *OIF*, the JPO devised and executed a rapid acquisition strategy.



The acquisition effort for the M-ATV is unprecedented, even more so than the original MRAP effort. Production began in July 2009 and the first trucks were fielded to the USMC in Afghanistan on Dec. 6, 2009, just 160 days from contract award. (Photo courtesy of MRAP JPO.)

Force Protection Industries and General Dynamics Land Systems). Vehicle testing began immediately to provide data in support of making a best-value determination for up to 10,000 M-ATVs. A down-select decision was announced in June, with the contract award going to Oshkosh Defense.

“The Source Selection Evaluation Board did an excellent job comparing industry proposals,” said Kevin Fahey, PEO Combat Support and Combat Service Support. As the Source Selection Authority, Fahey added, “We incorporated lessons learned from MRAP and sent M-ATVs to home stations for training before deployment, ensuring that safe, effective, reliable, and supportable M-ATVs were delivered to our operating forces as quickly as possible.”

“The M-ATV procurement is the result of an extremely comprehensive and rigorous source selection process, which appropriately weighed survivability, mobility, maneuverability, production capability, price, and other factors within the context of the urgent need for the procurement,” Brogan said.

We incorporated lessons learned from MRAP and sent M-ATVs to home stations for training before deployment, ensuring that safe, effective, reliable, and supportable M-ATVs were delivered to our operating forces as quickly as possible.

“The acquisition process determined the most capable and best-performing vehicle against stringent survivability requirements. Extensive test and evaluation with volumes of empirical data were produced, on which a ‘best value’ decision was based. It was detailed, thorough, and fair, and the results were reviewed by an Office of the Secretary of Defense peer review team made up of very senior contracting officials.”

As part of the MRAP vehicle program, the M-ATV is a high-priority, accelerated acquisition program supporting overseas contingency operations. It retains the highest possible Defense Priority Rating, DX. The government is using the same fundamental acquisition strategy as the original MRAP program with one exception. In addition to relying on the existing JPO infrastructure

to procure, test, field, train, and support the JUONS, the government has leveraged the resources of the U.S. Army Tank-automotive and Armaments Command Contracting Center to support the procurement.

Independent Suspension Systems (ISS) Modifications

Today, there are more than 500 M-ATVs in the Afghanistan theater of operations with more arriving daily. The vehicles are capable of driving up 60-percent inclines, in either forward gear or reverse, and can lean as much as 30 percent to the side. The suspension system keeps the axles from breaking by allowing each wheel to slide up or down as much as 16 inches as the vehicle drives over rocks or through ruts. Initial feedback on the M-ATV is positive. Reports from the field are that, “In addition to its ability to traverse a wide variety of terrain, its speed transforms it from simply a means of transportation to an offensive capability for the commander.”

Since November 2006, the JPO has placed 22,882 MRAP vehicles on contract, including 6,644 M-ATVs. In January 2010, the Joint Requirements Oversight Council increased the MRAP family of vehicles requirement up to an additional 4,000 vehicles. The vehicle mix will be determined by operational commanders. Part of the calculus may include how effective ISS are working on baseline MRAPs.

The USMC began ISS modifications of existing Cougar MRAPs in the summer of 2009, with good results. The Oshkosh TAK-4 ISS was chosen as the



The procurement of the M-ATV derived from an urgent requirement to protect troops in OEF with a highly survivable and off-road-capable vehicle. (Photo by Isaac Rodriguez, Yuma Test Center, AZ.)



MRAP JPO Army PMs stand alongside a U.S. Air Force convoy escort crew in front of their M-ATV in Afghanistan. Left to right: LTC Coll Haddon, COL Kevin Peterson, TSgt Clarissa Walkup, LTC Jay Proctor, CPT William Minor, LTC Andrew Oderkirk, TSgt Robert Berrier, and SrA John MacLean. (U.S. Army photo.)

replacement for the Cougar's solid-axle suspension. TAK-4 has been used on the USMC's most mobile wheeled vehicle, the Medium Tactical Vehicle Replacement (MTVR), with great success. Due to the similarities of the MTVR and Cougar, the TAK-4 ISS was adapted to fit the Cougar with only minor changes required.

The ISS increases overall suspension travel from 6 to 13 inches, providing the Cougar with off-road capability. It also includes larger tires with a Central Tire Inflation System, allowing the operator to select the appropriate tire pressure to maneuver in harsher terrain. Another benefit of the ISS is the optimized steering components. Together, all the modifications enhance overall automotive performance, ride quality, payload capability, and maneuverability while continuing to provide MRAP levels of protection.

"The Cougar ISS greatly improves mobility to units operating in *OEF* and will help save more lives," said Kim Yarboro, Assistant Program Manager (PM) Cougar MRAP fleet. "It's allowing the warfighter to follow the enemy into the harshest terrain and do it faster and more comfortably than ever before."

With the first ISS-capable Cougars delivered to Afghanistan in August 2009, the flow continues as the pipeline fills. In all, more than 2,100 Cougars will be retrofitted with ISS. According to Dave Hansen, MRAP Deputy PM, other variants, such as the MRAP RG-31, RG-33, and MaxxPro, are quickly following the Cougar's lead and profiting from lessons learned with Cougars' improved suspension system. "We are seeking technical evaluation support from industry to look at all the solutions out there and to improve the handling and off-road performance in their trucks,"

Hansen said. "The ISS already in use are performing very well."

While both the suspension upgrades and M-ATV programs are on track, efforts to increase the speed of delivery are continually being navigated. Officials say the MRAP team embraces the challenge in its unwavering commitment and support to the troops. "No matter how hard we think we have it, or how hard we are working, the young men and women out in combat have it dramatically worse," said Paul Mann, MRAP Joint PM. "We will keep pressing until the warfighters all come home safely."

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The Joint Cargo Aircraft (JCA)—Transfer of an Acquisition Category (ACAT) 1D Program to the U.S. Air Force (USAF)

COL Anthony W. Potts and Roderick A. Bellows

JCA is an excellent example of a successful joint acquisition program. An acquisition category (ACAT) 1D Major Defense Acquisition Program, JCA fills a critical tactical airlift capability gap. It will provide time-sensitive/mission-critical (TS/MC) delivery of equipment, personnel, and supplies across the last tactical mile to military forces on the battlefield. JCA was an Army-led joint program meeting all expectations for cost, schedule, and performance. With the delivery of the first two C-27J Spartans, the Army and USAF began training, testing, and preparing to rapidly field this much-needed capability in the fall of 2010. However, in the spring of 2009, the Secretary of Defense directed the program to be transferred to the USAF. This is the success story of the JCA and actions conducted in the ongoing transfer to the USAF.

The C-27J Spartan will provide TS/MC delivery of equipment, personnel, and supplies across the last tactical mile to military forces on the battlefield. (Photo courtesy of the Aviation Systems Project Office.)

JCA Joint Program Office (JPO)

In December 2005, Program Decision Memorandum III directed the Army to lead the JCA program, which merged the USAF Light Cargo Aircraft with the Army Future Cargo Aircraft. The Army and USAF Vice Chiefs of Staff (VCSs) signed a Memorandum of Agreement (MOA) in June 2006, paving the way ahead for the convergence of these two programs. In October 2006, the JCA JPO stood up at Redstone Arsenal, AL, with an Army Product Director and a USAF Deputy.

In June 2007, L-3 Integrated Systems was awarded a 5-year, firm-fixed-price requirements contract. The contract was designed to accommodate the Army-validated requirement for 78 aircraft (54 for the Army and 24 for USAF), plus potential international sales.

Since contract award, the JCA has been a model ACAT 1D joint program that is meeting its cost, schedule, and performance goals today. This exemplary performance earned the JPO the 2008 Defense Acquisition Executive's Certificate of Achievement, which highlighted the obligation of more than \$400 million for 13 aircraft, engineering services, bed-down and phase-in, aircrew training, and interim

contractor support. To date, three JCAs have been delivered. The program took delivery of JCA 1 and JCA 2 in September and November 2008. This was both a critical and an impressive feat, considering that the program was delayed 90 days due to protest. The accelerated deliveries of these two aircraft were critical to keeping the program on schedule, as they were required to begin aircrew training and airworthiness flight testing.

Training and Testing

Training of the first class of pilots and loadmasters began in November 2008. JCA training is a 14-week, contractor-led course conducted to Army standards and governed by Army regulations. The JPO split the eight pilot seats in Class 1 into four seats each for Class 1A and Class 1B. Class 1A was designed to produce qualified test pilots to take the program through production qualification testing (PQT). It consisted of three pilots from the U.S. Army Test and Evaluation Command's Development

Test Command Aviation Flight Test Directorate and one USAF Operational Test representative assigned to the JPO. Class 1A allowed the contractor to gain experience in instruction while allowing the government's test pilots to obtain aircraft proficiency, knowledge, and experience. Class 1B was designed to produce pilots who could evaluate the contractor flight training. Class 1B consisted of four Army aviators and loadmasters who possessed fixed-wing instructor and combat experience. Class 1B validated the training for Class 2, in which pilots and loadmasters will conduct the program's Multiservice Operational Test and Evaluation (MOT&E) and subsequently deploy with the first JCA unit. Instruction for Class 2 began Nov. 30, 2009, and is composed of two Army and two USAF crews.

PQT commenced in earnest with the graduation of the aircrews from Class 1A. Before their graduation, electromagnetic environmental effects (E3) ground testing was successfully



A C-27J Spartan flies over Monument Valley, UT. (Photo courtesy of the Aviation Systems Project Office.)

The direction to take an ACAT 1D program in the middle of its qualification testing, Army-based training, and LRIP phase and transfer it to another service was unprecedented.

conducted at the Naval Air Systems Command Patuxent River, MD, facility. With the conclusion of E3 tests and the arrival of aircrews, flight test began with airdrops at Yuma Proving Ground, AZ. This PQT was followed with testing for aircraft survivability at the U.S. Navy's (USN's) China Lake facility, CA, and the USAF's Eglin test ranges, FL. Aircraft Survivability Equipment (ASE) testing efforts also involved the use of F-18D/Tiger pods, infrared models, threat signal processor in the loop, modeling and simulation (M&S) flare solution development, and chaff and preemptive flare solution.

PQT also validates the C-27J's six key performance parameters:

- Unimproved runway takeoff and landing.
- Self-deployment.
- Transloadability.
- Survivability.
- Force protection.
- Net readiness.

In addition, the program has also undergone a Live Fire Test and Evaluation (LFT&E) to determine the C-27J's survivability (susceptibility and vulnerability) against ballistic and advanced threats. In particular, LFT&E consisted of completing "hardware" testing on nine components/subsystems and completing two complex ballistic vulnerability analyses. To ensure LFT&E Title X compliance before the C-27J's Full-Rate Production (FRP) decision, the program office mitigated scheduled risk by concurrently employing major ranges and test facility bases (MRTFBs) of each service. A significant LFT&E accomplishment was achieved the week

of May 18, 2009, when five separate JCA LFT&E ballistic test events were simultaneously completed at Army, USAF, and USN MRTFBs. In addition to live-fire testing, the JPO also used design analyses, M&S, and analysis to determine aircraft survivability given existing combat data. Again, DOD has cited the program as a model example on how to conduct a comprehensive LFT&E.

Testing will conclude in 2010 when MOT&E ends. MOT&E will assess operational effectiveness, suitability, and survivability. The Army's Operational Test Command will serve as the Operational Test Agency with support from the USAF Operational Test and Evaluation Center. This joint test team will evaluate the Army and USAF aircrews from Training Class 2.

Besides training and testing, the program office is also responsible for ensuring that the C-27J obtains a Federal Aviation Administration (FAA) Type Certificate (TC) along with a military airworthiness certificate for its peculiar mission equipment (PME), which includes ASE, public service radio, blue force tracker, secure voice communications, ARC-210 satellite communication radios, and ballistic protection armor. The U.S. Army Aviation Engineering Directorate will issue a Fielding Airworthiness Release based on the FAA's issuance of a TC

and its engineering review of PME substantiating data and test reports.

Joint Cooperation

In April 2009, Resource Management Decision (RMD) 802 changed the program's direction when it mandated reduction of the procurement quantity from 78 to 38, and transfer of both the program and the direct support airlift mission it supports from the Army to the USAF. The direction to take an ACAT 1D program in the middle of its qualification testing, Army-based training, and Low-Rate Initial Production (LRIP) phase and transfer it to another service was unprecedented. Though disappointed over the loss of the program, the Army did not let this deter its support of the acquisition program. Within weeks, the Army met with its USAF counterparts, who agreed to let the Army continue to execute the program until the FRP decision to ensure uninterrupted program execution and delivery of capability to the field in 2010.

Joint briefings by the Department of the Army and USAF's Air Mobility Command to the Joint Capabilities Board, the Joint Chiefs of Staff, and Deputy's Advisory Working Group following RMD 802 cemented the path forward and the activities required. In September 2009, the VCSs for the USAF and Army signed an MOA,



The Aviation Flight Test Directorate Survivability Equipment Joint Test Team is pictured with a C-27J Spartan. (Photo courtesy of the Aviation Flight Test Directorate.)

approving a Direct Support Concept of Employment and the USAF Direct Support of Army TS/MC effective date. The USAF is currently using a C-130, directly supporting an Army Combat Aviation Brigade as a proof of concept.

With a year to go to FRP, the Army program office is in the throes of completing PQT and beginning MOT&E. Preparations for determining the long-term sustainment strategy are at high pitch. Transition has begun with USAF program office personnel increasing while the Army office downsizes. With the signing of the FY10 Defense Bills into law, program authority and funding now resides with the USAF. Army leadership continues to ensure the schedule for test and training is not interrupted and momentum for completion is maintained.

After receipt of RMD 802, the JPO began planning activities to seamlessly transition the program from an Army-led joint effort to a single-service USAF one. The purpose of the transition plan is to document, coordinate, and approve assumptions, critical tasks, and organizational responsibilities, and target timelines and events for the transition of the C-27J program. This is an event-driven process. The objective of the plan is to minimize disruption and mitigate risk by defining and coordinating critical transition tasks and timelines between gaining and losing acquisition organizations. The primary approach to preventing disruption and reducing risk is to minimize change. The secondary approach is to transition gradually with temporarily overlapping organizations. This allows new program leaders to

Innovative acquisition execution strategies and precise execution across the joint services are models for other programs to emulate.



The Aviation Flight Test Directorate conducts an ASE test. (Photo courtesy of the Aviation Systems Project Office.)

develop a required understanding of current program operations before being charged with daily execution and decision-making responsibility. The Army and USAF have proceeded successfully with transition activities to date, cross-walking information, jointly producing documentation, and deciding fiscal, schedule, and business issues with the C27J Program Office, Air Mobility Command, and the Air National Guard.

The unprecedented success of this major acquisition program is a testament to the professionalism of the JCA JPO. After nearly 4 years, the program remains on cost, schedule, and performance. Innovative acquisition execution strategies and precise execution across the joint services are models for other programs to emulate. The end result of a highly capable cargo aircraft that fills

the requirement to provide dedicated support to the last tactical mile is both valid and an operational necessity, and will be executed by the USAF.

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UH-60 Recapitalization (Recap)— Black Hawk's Cornerstone for Fleet Sustainment

COL L. Neil Thurgood and Zachary A. Best



The UH-60 Recap Program was initiated in 2002 with the induction of the first UH-60A aircraft at Corpus Christi Army Depot (CCAD), TX, and continues today as the fundamental tenet of sustaining an aging Black Hawk fleet. The program was initiated as a recap/rebuild effort, which is, in short, a complete overhaul of the aircraft including replacement of all dynamic components, structural/electrical enhancement and repair, and delivery of a like-new UH-60A with an objective of 10 years' additional service life. To date, more than 140 UH-60As have been recapped and delivered to many state Army National Guard (ARNG) units, the U.S. Army Reserve, and the U.S. Army Aviation Warfighting Center at Fort Rucker, AL.

A U.S. Army UH-60A Black Hawk medical evacuation (MEDEVAC) helicopter with Charlie Co., 3rd Battalion, 25th Aviation Regiment, Forward Support MEDEVAC Team, flies over an Iraqi town along the Tigris River Oct. 22, 2009. To date, more than 140 UH-60A aircraft have been recapped and delivered. (Photo by U.S. Navy PO1 Carmichael Yepez, Joint Combat Camera Center Iraq.)

The Beginning—UH-60A to A Recap

The benefit of recap/rebuild is clear. Many of the recapped aircraft delivered to the ARNG have been deployed to theater in support of *Operations Enduring* and *Iraqi Freedom* (OEF/OIF). The Utility Helicopters Project Office (UHPO) conducted detailed monitoring of eight of these aircraft and found that they experienced a fully mission-capable rate that is 11 percent higher than UH-60As in the same units that had not been recapped. Additionally, since 2003, the UHPO has monitored two UH-60A recapped aircraft at Fort Rucker for reliability, availability, and maintainability. Six years and counting into the comparison, the recapped aircraft continue to demonstrate the following improved performance relative to two non-recapped aircraft monitored at the same location for the same period:

- 16 percent reduction in unscheduled maintenance ratio.
- 46 percent improvement in mean time between mission aborts.
- 58 percent improvement in mean time between mission-affecting failures.
- 17 percent improvement in mean time between essential maintenance actions.
- 25 percent improvement in mean time between system failures.

The benefit of a recapped aircraft is also not lost on the ultimate customer, the Soldier. User feedback is consistently

The benefit of recap/rebuild is clear. Many of the recapped aircraft delivered to the ARNG have been deployed to theater in support of OEF/OIF.

very positive and, at the same time, rewarding to the men and women of CCAD, the UHPO, and Sikorsky Aircraft Corp.—all of whom make this possible. In the words of CPT Paul Saiz, Aviation Maintenance Officer, New Mexico ARNG, who accepted and flew home another recapped UH-60A, “[It is] another great product.”

Moving Forward—The Next Chapter in UH-60 Recap

In July 2007, CCAD, in partnership with the UHPO; the Aviation and Missile Command; the Aviation and Missile Research, Development, and Engineering Center (AMRDEC); and Sikorsky Aircraft Corp., inducted a prototype UH-60A aircraft to be recapped and upgraded to the UH-60L configuration. The initiative was unprecedented in Army aviation acquisition. The UH-60L capability is a force multiplier in overseas contingency operations, delivering and supporting the most capable, reliable, and sustainable weapons platform to the battlefield. UH-60A to L recap/upgrade, program-matically known as the UH-60A to A to L Recap Program, leverages the proven reliability and sustainability

benefits realized with the UH-60A to A recap/rebuild, and provides enhanced warfighting capability with the performance improvements of the UH-60L. Those capability improvements include:

- Increased range and lift capability for high/hot combat missions.
- Increased engine torque under extreme drag conditions.
- Increased contingency power for emergency conditions.
- Increased sling load mission capability.

These improvements are gained by incorporating the handful of configuration upgrades associated with the UH-60L, such as the T700-701D engine, improved durability gear box, 9,000-pound cargo hook, and associated structural and electrical platform modifications required to apply these upgrades to a UH-60A. The end product is a UH-60L, a step further toward the divestiture of UH-60As from the utility helicopter fleet. The benefit of reduced operations and sustainment burden with a 2-model fleet (UH-60L and M) will be significant. The benefits of performance, reliability, and sustainability improvement, coupled with a reduced cost-per-flight-hour for the UH-60L over the UH-60A, and other tangible benefits such as obsolescence preemption and unscheduled maintenance avoidance, reinforce the merit of this effort.

The UH-60A to A to L recap prototype successfully completed the flight test phase of recap and was “sold” in August 2008. This milestone culminated the demonstration and validation of the engineering, configuration definition, and work instructions required to recap



A first production UH-60A to A to L lifts off the flight line at CCAD en route to the Delaware ARNG. (U.S. Army photo by Ed Mickley, CCAD Public Affairs Officer (PAO).)

and upgrade a UH-60A to UH-60L, and paved the way for the next phase of Black Hawk fleet sustainment—the induction, recap, and upgrade of 38 UH-60As to UH-60Ls per year beginning with FY09. In June 2009, the first production UH-60A to A to L aircraft was delivered to the Delaware ARNG, establishing steady state A to A to L recap operations at CCAD.

Capacity Expansion— Keeping Up With Demand

With the viability and benefit of UH-60A to A to L recap established and proven, the demand to induct old, tired, yet still in service, UH-60As for return of a like-new UH-60L has grown exponentially. From other government agencies to foreign allies, many entities beyond the U.S. Army employ UH-60As in their fleets, and most of these are the oldest UH-60As out there. To preserve 100 percent CCAD capacity to meet the Army's demand for recap as highest priority, and yet also meet this external demand, the UHPO has embarked on an initiative to stand up a dual source capability to execute UH-60A to A to L recap. Through leveraging the unique technical expertise and manufacturing capability of Sikorsky Aircraft Corp., original equipment manufacturer of the UH-60, that effort is well underway at Sikorsky's field operations center at Chase Field, TX. The first of two Department of Homeland Security Customs and Border Protection aircraft currently in process of A to A to L recap at Chase Field were completed in February 2010. Completion of these aircraft will validate the capability of Chase Field



Co-pilot WO2 Jay Falkenburg pre-flights the first production UH-60L Black Hawk to roll out of CCAD. (U.S. Army photo by Ed Mickley, CCAD PAO.)

as a dual source for UH-60A to A to L recap for non-Army aircraft and overflow Army aircraft at CCAD.

The Next Chapter—UH-60L to L Recap

As UH-60As are steadily exhausted from the fleet through a combination of A to A to L recap and divestiture, the next target in the life-cycle sustainment of Black Hawks will be the aging UH-60Ls. To that end, the UHPO plans to induct a UH-60L to L prototype at CCAD in late FY10 for execution during FY11, with recurring L to L recap slated to begin in FY12. UH-60A to A to L recap and L to L recap will operate in parallel through at least FY15.

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The UH-60L capability is a force multiplier in overseas contingency operations, delivering and supporting the most capable, reliable, and sustainable weapons platform to the battlefield.

UH-72A Lakota—A Key Component of Army Aviation Modernization

COL L. Neil Thurgood and LTC David Bristol

Over the last 42 months, the UH-72A Lakota Light Utility Helicopter (LUH) has made impressive strides in providing one of the key components of Army aviation modernization. The new aircraft, which is a variant of the civil EC-145 helicopter, is being fielded to the Army National Guard (ARNG) in the United States and its territories, as well as test and training centers for the active Army. The Lakota is an example of rapid acquisition of a new system that is a commercial/non-developmental item (NDI) due to flexibility in requirements and the willingness of the Army leadership and staff to think outside-the-box.

Two MEDEVAC-configured UH-72A Lakotas fly over the Nation's Capitol. So far, 25 aircraft have been delivered in MEDEVAC configuration. (U.S. Army photo by Matt Potter, UHPO.)



As of Feb. 28, 2010, 99 UH-72A Lakotas have been delivered to the Army. These have been fielded to ARNG units in 11 states and Puerto Rico. Medical evacuation (MEDEVAC) and general support units at the National Training Center and Joint Readiness Training Center (JRTC) have also received the UH-72A. Additionally, active Army units at Fort Rucker, AL; Fort Eustis, VA; and the U.S. Military Academy (USMA) have been fielded and will operate the new Lakota.

The UH-72A is replacing UH-60 Black Hawk, UH-1, and OH-58A/C helicopters used by the ARNG and active Army. The UH-60s being replaced are freed up to support U.S. operations in Afghanistan and Iraq. The UH-72A is also a smaller, less costly aircraft that can still fulfill the missions the UH-60s were conducting in the U.S. The cost of supporting the UH-1 and OH-58A/C aircraft had been increasing over the last several years because of parts availability and old age; the UH-72A provides an alternative to these burdens.

LUH Program

The LUH program was created as an outgrowth of the decision to end the Comanche program in spring 2004, by using the Comanche funding for the LUH. After a 1 year protest, a contract for production and support of the UH-72A was awarded to EADS-North America (EADS-NA) in June 2006. The original plan was for the procurement of 322 aircraft, but that has now increased to 345 with the majority (210 Lakotas) destined for the ARNG. The first delivery was in November 2006, just 5 months after contract award. The EADS-NA team has been able to deliver as many as five aircraft in any 1 month and remain on schedule and within the Army cost position.

There were two key components of the LUH program that led to such a rapid acquisition. The first



UH-72A Lakotas are used to support training and certification requirements, such as this freefall parachute certification at Yuma Proving Ground, AZ. (U.S. Army photo by Matt Potter, UHPO.)

component was the decision to accept a commercial/NDI system that would be civil certified by the Federal Aviation Administration. The second component was the decision to use Contractor Logistics Support (CLS) to maintain the aircraft and provide pilot and enlisted maintenance training. Together, these components minimized the investment the Army has had to make in facilities, part supply, and training equipment. At active Army sites, the mechanics are contractor employees. This provides our Table of Distribution and Allowance units and test facilities with a simple “turnkey” operation and support structure. The ARNG uses Army mechanics to perform field-level maintenance with the assistance of Contractor Field Service Representatives and parts supplied by the EADS-NA team. The UH-72A fleet has achieved an Operational Availability (OA) rate of more than 90 percent.

The successful performance on this contract also led the U.S. Navy (USN) to purchase five aircraft to support the training of rotary-wing test pilots at the USN Test Pilot School (TPS) at Naval Air Station Patuxent River, MD. The TPS trains naval aviators and other U.S. service pilots, as well as those from our allies overseas. The UH-72A provides a highly capable and maneuverable aircraft to support the stressing requirements of the TPS testing. The EADS-NA team produced and delivered all five aircraft to the USN in January 2010, enabling the TPS sustainment of its aggressive training schedule.

UH-72A Configurations and Missions

The UH-72A is delivered in primarily two configurations. First is the standard, which seats two pilots and has six crew seats in the rear compartment. The second is the MEDEVAC configuration, which adds an external

The EADS-NA team has been able to deliver as many as five aircraft in any 1 month and remain on schedule and within the Army cost position.

rescue hoist and substitutes provisions for two NATO standard litters in the back. The high tail rotor and large rear clam shell doors help ease loading and removing litter-bound patients. So far, 25 aircraft have been delivered in MEDEVAC configuration.

Beyond the standard and MEDEVAC configurations, further enhancements of the aircraft's capabilities include several Mission Equipment Packages (MEPs). These MEP kits allow the UH-72A to perform specific missions in support of their major command roles. These include a sensor and communication MEP for the ARNG to conduct its security and support battalion missions. Another MEP facilitates the opposing force/observer controller role at the training and readiness centers, which includes unique camouflage paint as well as communication equipment. There will also be another MEP for the aircraft to be stationed at the Kwajalein Atoll in the Marshall Islands to enhance its over-water capability. These different MEP kits will make the UH-72A more capable and useful to the units. The UH-72A is also certified by the Army to support static and free-fall parachute operations. This supports training at the USMA, as well as at JRTC and other Army sites across the world.

Further enhancements of the aircraft's capabilities include several MEPs. These MEP kits allow the UH-72A to perform specific missions in support of their major command roles.

The UH-72A has been flying in the United States and its territories, accomplishing various missions since it equipped its first unit in November 2006. To date, the fleet has flown more than 20,000 hours in training and support missions. These missions have included homeland security, disaster relief, surveillance, support missions to Hurricane Gustav in Louisiana and Mississippi, and MEDEVAC patient pickup and transport missions at the test and training centers. Since June 2007, any time the space shuttle is diverted to Edwards Air Force Base, CA, because of inclement weather in Florida, the UH-72A aircraft from Fort Irwin, CA, deploy to support those landings. Army personnel are transported daily in the UH-72A to meet their mission requirements.

The rapid acquisition, production, and fielding of the UH-72A Lakota aircraft over the last 3.5 years has allowed the Army to transfer 24 UH-60 Black Hawk aircraft to other missions that


support overseas contingency operations. It has allowed the retirement of aging UH-1 and OH-58A/C helicopters by replacing them with modern, capable aircraft. The use of CLS has provided high OA rates while quickly and efficiently allowing stand up of the units receiving the new aircraft. The more than 90 UH-72A aircraft in use by the Army and ARNG have demonstrated their value by completing numerous missions in support of homeland defense, natural disaster relief operations, and test and training support. The LUH Product Office and EADS-NA team are committed to continuing this production, fielding, and support of the UH-72A at the high standards already achieved to maximize the value of the aircraft performing the Army and ARNG missions.

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The first of five UH-72A Lakotas for the USN sits in a hangar ready to be delivered. The five aircraft will be used to support the training of rotary-wing test pilots at the USN TPS at Naval Air Station Patuxent River. (U.S. Army photo by Matt Potter, UHPO.)



Joint Integration of Unmanned Aircraft Systems (UAS)

Kellyn D. Ritter

UAS are a vital aspect of our military's success in full-spectrum operations, to include intelligence, surveillance, and reconnaissance (ISR); security; target acquisition/attack missions; manned/unmanned teaming; communication relay; and command and control (C2). The jointness of UAS is twofold: the UAS themselves operate jointly as an integrated system and the services work jointly to use UAS effectively in combat operations. At the Army Aviation Association of America UAS Symposium Dec. 10–11, 2009, in Arlington, VA, Army aviation senior leaders collaborated with other services' senior leaders to discuss how UAS work jointly as an integrated system and their plans for UAS integration among the services.

The role of UAS in today's military operations is significant. Here, 1LT Steven Rose launches an RQ-11 Raven UAS near a new highway bridge project along the Euphrates River north of Taqqadum, Iraq, Oct. 9, 2009. (U.S. Army photo by SPC Michael J. MacLeod.)

Defining Army UAS Integration

The role of UAS in today's operations is significant. "The introduction of UAS has had significant implication on how wars are fought today and how they will be fought in the future," said COL Christopher B. Carlile, Director, Army UAS Center of Excellence (COE), Fort Rucker, AL. According to Carlile, more than 325 Army UAS are deployed today, and they have flown nearly 900,000 hours in support of combat operations. In 2009, the Army Aviation Center's UAS Training Battalion, Fort Huachuca, AZ, trained more than 2,100 UAS operators and maintainers (including those in the U.S. Marines Corps (USMC) and U.S. Navy)—an 800-percent increase since 2003. "We've learned that UAS are continuing to prove themselves in key operational roles for the Army—and for the other services—on a daily basis. We employ them and we rely on them to save Soldiers' lives on the ground," said Carlile.

UAS integration involves complex capable manned and unmanned systems that are operated by trained UAS and sensor operators and integrated across the Army and joint

community. Integrating unmanned aircraft and ground systems to work together requires common control and architecture. Factors contributing to UAS integration include unmanned aircraft, mission packages, the human element, the control element, display, communication architecture, and life-cycle logistics. All these are centered around the Soldier and doctrine, organization, training, materiel, and leader development, personnel and facility (DOTML-PF).

System-of-Systems (SoS)

Army UAS function as an integrated system incorporating manned and unmanned assets. The Army UAS concept is an SoS driven by DOTML-PF, and UAS integration doctrine needs to be developed through the accompanying tactics, techniques, and procedures (TTPs). While UAS is a system approach, there are mission-specific platforms within UAS functions. These mission-specific platforms are acceptable as long as they work in an SoS environment and are interoperable within the UAS family.

Ellis W. Golson, Director, Capability Development and Integration Directorate, U.S. Army Aviation COE

(USAACE), explained the importance of an SoS approach. "To have UAS, you must have the people, the aerial platform, the sensor, the network to carry the information, a device that is going to display it to whoever needs it, and the airspace," he said. "If all those aren't synchronized, it won't work. We can have the best platform or the best sensors in the world and we can't do anything with them because we don't have any way to transmit it or display it."

Interoperability Profiles

Industry partner Lori Eckles, L3 Communications, Vice President Advanced Development Programs, advised that UAS development is accomplished through designation in one of three system categories: legacy, upgraded, and new. The development of an overarching interoperability profile is critical to ensuring the UAS platforms can work together. The profile "provides not just interoperability at the communication level, but also end-to-end sensory exploitation system," said Eckles. The SoS approach gives mission flexibility and common mission applications and allows the aircraft in the sky to disseminate real-time data to multiple users on the ground.



Soldiers assigned to the 4th Special Troops Battalion, 4th Brigade Combat Team (BCT), 1st Cavalry Division (Div.), UAS Platoon, move to a UAS launch and recovery site on Forward Operating Base (FOB) Hunter, Iraq. (U.S. Army photo by 1LT Joanne Cotton.)

Interoperability profiles for all Army UAS include:

- Universal Ground Control Station (UGCS).
- One System Remote Video Terminal (OSRVT).
- Tactical Common Data Link.
- Manned/Unmanned Teaming.

The interoperability future of UAS lies with the UGCS and OSRVT. Among other capabilities, the UGCS provides the commander with the ability to control and receive data from multiple unmanned aerial types and tactical flexibility; enables UGCS/OSRVT-linked systems; maximizes UAS operator/maintenance training and simulation; and provides payload products to the network for exploitation. Carlile advised that, “UGCS will control all types of UAS, as well as have the ability to operate eight UAS at the same time.” This allows the ground commander to control the UAS using point-and-click technology through the OSRVT. The OSRVT increases the tactical commander’s situational awareness of the operational environment by allowing Soldiers to mark and capture tactical information onscreen. It has multiple configurations for tactical flexibility and correlated sensor data and map with metadata.

Interoperability is also achieved through the Ground-Based Sense and Avoid System (GBSAA). A networked SoS, GBSAA is composed of system ground-based sensors, data links, procedures, logic, and interfaces. These work to detect an airborne intruder and declare a threat, if applicable, in time to allow the UAS to react and prevent air collision.

Joint Service Interoperability

There is no doubt that making UAS joint across the services is an integral aspect of employing UAS successfully. “The joint is no longer conceptual; it’s a reality, and arguably, a necessity,” said COL Jeffrey N. Colt, Commander, Joint UAS COE, Creech Air Force Base (AFB), NV. He also posed the question, “As we look to joint interoperability, the bottom line is, what’s the right metric and how much, and how do we measure its effects?” Across the full spectrum of operations, the services must be correlated. COL Robert J. Sova, U.S. Army Training and Doctrine Command Capability Manager for UAS, Fort

Rucker, indicated the enablers that play a role in establishing joint service interoperability:

- Common operating picture (COP) forces.
- C2 for dynamic retasking within/between components.
- Local/global distribution of video/data with common links.
- Responsive sensor-to-shooter kill chain.
- Common terminology/TTPs.
- Common training for joint missions.
- Common processing, exploitation, and dissemination architecture.

Another key aspect of joint service interoperability is complex airspace management. “As much as we like to segment the airspace among the services, the reality is that it’s one airspace, and we have to integrate within it and operate together,” said COL Anthony W. Potts, Project Manager (PM) Aviation Systems. “We lock up so much airspace. The ability to manage it effectively is truly a combat multiplier.” Part of this is adopting a conceptual SoS view where there is seamless integration between the civilian and tactical airspace.

The Joint UAS COE, headquartered at Creech AFB, represents the joint stakeholder and realizes many of the joint issues. The COE focuses on nonmaterial solutions and training and readiness. Focus areas include national airspace access, bent-down locations and airspace requirements, operator standards and joint mission qualification requirements, satisfying the see-and-avoid requirement, and solutions for working better with coalition partners. Colt advised that the development of

We’ve learned that UAS are continuing to prove themselves in key operational roles for the Army—and for the other services—on a daily basis.

appropriate joint training readiness and the integration of the COE into joint exercises and experimentation are future areas of concentration for the COE. Another initiative is the Airspace Integration Improvements Initiative being worked by PM Aviation Systems. This entails incremental improvements for collaboration and decision making among all airspace stakeholders, automated capabilities to digitally pass relevant changes to aviators in flight and UAS operators, and networking existing sensors to provide a robust COP during mission execution.

Army aviation leaders and organizations, to include the Army UAS COE in conjunction with USAACE; Maneuver COE; Military Intelligence COE; and U.S. Army Aviation and Missile Research, Development, and Engineering Center, have been working on the Army's UAS road map for the next 25 years. Nested with the Joint Communications and the Army Campaign Plan, the road map has three terms: near-term (2010–2015), mid-term (2016–2025), and far-term (2026–2035). COL Eric S. Mathewson, Director UAS Task Force, HQ U.S. Air Force (USAF), Arlington, advised that the USAF also has a road map and is working on implementing it.



The Army Aviation Center's UAS Training Battalion, Fort Huachuca, trained more than 2,100 UAS operators and maintainers in 2009. Here, SGT Richard Knuth, an unmanned aerial vehicle maintainer in Co A., Brigade Special Troops Battalion, 3rd Heavy BCT, 3rd Infantry Div. (31D), does a pre-flight check on one of his vehicles at FOB Kalsu, Iraq, Jan. 25, 2010. (U.S. Army photo by SGT Ben Hutto, 3rd Heavy BCT, 31D.)



SGT Donald Melvin (left), an unmanned aerial vehicle mechanic with 1st Cavalry Div. in Baghdad, Iraq, and SPC Stephen Cantrell prepare a UAS for a launch. (U.S. Army photo by SGT Travis Zielinski.)

Future

The future of UAS looks promising, according to MG James O. Barclay III, Commanding General, USAACE, Fort Rucker, and Chief, U.S. Army Aviation Branch. "What we're reaping today is probably a miniscule amount of what I know technology can give us in the future," he said. Yet, he and other Army senior leaders cautioned against making mistakes now that will affect the UAS of tomorrow. "We need to be very careful to make sure we do it right, we get what is needed, and we get it in a manner that it can be used on the battlefield," said Barclay. The procurement of the right technology and capabilities is crucial. "We have to remain focused that we're not in the UAS business, [but rather,] focus on the procurement of capabilities," said BG William T. Crosby, Program Executive Officer Aviation. "Those capabilities are focused on the business of getting the right information to Soldiers and combatant commanders."

Mathewson advised that the military has brought unmanned systems to

the forefront: "We're in a revolution in military affairs—not [of] unmanned systems, but the conscious application of automated technology and [being] able to project power without projecting vulnerability." BG Glenn M. Walters, USMC, Deputy Director for Resources and Acquisitions, Joint Staff, J8, advised that it's "mind-boggling the progress we've made in the past 2 years," and he doesn't see that trend changing. Every capability desired is being considered in unmanned form, to include airlift, resupply, ISR, strike, maintenance, etc., across all portfolios.

When asked what will happen to UAS after *Operations Enduring and Iraqi Freedom*, Golson admitted, "We don't know details. But we do know that we *will* have unmanned systems. The big question is: what is the right mix between manned and unmanned?" The Army and joint services are working that question today to prepare for a future where UAS continues to be a successful combat multiplier for our Soldiers.

KELLYN D. RITTER provides contract support to the U.S. Army Acquisition Support Center through BRTRC Strategy and Communications Group. She holds a B.A. in English from Dickinson College.

Fire Support Command and Control (FSC2) Team's Continued Quest for Optimal Joint Fires

Dr. Gary Notte

Joint fires have proven invaluable to U.S. and coalition forces in theater. Joint fires occur when two or more services use lethal and nonlethal weapons in coordinated action toward a common objective. However, as with most collaborative steps taken in DOD, decisions on joint fires must be supported by all echelons to achieve success. The Army's FSC2 division, which falls under the management of Project Manager Battle Command (PM BC), challenges itself daily to increase collaboration in joint fires, while simultaneously redefining the tools that warfighters use to maintain these connections.

Pictured is the High Mobility Artillery Rocket System, a joint fires system. (U.S. Army photo by Kari Hawkins, Redstone Arsenal, AL.)





SPC Todd Thomas, a Fire Support Specialist with Headquarters Co., 2nd Brigade Combat Team (BCT), 82nd Airborne Division (Abn Div.), receives a call for fire from troops in contact with the enemy during 2nd BCT's Virtual Joint Fire Coordination Exercise held at the BC Training Center. (U.S. Army photo by Mike Pryor, 82nd Abn Div.)

Making Jointness a Priority

Senior defense leaders, including those from the FSC2 team, continue to reinforce the idea of joint interdependence to ensure they are meeting the needs of warfighters on the battlefield as quickly as possible. The 2005 Army Strategic Planning Guidance stated that to reduce redundancies and gain efficiencies, the services must become interdependent, where each must rely on the other for certain capabilities so the entire force can function with greater effectiveness. Joint interdependence is the purposeful reliance on other service, coalition, and joint capabilities. It maximizes complementary and reinforcing effects and minimizes

vulnerabilities. The Army will continue implementing initiatives that leverage interdependence, a concept that is central to both the expeditionary mindset and the campaign quality we seek. This concept of interdependence also extends to interagency and coalition partners, enhancing the ability of Army and joint forces to effectively achieve joint force campaign objectives.

The FSC2 team leverages this guidance as much as possible. As FSC2 develops fire support technologies, it strives to incorporate international and coalition technologies where suitable. Today, it focuses on achieving 100 percent joint collaboration in every aspect of

fire support. The PM and the FSC2 team strive to make jointness a natural condition for everything they do. Given the nature of the security environment, sustained operational commitments, and challenges inherent in responsively implementing the defense strategy, joint interdependence is a strategic and operational imperative.

Enlisting the Tools of the Trade

FSC2 manages six products, all of which support multiservice applications:

- Advanced Field Artillery Tactical Data System (AFATDS).
- Joint Automated Deep Operations Coordination System (JADOCS).
- Pocket-Sized Forward Entry Device.
- Lightweight Forward Entry Device.
- Centaur (Lightweight Tactical Fire Direction System).
- Gun Display Unit-Replacement.

These products represent the first digital entry into the fires chain, as well as the

JADOCS represents a true joint and coalition tool, providing a timely, accurate, and detailed operational environment view for planning, coordination, and execution of time-sensitive and component targets.



PFC George Dick of the 2-4 Infantry, 4th BCT, 10th Infantry Div., operates AFATDS in an exercise at Forward Operating Base Anvil at the Joint Readiness Training Center, Fort Polk, LA. (U.S. Army photo by Tim Rider.)

C2 to conduct both lethal and non-lethal fires. While all FSC2 products support multiple services, AFATDS and JADOCs stand out among these systems as true joint and coalition tools.

AFATDS

AFATDS is the land component's automated fire support C2 system that processes, analyzes, and exchanges combat information within the Army/U.S. Marine Corps (USMC)/joint architecture. Its interoperability with other Army, USMC, U.S. Air Force, and U.S. Navy C2 systems, as well as international partners, makes this system an asset for commanders throughout the services. The technical fire direction capability is at the heart of AFATDS, designed to ensure that the right surface targets are quickly engaged with the most efficient fire support asset that meets the joint task force commander's intent. AFATDS provides fully automated support for planning, coordinating, controlling, and executing fires and effects. It supports weapon systems such as mortars, field artillery cannons, rockets, close air support, attack helicopters, and naval surface fire support systems. FSC2 recently enhanced the performance of AFATDS by adding fires planning, scheduling of fires, and

target list development to include no-strike lists and restricted target lists.

One unique aspect of AFATDS is its future approach to providing coalition support in current-day conflicts. FSC2 is currently designing the Artillery Systems Cooperation Activities (ASCA) interface, which is the first concerted effort to build a fires C2 interface among multiple countries. This tool will enable disparate country systems to interoperate and send bidirectional data from their own C2 systems to execute fires missions and planning/scheduling of fires using other countries' assets. ASCA recently underwent successful developmental testing, but is undergoing further analysis prior to implementation.

AFATDS continues to greatly enhance fire support in multinational and coalition activities, providing for successful

collaboration on the battlefield. The FSC2 team looks forward to the future development of ASCA and hopes to implement it soon. Joint fires could not be accomplished effectively across the battlefield without AFATDS C2.

JADOCs

JADOCs is also a joint and combined warfighting application that provides warfighters with a combination of tools, services, and mission managers to bridge "capability gaps" identified by combatant commands (COCOMs) and service commanders. JADOCs focuses on the joint service component, coalition-targeting process, and coordination carried out from battalion through the Joint Force headquarters and COCOMs based on the operational situation. Today, JADOCs represents a true joint and coalition tool, providing a timely, accurate, and detailed operational environment view for planning, coordination, and execution of time-sensitive and component targets.

JADOCs provides capabilities in each of the six phases of the joint targeting cycle (see figure on Page 43). Nomination of targets and subsequent vetting through execution and coordination enables the commander to assess an estimation of battle damage and collateral damage. JADOCs' mission coordination role is to deconflict, collaborate, exchange digital information, and visualize. Prior to JADOCs, there was limited horizontal mission coordination between programs of record (PORs). JADOCs has specifically solved this weakness and provides the horizontal coordination elements, interface, communications tools, and

PM BC and FSC2 continue work to achieve fully interoperable joint BC and joint fire control systems while still trying to achieve a seamless interface between communications and computer networks.

mission coordination managers between services, coalition, echelons, systems, and functional areas.

COL David Moore, PM BC, saw the capabilities that JADOCS brings to the targeting and fires area while in theater. “I am very proud of our ability to leverage JADOCS,” he said. “This system is present on U.S., NATO, and other national networks. It is a key enabler to ensure artillery and other fire support systems could be made available to the coalition fight.”

In 2008, the Vice Chief of Staff of the Army approved the transition of JADOCS from a capabilities development for rapid transition program to an acquisition program. This designation aligns JADOCS with the *DoD 5000.1* and *DoD 5000.2* acquisition documents, which will establish the system as a POR. JADOCS is currently employed in Central Command, European Command, Pacific Command, and U.S. Forces Korea with more than 3,000 dedicated users. Recently, JADOCS has been selected as the key targeting coordination system and provides services for effective coordination between Army, joint, and coalition systems in functional areas of multiple mission threads, such as deconfliction/collaboration, digital information

Soldiers from Charlie Battery, 1st Battalion, 321st Abn Field Artillery Regiment, fire 155 Howitzer rounds using an M777 weapons system in theater. The Soldiers were registering targets so they will have a more accurate and faster response time when providing fire support. (U.S. Army photo by SPC Evan D. Marcy.)



JADOCS plays a role in all six phases of the joint targeting cycle.

exchange, and visualization of the common operating picture.

Improving Joint Fires

Our Future Force concepts call for decisive maneuver through simultaneously distributed operations, continuous operations at high operational tempo, and direct attack of key enemy capabilities and centers of gravity. A networked approach to both lethal and nonlethal fires and true joint fires interdependence are necessary elements of this future concept. PM BC and FSC2 continue work to achieve fully interoperable joint BC and joint fire control systems while still trying to achieve a seamless interface between communications and computer networks.


“Even though each individual system is performing well, we are working to do better tying our information systems together more tightly and efficiently,” Moore said. “By doing this, we can continue to help the warfighter organize, mature, and share this information to ensure

that both U.S. and coalition forces maximize their freedom of maneuver and secure their objectives.” The Future Force will be equipped with enhanced systems and capabilities that improve our current platform and readiness. We continue to partner in joint initiatives to improve integration of necessary joint fires across the entire spectrum of conflict in support of land force operations throughout the range of military operations, from small-scale counterinsurgency to strategic global strike. Our concept development, experimentation, and capabilities generation processes must proceed along a joint path with that purpose in mind. The zenith for fire support coordination would be absolute joint integration to achieve the responsiveness and effectiveness required, and this is what the Army aims for each day.

DR. GARY NOTTE is the Product Director (PD) FSC2, PM BC. He holds a B.S. in management science from Kean College, an M.B.A. from Monmouth College, and a D.B.A. from California Coast University. He is also a graduate of the Senior Executive Fellowship at the Harvard University John F. Kennedy School of Government and the Army Management Staff College.

Army Insensitive Munitions Board (AIMB) Aids in Weapon Systems' Development and Acquisition

Kirk E. Newman



Over the past 50 years, catastrophic losses have resulted from incidents involving munitions. The collateral damage from the inadvertent initiation and detonation of our own munitions has ranged from property damage to serious injury to loss of life. Though a number of these incidents can be attributed to careless handling or enemy attack, many occurrences were exacerbated by the lack of understanding as to how certain types of energetics react when subjected to unplanned stimuli (heat, impact, shock), and/or a lack of available technology to mitigate the severity of reaction. Incidents such as the 1967 USS Forrestal fire; the 1981 aircraft crash aboard the USS Nimitz; the 1991 Camp Doha, Kuwait, motor pool fire; and the 2006 shelling of an ammunition storage facility at Camp Falcon, Iraq, illustrate why the government has passed laws and the services have enacted joint insensitive munitions (IM) policy to ensure, to the extent practicable, that munitions are as safe as possible throughout their life cycle when subjected to unplanned stimuli.

Soldiers of Team Arrowhead fire high-explosive rounds in March 2009 at Fire Base Mayhem, Camp Taji, Iraq, before departing for Joint Security Station Istiqlal during the battery's M777A calibration. The AIMB ensures, to the extent practicable, that munitions such as those fired here are as safe as possible throughout their life cycle when subjected to unplanned stimuli. (U.S. Army photo by CPT Ed Shank, 1st Battalion, 108th Field Artillery Regiment, 56th Stryker Brigade Combat Team, U.S. Forces-Iraq.)

In August 1992, the Army established the Munitions Vulnerability Assessment Panel (MVAP) to provide weapons developers with access to a team of subject matters experts (SMEs) for assistance in executing the Army's IM and survivability-related program requirements throughout the munitions life cycle. The MVAP was superseded by the AIMB, which coordinates the integration of research, development, testing, and evaluation products with the practices of acquisition managers to mitigate the inherent hazards of weapon systems and ensures the performance, survivability, and interoperability of the munitions used by the warfighter.

What is the AIMB?

The AIMB is an independent advisory authority of SMEs and technical advisors. It is chartered by the Deputy Assistant Secretary of the Army (ASA) for Acquisition and Systems Management under the ASA for Acquisition, Logistics, and Technology, the designated Army Executive Agent (AEA) for IM. The

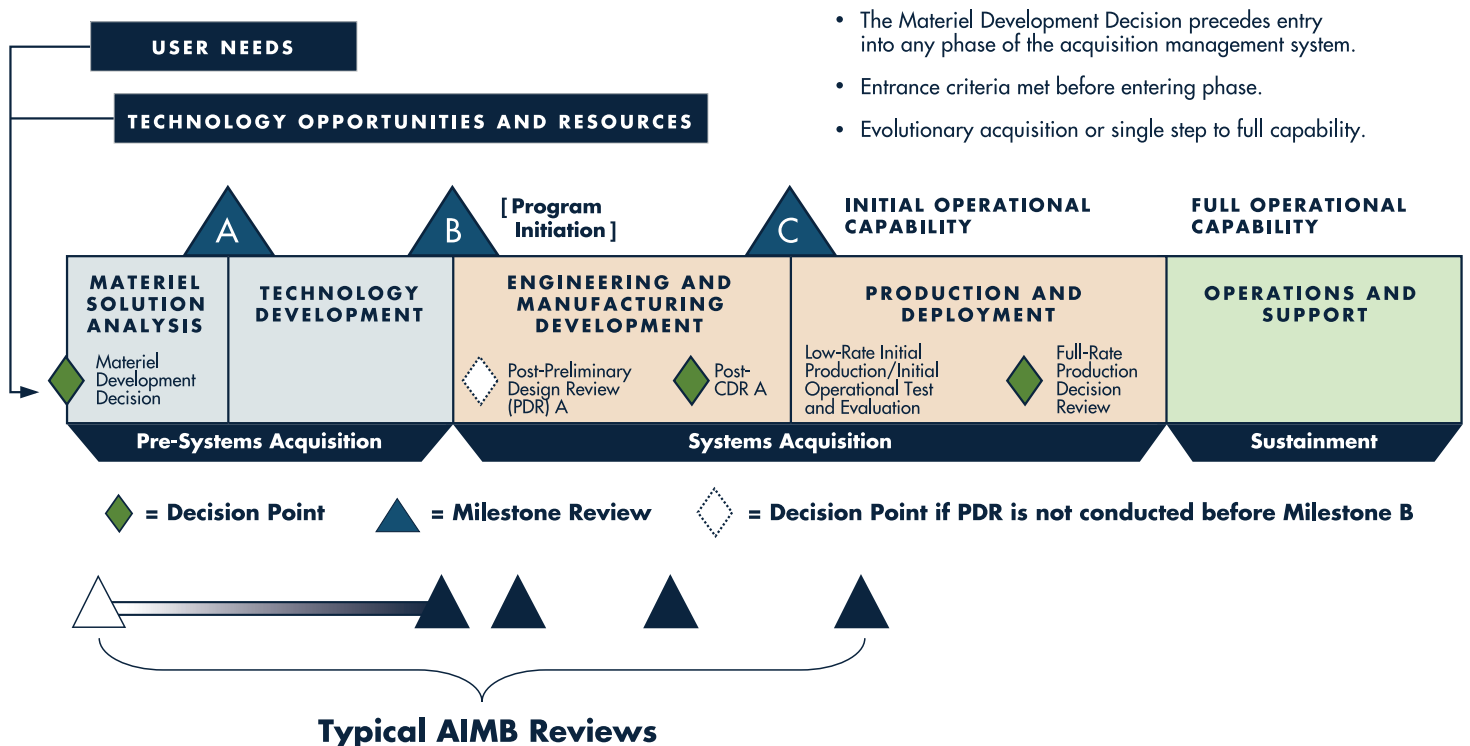
AIMB members are experts in such areas as energetic materials, warhead and propulsion development, IM technology, weapon system design, HC, and vulnerability.

AIMB provides advice to the AEA for IM on all IM matters and assists acquisition managers in the execution of their IM-related responsibilities. The Board encourages the insertion of relevant technology, ensures compliance with Army and DOD IM policies for weapon systems used by warfighters, and works with Army and joint program executive offices (PEOs) and program/product managers (PMs) in the development of their biennial IM Strategic Plans (IMSPs).

The AIMB is composed of four co-chair (core) members, five sitting members, and invited technical advisors. The Board's core membership is derived from the U.S. Army Research

Laboratory; U.S. Army Armament Research, Development, and Engineering Center (ARDEC); U.S. Army Aviation and Missile Research, Development, and Engineering Center; and the U.S. Army Space and Missile Defense Command (SMDC). The sitting membership includes participants from the U.S. Army's Aviation and Missile Command Safety Office; the ARDEC Systems Safety Office; the ARDEC Packaging and Engineering Support Division; the U.S. Army Technical Center for Explosives Safety; and the U.S. Army's Test and Evaluation Command. Invited technical advisors include IM representatives from the U.S. Navy (USN), U.S. Marine Corps

FIGURE 1. AIMB COORDINATION WITHIN THE ACQUISITION MANAGEMENT FRAMEWORK



(USMC), U.S. Air Force (USAF), and Missile Defense Agency (MDA). AIMB members are experts in such areas as energetic materials (e.g., high explosives, propellants, pyrotechnics), warhead and propulsion development, IM technology, weapon system design, hazard classification (HC), and vulnerability. The Board provides technical assistance and/or guidance to PEOs and PMs at each step in a weapon system's life cycle.

AIMB's Role Within the Acquisition Management Framework

According to *Department of the Army Pamphlet 70-3, Section 10-44*, the planning and execution of an IM program plan should be initiated at the start of a munition acquisition program and continue through production and fielding of the munition. The AIMB performs tasks that are critical to the effectiveness of the Army's IM thrust, primarily within the munition acquisition process, as illustrated in Figure 1 on Page 45.

The AIMB provides technical advice to the acquisition manager by suggesting IM technical approaches to mitigate

From its inception, the AIMB has been an advocate for the programs that seek technical advice on, support for, and approval of their endeavors to comply with IM policy.

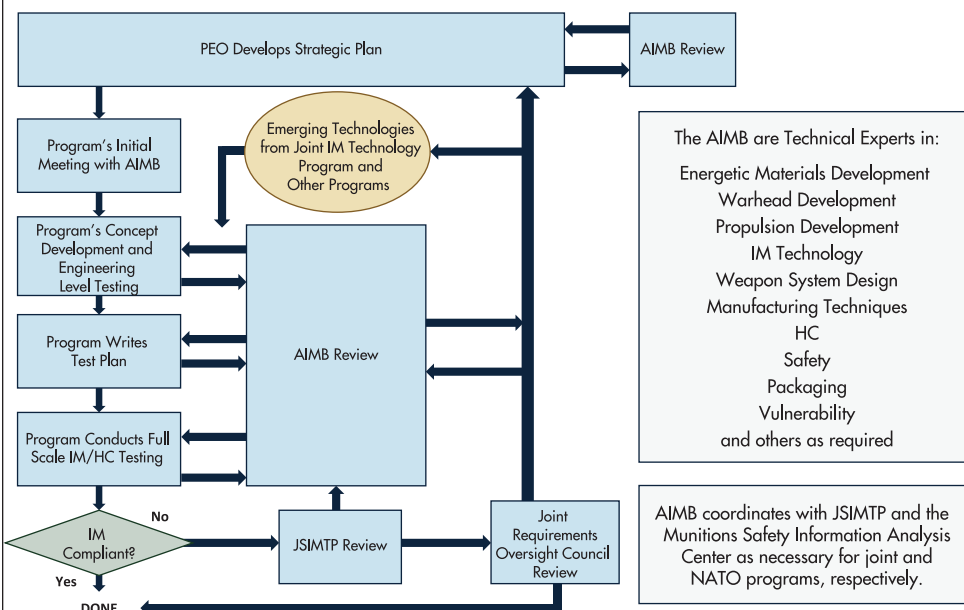
munition reactions to unplanned stimuli and identifies potential and/or existing technology gaps that may impede development of less sensitive munitions. The AIMB monitors emerging IM technologies in the areas of munition design, energetic materials, and packaging, and it develops recommendations that assist acquisition managers in achieving IM objectives. Prior to a program's Critical Design Review (CDR), the AIMB reviews the IM threat hazard assessments, test plans, test reports for munitions, and any other relevant documents. The reviews are conducted at key points during the planning and execution of the acquisition program. The AIMB assesses the compliance of munitions with IM requirements, reviews test results of munitions for which official Army IM test scores are derived, and promotes the integration of IM and HC testing. Another of the Board's key

responsibilities throughout the acquisition management process is the review of IMSPs and the supporting IM Plans of Action and Milestones (POA&Ms). As stated previously, the AIMB provides IM technical guidance to PEOs and PMs in the development of their IMSPs. This guidance serves to help coordinate and maximize the benefit of IM-related endeavors for the Army's munitions portfolio. The Board also aids PEOs and PMs in achieving their IM goals by assisting with prioritization of new IM technologies and their implementation into munitions systems and by providing advice regarding cost-effective methodologies. The AIMB's role within the strategic planning process is illustrated in Figure 2 below.

Working within the IMSP, PEOs and PMs develop POA&Ms for their priority munitions with the intent of improving the munition's IM characteristics. The AIMB reviews the POA&Ms to ensure that the information presented regarding the munitions' program status, system description, threat hazards, system test results, technical approach, schedule, funding, procurement, and impacts will succeed in improving the IM characteristics of the subject munition. As an advocate for its constituent programs and the PEOs and PMs, the AIMB encourages frequent coordination between the Board and PMs in the development of IMSPs and POA&Ms to ensure that the Army's IM requirements are properly addressed and munitions acquisition is not adversely impacted.

Advocate for IM Compliance
From its inception, the AIMB has been an advocate for the programs that seek

FIGURE 2. AIMB ROLE WITHIN THE STRATEGIC PLANNING PROCESS





In a fire during the load/assemble/pack operations for the M232A1 Modular Artillery Charge System (MACS) at General Dynamics-Armaments and Technical Products, Camden, AR, the IM features of the MACS vented the pressure from the nearly 6,000 pounds of burning propellant housed in and around the building and prevented injuries to personnel. (Photo courtesy of Project Manager Combat Ammunition Systems, Picatinny Arsenal.)

technical advice on, support for, and approval of their endeavors to comply with IM policy. Since 1992, more than 550 munition/system program briefings (including multiple program briefings) have been presented to the Board. This number includes programs that develop and procure weapons used by the land warfighter that are under the purview of the Army, USN, USMC, USAF, MDA, and U.S. Special Operations Command. Stressing to its constituents the importance of attaining successful IM technology development, implementation, and compliance, Board members make themselves available to programs needing extra technical assistance/guidance. To educate those who were not familiar with the IM program or the processes and requirements that support it, the AIMB served as lead for the development and revision of the *DoD Acquisition Manager's Handbook for Insensitive Munitions*.

The handbook is a single-source document for acquisition managers to locate DOD and military service

policy, procedural references, and technical information about IM policies, business rules, joint IM testing standards, and strategic planning. One of the objectives of the handbook was to ensure that all program management offices clearly understood the concepts and requirements associated with integrating acquisition management, assessment of ammunition programs, identification of potential opportunities for IM improvement, and prescribed actions to develop and execute detailed plans.

The Board often educates managers and weapon developers about other advisory boards and panels, with

which they may be required to engage over the course of their program. The AIMB chair is the Army representative on the Joint Services IM Technical Panel (JSIMTP), which assists with IM technology matters regarding IM compliance of the DOD munitions inventory and provides technical advice/recommendations concerning IM technology to program Milestone Decision Authorities, PEOs, PMs, the Office of the Secretary of Defense, and Joint Staff. Whenever feasible, the AIMB encourages interaction with Army Hazard Classifiers and the DOD Explosives Safety Board in an effort to combine testing.

Impact on Soldiers

The following account is from a Picatinny Arsenal, NJ, employee whose son, a mortar gunner, was traveling in a convoy in the Afghanistan theater of operations when one of the vehicles was hit by an improvised explosive device (IED). This story demonstrates how IM technology has saved lives and serves as reminder of the AIMB's mission to ensure the safety

and survivability of our warfighters at home and abroad.

"I want to share my son's experience with the 60mm mortar M768 [high-explosive cartridge] with the people who developed it," the employee said. "When talking to my son, who is now in theater in Afghanistan, he told me that one of their trucks got hit by an IED resulting in four injuries, and one of them was badly burned. Later, they recovered the badly damaged truck. They discovered that there were some damaged M768 rounds inside the truck. They said that the fuzes on those rounds flew off, but the shell bodies were not detonated. They praised the people who developed the rounds because that might have saved the lives of injured Soldiers."

The AIMB serves as an advocate of programs seeking to comply with IM policy and an educator on IM technology and practices. An entity whose efforts are considered significant and vital to the success of the Army's IM endeavors, the AIMB members, with their considerable expertise, take on the added responsibility of ensuring the survivability of weapons platforms and personnel that define the AIMB. It is these experts who, when engaging their constituents, emphasize that IM is a requirement that can mitigate the severity of disaster and provide life-saving benefits.

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Picatinny Insensitive Munitions (IM) Efforts Paying Dividends

Rene Kiebler and Paul Manz

On Oct. 5, 2009, Picatinny Arsenal, NJ, was honored to host SPC Alan Ng, who was home on mid-tour leave from duty in Afghanistan. Ng, a son of a Picatinny employee, is a mortarman in the 10th Mountain Division. While at Picatinny, he spoke with leaders and engineers from Project Manager Combat Ammunition Systems (PM CAS) and the U.S. Army Armament Research, Development, and Engineering Center (ARDEC) about his experiences with Picatinny-developed munitions.

Shell bodies and separated M783 fuzes from M768 cartridges were recovered from SPC Alan Ng's vehicle after the Sept. 12, 2009, MRAP fire. (Photo courtesy of PM CAS, Picatinny Arsenal.)

On Sept. 12, 2009, a Mine Resistant Ambush Protected (MRAP) vehicle in Ng's convoy was destroyed by a very powerful improvised explosive device (IED). The IED ruptured the vehicle's hull and fuel tank, which engulfed the vehicle interior in flames—to include 16 M768 60mm mortar cartridges that were carried inside the cabin with the 7-man crew. Although several Soldiers were seriously injured in the ambush, all survived. Thanks to the IM features of the M768 cartridges, a much greater disaster was averted.

M768

The M768 incorporates several IM features, including new energetic materials in the fuze and shell body. It also contains a plastic fuze adaptor that melts in an accidental fire, allowing the fuze to separate from the cartridge. This relieves internal pressure and prevents detonation of the explosive fill. After the MRAP had stopped burning, Soldiers who examined the wreckage were amazed to find all of the rounds' shell bodies intact, proving that none of them had gone "high order" in the fire. They also found the remains of the fuzes that had separated from the cartridges as designed, which allowed the PAX-21 explosive fill to burn rather than explode. The team members who

The team members who developed the M768 were gratified to hear that their hard work paid off for American Soldiers in such a real and dramatic way.

developed the M768 were gratified to hear that their hard work paid off for American Soldiers in such a real and dramatic way.

The M768 cartridge, which received Full Materiel Release in 2006, is one of the early success stories in a larger IM Strategic Plan that Program Executive Office Ammunition (PEO Ammo) is implementing to develop and produce safer ammunition throughout its portfolio. The PEO's PMs have instituted plans of action and milestones for improving IM characteristics for their assigned munitions through improvements in packaging, explosive fills, propellants, and fuzes for all calibers, up to and including 155mm.

PEO Ammo, under the direction of the Army Executive Agent for IM, has long recognized that IM enhances warfighter safety by preventing catastrophic accidents, such as the now-famous fire in Camp Doha, Kuwait, in July

1991 that resulted in 3 deaths and 56 wounded. This incident started with a small heater fire in an artillery resupply vehicle—loaded with propellants and projectiles—that exploded, spreading the fire from vehicle to vehicle. In all, 102 vehicles were destroyed or damaged before the fire was extinguished. In addition, IM promise to reduce the logistics burden imposed by the requirement for large separation distances between highly volatile munitions, both in transit and in storage.

IM Testing and Improvements

Department of the Army Pamphlet 70-3, Army Acquisition Procedures, presents a total systems engineering approach to assist in meeting IM requirements, and specifies IM testing based on *Military Standard 2105C, Hazard Assessment Tests for Non-Nuclear Munitions*. This standard requires subjecting munitions to six very harsh tests:

- Fast cook-off—rapid exposure to a liquid fuel fire.
- Slow cook-off—gradually raising the temperature to above the ignition point.
- Bullet impact.
- Fragment impact.
- Sympathetic detonation—intentionally detonating one munition surrounded by several others.
- Shaped charge jet impact—similar to a rocket-propelled grenade.

Over the last decade, great strides have been made in shell design, propellant and explosive fill formulation, and packaging improvements. For example, the sympathetic detonation and shaped charge tests were once presumed to be impossible to pass, routinely requiring



Shown here is the interior view of the MRAP in Ng's convoy after the Sept. 12, 2009, fire. An unexploded shell body from a M768 cartridge can be seen in the lower left. (Photo courtesy of PM CAS, Picatinny Arsenal.)



SPC Alan Ng (third from left) explained his firsthand experience with the importance of IM to Picatinny M768 team members (left to right) Bill Kuhnle, Roger Wong, Scott Faluotico, Marty Moratz, Pam Ferlazzo, John Niles, Jeff Ranu, and Jeff Smith. (Photo courtesy of PM CAS, Picatinny Arsenal.)

IM promise to reduce the logistics burden imposed by the requirement for large separation distances between highly volatile munitions, both in transit and in storage.

waivers before new munitions could be materiel released. In 2008, however, the Energetics Branch of PM CAS was nominated for the David Packard Excellence in Acquisition Award for design and explosive fill technology improvements to 155mm artillery projectiles, propellants, and packaging that finally passed all six of these difficult tests.

The maturation and transition of these technologies were dramatically accelerated through the infusion of enabling funds from the Office of the Secretary of Defense (OSD) Technology Transition Office. The Technology Transition Initiative (TTI), established by Congress in 2002, “is intended to accelerate the introduction of new technologies into operational capabilities for the armed forces.” The PM CAS/

ARDEC team proposed a new IM TNT-replacement explosive fill (called IMX-101) and changes to the M795 projectile to allow pressure relief from the projectile nose. In a highly competitive environment, these were selected by OSD and subsequently received TTI funding. These improvements to the projectile, when coupled with the IM features of the M231, M232, and M232A1 propelling charges and containers, would have almost certainly prevented the Camp Doha disaster.

PM CAS and ARDEC are currently working on a Common Low-Cost IM Explosive Program. Along with support from OSD’s TTI, they are leveraging support from the Joint IM Technical Program to accelerate transition of IM solutions to the field. The long-term objective of this program is to

develop a single high-explosive fill that can replace TNT and Composition-B in 105mm and 155mm artillery projectiles and 60mm, 81mm, and 120mm mortar cartridges. The new fill must be at least as effective as the more volatile formulations it will be replacing, even though it will be less sensitive to unplanned stimuli. It must be affordable, producible by the current industrial base, and environmentally friendly. Although these requirements may seem insurmountable, in the past, Picatinny Arsenal personnel have risen to such challenges and passed tests once considered impossible. Always focused on providing effective, safe, and reliable weapons to the warfighters they support, their motivation was further enhanced when they heard the aforementioned firsthand feedback from “one of the family” on the importance of providing IM.

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PAUL MANZ is Chief of Advanced Systems in PM CAS. He holds a B.S. in electrical engineering from the New Jersey Institute of Technology and a master of public administration from Fairleigh Dickinson University. Manz is Level III certified in program management; life-cycle logistics; business, cost estimating, and financial management; systems planning, research, development, and engineering (SPRDE)-science and technology manager; and SPRDE-program systems engineer. He is a U.S. Army Acquisition Corps member.

Army Team Wins DOD Award for Satellite Communications (SATCOM) Project

Stephen Larsen

Not too long ago, it took hours for deployed medical personnel to transmit digital X-ray or computed tomography (CT) scan files in Iraq and Afghanistan. Now, it takes minutes, allowing wounded Soldiers to receive more timely medical care. This revolution in medical care is thanks to the Joint Telemedicine Network (JTMN) project, for which the JTMN implementation team was honored with the DOD Chief Information Office (CIO) 2009 Team Award at the Pentagon Oct. 28, 2009.

LTC Tony Allen, Theater Radiology Consultant, views digital CT scans in Iraq thanks to the JTMN. (U.S. Army photo.)



JTMN implementation team members include LTC Nanette Patton, U.S. Army Medical Department (AMEDD) Deputy Chief Information Officer for Business and Theater Systems Integration and the project's sponsor; LTC Alfred Hamilton, U.S. Central Command (CENTCOM) Medical Chief Information Officer and the project's operational sponsor; Salvatore Granata, project lead for Product Manager Defense Wide Transmission Systems (PM DWTS), part of the Defense Communications and Army Transmission Systems Project Office, Program Executive Office Enterprise Information Systems (PEO EIS); MAJ James Morrison, Task Force 44 U.S. Army Medical Command (MEDCOM) G-6, who represented the medical community in Iraq; MAJ Jack Leech, Health Information Systems Officer (HISO) for Combined Joint Task Force-101 in Afghanistan; MAJ Dan Bridon, HISO for Task Force 30 in Afghanistan; 1LT Peter Winkel, Task Force Medical J-6; and Liz Snyder, Project Manager for PM DWTS' prime contractor DRS Technologies Inc.

The Telecommunication Problem

The need for the JTMN emerged when Hamilton went to Iraq and Afghanistan for 60 days in 2007 and visited military health care facilities and providers throughout the theater. He asked the providers a simple question: what information technology support did they need to help them provide the best medical care possible?

"We went through their concerns and a picture emerged," said Hamilton. That picture clearly showed that the existing in-theater telecommunication infrastructure was not sufficient to support critical medical situations. It took an average of 4.5 hours to transmit a single full-body CT study of traumatically wounded service members from one medical facility to another, and more than an hour to transmit a single digital



JTMN implementation team members are shown after winning the DOD CIO 2009 Team Award at the Pentagon Oct. 28, 2009. Left to right: Salvatore Granata, project lead for PM DWTS; MAJ James Morrison, Task Force 44 MEDCOM G-6; LTC Alfred Hamilton, CENTCOM Medical Chief Information Officer; Liz Snyder, Project Manager for PM DWTS' prime contractor DRS Technologies Inc.; LTC Nanette Patton, AMEDD Deputy Chief Information Officer for Business and Theater Systems Integration; and 1LT Peter Winkel, Task Force Medical J-6. (Photo by Jessica Wainwright.)

chest X-ray. In many instances, patients being evacuated would reach the next echelon of care before transmitted medical data and images got there.

Hamilton captured all this information in a Joint Urgent Operational Needs Statement (JUONS) that he wrote, in which CENTCOM identified the requirement for a SATCOM capability using very small aperture terminals (VSATs) with sufficient bandwidth to expeditiously transmit critical medical data and images. In response to the JUONS, the JTMN project started in October 2008 with the JTMN implementation team, including members who collaborated from worldwide locations such as Fort Monmouth, NJ; MacDill Air Force Base, FL; Falls Church, VA; Germany; Kuwait; Iraq; and Afghanistan.

The JTMN Solution

The JTMN implementation team's solution included modifying existing VSATs in theater to handle greater bandwidth capacity, repurposing VSATs no longer needed in Iraq for use in Afghanistan, providing additional VSATs throughout the theater, and upgrading the Landstuhl, Germany,

hub to link the network back to CONUS. The team successfully achieved initial operational capability for the system in March 2009 and since then has been working to expand and improve the system.

Patton noted that the team overcame multiple obstacles in implementing the project, including time zone challenges, a 100-percent turnover of key project personnel, contracting delays, transportation issues, supply chain failures, and satellite bandwidth shortages. She called the experience "the best of times and the worst of times. Overcoming all those obstacles—that's why it was the worst of times—and working with the team—that's why it was the best of times," Patton said.

One significant obstacle that the team overcame was the failure of an aging satellite providing temporary Ku bandwidth for the JTMN until the launch of a new satellite. "There are only so many birds [satellites] over Afghanistan, and everyone is trying to use them," explained Granata. "These satellites were not meant to last as long as they have, and we've had three instances where the orbit of a satellite

Our wounded warriors benefit by the proliferation of JTMN and continue to receive improved care at all echelons, in and out of Afghanistan.

deteriorated and we had to move to an interim satellite to keep the network running while we arranged getting on another satellite for a long-term solution.”

Thanks to the team’s ability to react calmly and work together to overcome these obstacles, deployed medical personnel now can transmit 250-megabit digital X-ray or CT scan images within about 5 minutes via JTMN. “This allows radiologists to view the images before the patient arrives at the medical treatment facility,” said Patton, “and enables the medical team to provide more effective care during the ‘golden hour’”—the time period from a few minutes to an hour following traumatic injury, during which there is the highest likelihood that prompt medical treatment will prevent death. “Having the images at the medical treatment facility before the wounded Soldier arrives allows the medical team to proactively

have a game plan when the wounded Soldier arrives,” added Morrison.

According to Bridon, another benefit is that JTMN’s video teleconferencing (VTC) capability allows remote teleconsultation with medical specialists at other locations—in theater, Germany, or back in CONUS. Morrison added that, in addition to enabling teleconsultation, JTMN’s VTC allows distance learning and remote training. The JTMN also allows technicians from other locations to perform remote diagnostic maintenance services on their radiological equipment. “These JTMN capabilities have reduced our need to put people at risk by having to send them out on the roads to do maintenance or to get training,” Morrison said.

Morrison and Bridon both appreciate that JTMN now allows medical personnel in theater to transmit electronic

medical records detailing past medical history, medications, immunization records, laboratory data, and radiology reports—even in austere regions of Iraq and Afghanistan where the telecommunications infrastructure is not well developed. “JTMN also allows us to do automated ordering of Class VIII medical supplies [medicines, medical equipment, and dressings] using Web-based tools,” said Morrison.

A Team Effort

The process of implementing JTMN was “a roller-coaster ride,” Patton said. “Some teams implode when there’s all that pressure to overcome so many obstacles, but we kept it all together. Life threw us some curveballs, but we adjusted and improvised.” Added Hamilton, “Our team was just a perfect team. Everyone had a role and they were all intertwined and just clicked.”

Bridon said that when he and the Task Force 30 MEDCOM team arrived in Afghanistan in May 2009, JTMN was up and transmitting at only three sites in Afghanistan. Over the following 6 months, he and his team worked to triple the number of JTMN sites—despite very difficult and dangerous conditions in theater—and have many more sites in various stages of implementation and planning.

“Our wounded warriors benefit by the proliferation of JTMN and continue to receive improved care at all echelons, in and out of Afghanistan. All of that gain makes the long hours, grueling travel, and high stress worth it. Our brothers- and sisters-in-arms deserve it,” concluded Bridon.

STEPHEN LARSEN is the PEO EIS Public Affairs Officer at Fort Monmouth. He holds a B.A. in American studies from the College of Staten Island of the City University of New York and has more than 20 years’ experience writing about Army systems.



CPT John Lavoie (left) and SGT David Leach, Task Force 30 MEDCOM, pose proudly next to one of the JTMN VSATs in Afghanistan. (U.S. Army photo.)

Project Manager Combined Arms Tactical Trainers (PM CATT)—Supporting the Reserve Component (RC)

COL Francisco A. Espaillat and LTC Jay A. Smith

Almost every leader in the U.S. Army Reserve (USAR) or Army National Guard (ARNG) can tell you a good news story about Training Aids, Devices, Simulators, and Simulations (TADSS) and how they have multiplied the effectiveness of a good drill weekend's training. Those same leaders can also tell you bad news stories about how their training plans have suffered because the right training aid was not available on the weekend they needed it.

PEO STRI oversees the EST 2000 production, fielding, and sustainment. The EST 2000 enables Soldiers to go through initial and sustainment marksmanship training, along with collective gunnery and tactical instruction. (U.S. Army photo by Doug Schaub.)

If used correctly, a good training aid or simulator can improve a Soldier's skills and provide vital safety training before the Soldier is in the actual situation. TADSS can significantly reduce time spent in the field, improve training scores, reduce training costs, enhance unit safety, and multiply the unit's chances of success in combat.

The Army is placing renewed emphasis on the use of TADSS in today's demanding training environment, especially since today's Soldiers understand the power of virtual training devices and simulators. PM CATT, part of the Army's Program Executive Office Simulation, Training, and Instrumentation (PEO STRI) in Orlando, FL, takes a leading role in putting needed, high-tech TADSS into the hands of USAR/ARNG Soldiers.

USAR/ARNG Soldiers have probably used many of their devices without knowing that a dedicated team of engineers, technicians, and support logisticians stands behind those devices and simulators and is striving to improve each and every device as the

Army's combat equipment improves and changes. PM CATT's mission is to manage the acquisition, fielding, and life-cycle support of virtual TADSS, while stressing the need for continual improvement and support. PM CATT is responsible for 58 TADSS systems that are either in the field or are being rapidly developed to meet the training needs of today's Army operations.

TADSS Systems

One of PM CATT's biggest successes has been the ongoing development and fielding of the Engagement Skills Trainer (EST) 2000, the high-tech equivalent of an old-fashioned shooting gallery. It allows the Soldier to practice individual marksmanship skills and combat leaders to improve their unit's collective gunnery skills. It offers various engagement scenarios and records the individual Soldier's hits and misses, which provides effective feedback in unit after action reviews (AARs). All this is safely done before a single round is fired on a live-fire range. PM CATT has fielded more than 330 ESTs to USAR/ARNG installations and plans to field 227 more.

Another PM CATT system is the Call for Fire Trainer (CFFT), which allows forward observers from all units to practice their coordination with fires and effects from artillery, mortars, naval gunfire, and close air support. The CFFT system can train up to 30 Soldiers in a single classroom and provide recorded feedback to Soldiers regarding their performance. A newer version, the CFFT II, was approved for full-rate production in June 2009 and will provide additional capabilities that allow for integration with other simulation systems; the capability to train for classified operations; and enhancement of command,

control, computing, communication, and intelligence interoperability. To date, PM CATT has fielded 116 CFFTs to USAR/ARNG installations and plans to field 87 more.

A recent success for PM CATT has been the fielding of more than 190 high-mobility multipurpose wheeled vehicle (HMMWV) Egress Assistance Trainers (HEATs). This system was rapidly developed and fielded in partnership with Red River Army Depot, Texarkana, TX, in direct response to urgent demands from units supporting the overseas contingency operations. This device includes a full-sized M1114 HMMWV cab and simulates the rollover of a vehicle in combat situations, giving Soldiers hands-on practice in extracting themselves and their buddies from a crippled vehicle in various rollover angles. A key secondary safety lesson is geared toward proper vehicle load planning and equipment tie-down; as the simulator rolls, anything that is not properly secured becomes a projectile and gives the crew a "hard-knock" lesson. So far, 100 HEAT systems have been fielded to RC units.

A key system that PM CATT has developed and is currently fielding to ARNG units is the Shadow Unmanned Aerial Vehicle (UAV) Crew Trainer (SCT). The National Guard Bureau recognized a need for a unique crew trainer and approached PM CATT with a request to build a simulator. Live UAV missions are often difficult to conduct at home stations where Federal Aviation Administration airspace limitations do not allow actual deployment of UAVs. This trainer allows Shadow units to virtually fly an entire mission without ever having to launch their UAVs. To date, eight SCTs have been delivered and another 17 are planned to be fielded.

PM CATT has also seen success with the ongoing development and fielding of the Aviation Combined Arms Tactical Trainer (AVCATT), which is a mobile, transportable, multistation



PEO STRI's MSTC teaches Soldiers basic combat casualty care through both classroom instruction and hands-on training. (U.S. Army photo by Doug Schaub.)

virtual simulation device designed to support unit collective and combined arms training. AVCATT provides six manned modules reconfigurable to any combination of attack, reconnaissance, lift, and/or cargo helicopters. There are four role player stations for battalion/squadron staff, combined arms elements, integrated threat, or friendly semi-automated forces. The AVCATT has a robust exercise record and playback feature with a simultaneous AAR capability. PM CATT has fielded nine AVCATTs to USAR/ARNG installations and plans to field two more.

A new Medical Simulation Training Center (MSTC) is being fielded to numerous Active and RC locations. The MSTC is equipped with bleeding, breathing mannequins that give combat lifesavers and medics realistic first aid training for traumatic injuries. The mannequin is visually striking and realistically depicts massive wounds found in combat situations. If the mannequin does not receive proper first aid treatment, it simulates the pulmonary symptoms of a real casualty and its vital conditions rapidly deteriorate. The skills learned in the MSTC improve a combat lifesaver's chances to save a fellow Soldier wounded on the battlefield.

One of the fastest growing and most popular of PM CATT's systems being deployed to USAR/ARNG units is the Games for Training (GFT) program. Gaming technology provides training for various individual and collective tasks, improving battalion and below, individual, collective, and multi-echelon training. GFT is tailored for tactical and combined arms training configured for almost any platoon in the Army's inventory. Trainees move about in a shared, semi-immersive, first-person environment that supports mounted and dismounted operations, combat platforms, small arms, and vehicle-mounted weapons. GFT allows for enhanced skills in cultural awareness, language, improvised explosive

As each piece of Army hardware changes, so must the training methods and TADSS that support it.

device recognition, and negotiation skills. The simulation engine provides extremely realistic virtual environments with large, dynamic, highly detailed geo-typical terrain areas. The user-generated, geo-specific terrain allows for a more accurate troop training capability that can be combined with hundreds of accurately simulated military and civilian entities. This virtual environment enables scenario creation, real-time editing, rapid terrain development, and mission rehearsal with a robust 3-D AAR capability and a time-scrollable review of the training from any point of view. GFT fulfills a flexible, low-cost training solution that leverages commercial- and government-off-the-shelf games and advanced simulation technology second only to costly live training opportunities. In 2009, 16 GFT systems were fielded to the USAR/ARNG.

Recognizing RC Special Needs

PM CATT understands that 51 percent of the Army's manpower is found in USAR/ARNG units. Not only should a proportional distribution of the Army's TADSS be delivered to these units, but RC units have special needs.

In recognition of the USAR/ARNG's need for input into the development of TADSS, PM CATT has established an Assistant PM RC Training Systems. This office will be staffed by USAR/ARNG personnel who understand that the home station environment in which RC units train is significantly different than the environment found at the Army's major posts. This understanding, in turn, drives the demand for flexible, mobile TADSS that can be distributed to armories and readiness centers in hometowns across America. The mission of this office is simple:

advocate TADSS that are easy-to-use and maintain at local readiness centers; provide design input to achieve realistic, RC Soldier-friendly devices; and coordinate speedy delivery to USAR/ARNG installations.

PM CATT has become the Army's leader in providing realistic, virtual TADSS solutions to our Soldiers. As each piece of Army hardware changes, so must the training methods and TADSS that support it. PM CATT strives to ensure that the latest virtual technologies are not only built into the current generation of TADSS, but that there is room to grow and improve these systems well into the future as the pace of today's high-tech training needs accelerate. PM CATT is firmly partnered with the USAR and the ARNG and stands ready to meet the challenges of the virtual age.

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LTC JAY A. SMITH, ARNG, is the Assistant PM RC Training Systems in Orlando. He holds a B.S. in industrial technology from Texas A&M University, a B.S. in civil engineering from the University of Alaska Anchorage, and an M.S. in management from the Florida Institute of Technology. Smith is a Command and General Staff College graduate, Level III certified in program management, and an AAC member.

Agility in the Operational Environment— The Value of Army Science Advisors (51S) to Service and Combatant Commanders

LTC Rich Lonardo

The U.S. Army Research, Development, and Engineering Command (RDECOM) provides agility and capability to battle formations and staffs by managing Army acquisition officers in assignments titled “Science and Technology (S&T) Advisors” or 51S area of concentration (AOC). Initially part of a few Ph.D. Soldiers labeled Uniformed Army Science Advisors, the 51S officer role has evolved since 2003 to meet war requirements.

Today, Army S&T Advisors fulfill critical roles at the tactical, operational, and strategic levels. They provide tactical support to battlefield commanders via focused technology insertion. The 51S officers provide operational support to joint warfighting staffs in mitigating enemy fires. At the strategic level, these Soldiers advise combatant command (COCOM) staffs on enabling technologies to influence defense efforts in the reality of hybrid wars waged in a flat world.

AOC 51S Soldiers were given a chance to excel at the operational level with the effective horizontal integration of additional specialized capabilities, such as those performed by JIEDDO. Here, SSG Scott Saenz, a 755th Explosive Ordnance Disposal Technician, conducts security during JIED training at Kandahar Airfield, Afghanistan, May 5, 2009. (U.S. Army photo by SSG James L. Harper Jr.)

Priority Mission #1— Maintaining Customer Confidence in the Tactical Fight

Science advisors are a small cog in the great materiel developer community of our Nation's military. This community includes unsung heroes both downrange and stateside. Examples include Force Modernization Officers, Rapid Equipping Force Soldiers, Contracting Officers (51C), or Program Management Soldiers (51A). The team also includes counterparts at the Army and joint staff levels, who work tirelessly to mitigate the disruptive effects of emerging needs on budgets and long-term warfighting power.

In my opinion, many 51S officers serve in roles close to the tactical fight. They have formal acquisition education and, thus, bear the moral responsibility to facilitate near-term, immediate technology support in a manner that ensures agile, yet responsible, life-cycle support. Maintaining operational availability of new technologies that a unit has wrapped its tactics around is a serious responsibility.

A great officer professional development discussion should include what I would collectively call the Tactical Wheeled Vehicle Add-on Armor program as a case study. As the first military assistant project manager (PM) for this effort, I witnessed the intrinsic value of 51S officers, such as LTC Dan Rusin, one of many volunteers operating downrange to firm up initial U.S. Army Research Laboratory prototypes in the operational environment. Because of that critical interface with the customer, the follow-on original equipment manufacturer management by the acquisition community and the U.S. Army Materiel Command was more rapidly focused. And many readers know how significant and challenging that program became. The Add-on Armor effort is by no means a perfect program, but it represents a significant milestone for our relationship

with our customer; and 51S officers played a pivotal role in this program.

Operational Role in Mitigating Enemy Fires

In 2003, the enemy thrust a technology into the war with improvised explosive devices (IEDs). Consequently, the Joint IED Defeat Organization (JIEDDO) was borne, along with multiple intelligence and materiel support efforts to counter the threat. A review of Joint Manning Documents (JMDs) may not include these additional special staffs at the forces or corps levels; thus, the effective horizontal integration of such capabilities provided 51S officers a chance to excel at the operational level. In 2004, RDECOM leaders made a decision to embed a senior acquisition officer on the warfighting staff in Iraq to facilitate horizontal materiel integration, such as prioritized IED solutions.

In addition to 51S officers assigned to Field Assistance S&T (FAST) teams working at the division level and below, RDECOM provides another enduring commitment via the Science, Technology, and Acquisition Corps Advisor (STACA) officer to advise senior staffs in Iraq and Afghanistan. These experienced colonels organize the materiel developer response to mitigate enemy fires. Furthermore, these officers integrate rigor to the difficult process of vetting and merging urgent operational needs with long-term service component goals. I believe the value of these positions should merit consideration as additions to JMDs. Moreover, a highly integrated joint staff can effectively leverage the 51S officer to lead "materiel red-teaming cells" by more closely combining intelligence products and coalition versus enemy trends with planned technical materiel solution integrations. The goal: vector



Analysis of the SOUTHCOM response to the January 2010 Haiti earthquake disaster reveals additional potential roles for 51S officers in humanitarian relief operations. Here, a SOUTHCOM assessment team boards a C-130 Hercules aircraft en route to Haiti to support U.S. relief efforts. (Photo by TSgt Santita Mitchell, SOUTHCOM Public Affairs.)

the enemy in directions the combatant commander desires.

Enabling Strategic Influence for Hybrid Wars in a Flat World

The reality of a connected world means a natural disaster in one hemisphere can coalesce into a strategic jihad message in another hemisphere by non-state actors. The geographic structure of COCOMs is well suited to address and respond to these threats as our national command authority deems appropriate. DOD assets often take the initial lead until other responses crystallize. In this scenario, 51S officers provide a critical link from the COCOM staff back to service programs of record (PORs) and provide insight on potential emerging needs that senior commanders will expect Soldiers to bring to the rescue. The 51S is challenged in thoughtfully connecting Joint Urgent Operational Needs Statements to approved Army capabilities and materiel solutions appropriate for a POR.

The U.S. Southern Command (SOUTHCOM) response to the January 2010 Haiti earthquake disaster is a relevant case study. The SOUTHCOM

commander immediately leveraged existing staff plans and appropriate services to ensure security, provide stability, and set the foundational underpinnings for enabling posterity for the Haitian people. A cursory review of the response might include conversations on the use of U.S. Army or U.S. Marine Corps (USMC) security forces, U.S. Air Force logistics, and U.S. Navy medical support to carry out vital roles as directed by the President.

Deeper analysis includes the perspective that 51S officers might add to the discussion. Prior to this earthquake, SOUTHCOM's Science Advisor had leveraged joint staff and Army resources to integrate promising emerging technologies in several relief experiments. Insight on tactics, techniques, and procedures was noted to enable COCOM stability operations. If the Army and RDECOM are linked to these events and value for a program is evident, positive outcomes are possible both for the Army and the COCOM.

An example may be the use of renewable energy to power a small video teleconferencing capability that Army medical teams might employ to leverage a larger remote network of medical care professionals to help in triage, diagnosis, and potential treatment. The power of the network includes reduced security and logistics needs in the operational environment or, in the Haiti case, the disaster site. Just as important is how the commander might transition this capability to others once military forces and their equipment redeploy. The 51S is challenged yet again to help other organizations consider government-off-the-shelf or commercial-off-the-shelf technologies that will help them provide "whole-of-government" enduring low-cost health nodes that non-DOD agencies can leverage over the long run, thus furthering the commander's goal of enabling prosperity.

Combatant commanders fight wars and the services provide trained and ready forces and equipment. Unless acquisition laws change drastically, the key factor to further develop and transition any promising technologies back to Army or service components falls on the shoulders of COCOM 51S officers. They run the trap lines and find the confluence of these joint needs with Army modernization opportunities expressed as new U.S. Army Training and Doctrine Command or Joint Forces Command experimentation efforts or documents, or vetted PM modernization strategies.

Such work benefits the services in future hybrid wars. Commanders include building partner capacity venues as part of their campaign plan. A technology that serves as an immediate need in nation building that might also offer reduced life-cycle costs in ongoing contingency operations via reduced troop consumption and less wear and tear on vehicle fleets and reset costs, is very significant.

For example, many of the technologies employed in Haiti for stability operations may also fit the emerging requirements that service leaders desire for reduced logistics and more efficient mass and energy autonomy of battle formations. This is a current focus area under discussion in the USMC and Army for brigades. Whether it be low-cost and energy-efficient unmanned aircraft systems for force protection, solar-powered water purification, or gray water management technologies, the COCOM 51S officers can advise the COCOM and joint staff on how to best horizontally integrate their needs into what the services envision for their programs. They can also provide the services with lessons learned from these joint experiments. The result of such collaboration can be undervalued because it is achieved in the least disruptive manner by leveraging experienced and networked 51S officers,

working real-time in a flat world with their materiel developer counterparts.

Vision

The 51S has evolved from a select few military Ph.D. personnel in special assignments to experienced multi-functional Acquisition Corps officers serving as 51S from division and corps levels and joint warfighting staffs. FAST Soldiers provide agile technology integration in the operational environment. The results have tactical significance and tie us to our warfighters. The 51S officers serving as STACAs on corps staffs help mitigate enemy fires and provide operational opportunities to warfighting staffs. At the COCOM, they can enable combatant commanders' strategic goals. These critical Soldiers should be recognized for the return they offer us in maintaining warfighting capability now and in the future. Continued mentorship and application of supporting processes to enable their interaction with the greater materiel developer community would include appropriate certification, promotion, and command opportunities. Additionally, their insight might offer the foundational underpinnings for similar effort at the Office of the Secretary of Defense level that mimics this horizontal integration occurring in the Army, but appropriate for all services. The end result of good 51S work is efficient and anticipated combat power that provides commanders at all levels the most freedom of maneuver.

LTC RICH LONARDO is assigned to RDECOM. His deployment experience includes both the Gulf War and three deployments in *Operation Iraqi Freedom* as a 51A/S. He holds a B.S. in chemical engineering from Youngstown State University and an M.S. in environmental engineering from the University of Alabama in Huntsville. He is Level III certified in systems planning, research, development, and engineering-S&T manager.

The U.S. Army Chemical Materials Agency (CMA)—Making Chemical Weapons History One Milestone at a Time

Argie Sarantinos-Perrin

The CMA leads the world in chemical weapons destruction and has many reasons to celebrate. In April 2009, CMA marked the elimination of 60 percent of the original U.S. chemical weapons stockpile. In August 2009, CMA's first modern, industrial scale chemical demilitarization facility, the Johnston Atoll Chemical Agent Disposal System (JACADS), obtained clean closure from the U.S. Environmental Protection Agency (EPA), marking the end of the Army's environmental responsibility on the atoll. And in October 2009, CMA marked the safe elimination of more than 2 million individual munitions since the Chemical Weapons Convention (CWC) entered into force in 1997.

Workers at NECDF move the last TC using a special lift boom on a forklift. (U.S. Army photo courtesy of CMA.)



Safety and Processes

As CMA reaches these and other milestones, safety remains the agency's top priority. This is evidenced by the following five sites earning the Voluntary Protection Program Star status—the highest safety recognition issued by the U.S. Occupational Safety and Health Administration:

- Anniston Chemical Agent Disposal Facility (ANCDF), AL.
- Pine Bluff Chemical Agent Disposal Facility (PBCDF), AR.
- Tooele Chemical Agent Disposal Facility (TOCDF), UT.
- Umatilla Chemical Agent Disposal Facility (UMCDF), OR.
- Newport Chemical Agent Disposal Facility (NECDF), IN.

CMA's strict safety culture aligns with the goal to protect the workforce, the public, and the environment in storing and destroying the Nation's chemical weapons stockpiles. The original stockpiles consisted of various munitions to include mortars, projectiles, landmines, rockets, bombs, ton containers (TCs), and spray tanks filled with chemical agent. The types of chemical agents in the munitions ranged from mustard blister agent to two nerve agents: sarin—also known as GB—and VX.

In 2007, CMA marked the end of its GB destruction mission and, the following year, all of the VX in CMA's destruction mission was safely eliminated. In 2008, the last M55 rocket in CMA's destruction mission was destroyed, reducing the cumulative storage risk to the public by 94 percent. Rockets represented the greatest risk in storage—more than any

other munitions in the U.S. stockpile—because they were a complete weapon system containing high explosives, a propellant motor, and an agent-filled warhead that work together to ignite, propel the rocket, and release the agent. Each rocket contained approximately 10 pounds of agent.

“By destroying the last M55 rocket, CMA continues to address the safety of those living nearest our stockpiles,” said CMA Director Conrad Whyne. “We have reduced the chemical storage risk for the communities around our sites, as well as the risk to our workers who are charged with destroying some of the most dangerous weapons from our past.”

CMA uses two processes to destroy the chemical munitions. High temperature incineration is currently used in ANCDF, PBCDF, TOCDF, and UMCDF and was the method used at JACADS. Neutralization was used at the Aberdeen Chemical Agent Disposal Facility, MD, which closed in 2007, as well as at the NECDF, which eliminated its stockpile in August 2008 and is currently in closure operations.

Neutralization technology at the NECDF faced challenges when shipping 1,630,877 gallons of hydrolysate (basically caustic wastewater) to a waste treatment plant in Texas for disposal. Although state and community officials and regulators along the transportation



Shown here is a CMA chemical weapons disposal facility at dusk. (U.S. Army photo courtesy of CMA.)

route and at the disposal site supported the decision to ship the hydrolysate, activist groups tried to obtain a restraining order preventing shipment. CMA voluntarily suspended shipments until a resolution to the issue was obtained. The court ruled in favor of the Army, and shipments were continued without an accident or incident. In September 2008, hydrolysate destruction was completed.

Emphasizing the international importance of the NECDF's accomplishment, Deputy Assistant Secretary of the Army for Elimination of Chemical Weapons Carmen J. Spencer said to the NECDF workforce, “The example of the depot and NECDF in completing your missions is truly a model for the world to follow. As we share our destruction technology with the other signatory nations of the world, we will also be sharing the example of your work here.”

CMA's strict safety culture aligns with the goal to protect the workforce, the public, and the environment in storing and destroying the Nation's chemical weapons stockpiles.

CMA's Project Areas and Stakeholders

CMA's stockpile destruction mission falls under the Chemical Stockpile Elimination Project. However, not all chemical materiel is included in the

We will remain vigilant and keep safety—the safety of our workers, our communities, and our environment—at the forefront of this important national and international mission.

stockpiles, so another CMA mission area—the Non-Stockpile Chemical Materiel Project (NSCMP)—destroys these chemical weapons and materiel, referred to as “non-stockpile” chemical materiel. When suspect chemical warfare materiel is recovered, NSCMP personnel are engaged to assess the content and condition of the materiel and assist in ultimate destruction determinations. NSCMP also has the responsibility of destroying facilities and equipment that were used to produce chemical agent. This effort was safely completed in 2006, ahead of schedule and the CWC requirements.

CMA also partners with the Assembled Chemical Weapons Alternatives (ACWA) program, a separate DOD program responsible for destroying the stockpiles in Pueblo, CO, and Richmond, KY. While ACWA will destroy those weapons per congressional direction, CMA is responsible for the safe and secure storage of those stockpiles.

The Army and the Federal Emergency Management Agency established the Chemical Stockpile Emergency Preparedness Program (CSEPP)—a CMA responsibility—to help protect residents who live and work near the Army installations in the event of a chemical accident or incident. Key components of the program include emergency planning, training, public outreach and education, exercises, medical preparedness and response, public alert and notification, and communications. CSEPP has a federal statutory requirement to remain active in an area until the stockpile stored there is completely destroyed.

Each CONUS stockpile site has a Citizen’s Advisory Commission (CAC) consisting of nine members, including seven governor-appointed citizens who live in areas near destruction operations and two state governor representatives with direct responsibilities related to the chemical demilitarization program. The

CAC meets at least twice per year and Army representatives attend and participate in those meetings. Other key CMA stakeholders include the Centers for Disease Control and Prevention, the EPA, the National Research Council, and state regulators.

Continuing Mission

CMA estimates that 1,582 tons of chemical agent had already been destroyed by the time the United States ratified the CWC on April 29, 1997. When the United States signed the treaty, they, along with 86 other nations, agreed to destroy all their chemical weapons and former chemical weapons production facilities within a predetermined timeline. Today, more than 180 nations have ratified the CWC, and CMA has destroyed more than 21,000 tons of chemical agents.

The Army and CMA are safely working toward meeting the 2012 CWC deadline. CMA has overcome many obstacles throughout the years and remains committed to the safe destruction of all the chemical weapons at their four operating destruction sites.

“We have a lot of work to do, many years to go. We have achieved many significant milestones, but there are many more milestones to achieve before we declare our mission complete,” Whyne said. “We will remain vigilant and keep safety—the safety of our workers, our communities, and our environment—at the forefront of this important national and international mission.”

ARGIE SARANTINOS-PERRIN is a Communications Specialist with Science Applications International Corp. under contract with the CMA. She holds a B.A. in mass communications and is pursuing an M.S. in professional writing from Towson University.



PBCDF munitions handlers watch the last Enhanced Onsite Container carrying VX M55 rockets being lifted by an overhead crane into the disposal facility’s container-handling building. (U.S. Army photo courtesy of CMA.)



From the Acquisition Support Center Director

We are proud to welcome Dr. Malcolm Ross O'Neill as the new Assistant Secretary of the Army for Acquisition, Technology, and Logistics (ASAALT). His distinguished career has spanned the acquisition arena and allowed him opportunity to gain vast experience with the DOD acquisition process and major systems acquisition. Dr. O'Neill comes to us after serving as a consultant and Chairman of the Board on Army Science and Technology for the National Academies and the National Research Council. From 2000 until his retirement in 2006, he served as Vice President and Chief Technical Officer of Lockheed Martin Corp. and previously as its Vice President, Mission Success and Operations, in the Space and Strategic Missiles Sector. Dr. O'Neill is also a retired Army lieutenant general. During his 34-year military career, he completed a combat arms tour as an infantryman, was wounded twice in Vietnam, and later reverted to Army Ordnance and became a uniformed acquisition specialist. Dr. O'Neill's last military assignment was Director, Ballistic Missile Defense Organization, reporting directly to the Under Secretary of Defense. It is indeed an honor to welcome such a distinguished leader into our AL&T community. I'm ready to follow Dr. O'Neill's focus and priorities as he begins his journey as our ASAALT.



Haiti Earthquake Relief

On Jan. 12, 2010, a 7.0 magnitude earthquake struck Haiti. Within hours, U.S. military units were "wheels up" and under-way to the Caribbean country to provide humanitarian assistance. The ASAALT worked in tandem with the U.S. Army Materiel Command to ensure that supplies and information were directed to the appropriate damaged areas and contracting requirements were met. Program Executive Office (PEO) Enterprise Information Systems set up state-of-the-art satellite terminals to assist in delivering logistics and supplied Global Positioning System tracking devices for Army vehicles and watercraft. The U.S. Army Expeditionary Contracting Command established contracting centers in Port-Au-Prince and in the Dominican Republic, and the U.S. Army Sustainment Command provided generators and air conditioners for Haitian hospitals and orphanages. Shortly before press time, supplies had been delivered to more than 16 sites, reaching 2.6 million people. As the rebuilding process continues, our thoughts and prayers are with those who are providing help or who have lost or are missing loved ones in Haiti. If you wish, you can help support relief efforts in Haiti by donating to various organizations.

Section 852: Army's Catalog of Opportunities Update
 Section 852 of the *National Defense Authorization Act of 2008, Public Law No. 110-181*, directed the establishment of the Defense Acquisition Workforce Development Fund. This fund enables DOD to recruit and hire, develop and train, and recognize and retain its acquisition workforce. The U.S. Army Acquisition Support Center (USAASC) has used the fund to launch multiple programs that further the progression of our AL&T Workforce.

The 2009 Student Loan Repayment Program paid down 438 student loans held by AL&T Workforce members. For a complete breakdown of the recipient demographics, please see Page 34 of the October–December 2009 *Army AL&T Magazine* or visit <http://asc.army.mil/altmag/> to read the issue online. USAASC is again pleased to offer this incredible program to our AL&T Workforce and is preparing to launch an open announcement in the 3rd quarter of FY10. An e-mail blast will be sent to all AL&T Workforce members regarding the application process and program timelines.

Another pilot program offered in 2009 was the Civilian Incentive Program (CIP) of recruitment and retention incentives for the AL&T Workforce. The recruitment incentive identifies acquisition positions where incentives should be offered and awarded under authorities provided within *Title 5, Code of Federal Regulations 575.102*. CIP retention incentives are available for Army AL&T Workforce members with unusually high or unique qualifications, or when the organization has a special need for an employee's services and the employee would likely leave federal service in the absence of an incentive. During the April 2009 CIP data call, the Army provided the AL&T Workforce 53 recruitment bonuses and an additional 103 retention bonuses centrally funded by the FY08 *Section 852* and managed by Army AL&T Workforce commanders covering FYs 09 and 10.

The Army's assumption of the Secretary of Defense's (SECDEF's) Growth Strategy is 5,085 personnel across the Future Years Defense Program. New Army hires will bring 1,885 positions/persons and contractor conversions (insourcing) will account for at least 3,200 positions. The Army plans on exceeding the insourcing target. Civilian Manpower Equivalent Documentation Panels were conducted to determine contractor positions that are inherently governmental or closely associated with inherently governmental. More than 4,000 of these positions were determined to be acquisition positions.

Furthermore, in concert with the SECDEF's Acquisition Workforce Growth Strategy, significant increases were made to the AL&T Workforce. FY08 *Section 852* funded 88 Student Career Experience Program hires, 432 interns, 10 systems-of-systems engineers at the journeyman level, and one Highly

Qualified Expert supporting the Army major and support commands and PEOs. For a complete listing of the Army's *Section 852* efforts, visit <http://asc.army.mil/career/programs/852/default.cfm>.

Commissioned Officer Career Development

On Feb. 1, 2010, the Army published the new *Department of the Army Pamphlet 600-3, Commissioned Officer Development and Career Management*. The pamphlet outlines officer development and career management programs for each of the Army's career branches and functional areas. The full text can be found at http://www.army.mil/usapa/epubs/pdf/p600_3.pdf. Information on the U.S. Army Acquisition Corps (AAC) can be found in *Chapter 42*.

2009 Competitive Development Group/Army Acquisition Fellowship (CDG/AAF) Program Orientation and Graduation

With the theme "Developing Our Next Generation of Leaders," the CDG/AAF Program held its annual orientation, graduation, and training in Nashville, TN, Feb. 22-24, 2010. The program, designed to develop future acquisition leaders, provides board-selected fellows with training that might not otherwise be available to them, such as executive leadership education, experiential, and other career development opportunities, including developmental assignments in the AAC. Orientation activities for the fellows included a senior leaders panel, a panel of current and former project managers and CDG/AAF fellows who gave firsthand program insight, and other speakers who explained the program's benefits. The event culminated with a graduation dinner where Eric Edwards, Executive Director, Integrated Materiel Management Center, U.S. Army Aviation and Missile Command, was the honored guest speaker. Edwards congratulated the current and graduating fellows and advised them to strike a good balance between family and work for a successful career and a fulfilling life. If you are interested in applying to the CDG/AAF Program for the 2011 Year Group, please contact Chandra Evans-Mitchell at (703) 805-1247/DSN 655-1247 or chandra.evansmitchel@us.army.mil.

AAC Annual Awards Call for Nominations

It's that time of year again where we call for nominations for the AAC Awards. It's vitally important that we recognize those among us who have distinguished themselves by going beyond expectations and simultaneously making the AL&T Workforce an even more professional and positive influence for the Army, as well as a great example of acquisition excellence for the American people. For information on nomination deadlines and windows, please see the inside back cover of this issue.

Craig A. Spisak

Director, U.S. Army
Acquisition Support Center

Contracting Community Highlights



I have had many opportunities to speak to the contracting community during the past year and have come away with three distinct conclusions. The first is the absolute professionalism of the contracting workforce personnel and their desire to do their jobs with integrity, ingenuity, innovation, and diligence.

The second conclusion is the commitment of contracting professionals to invest time and effort to continue honing their skills, progress their professional development, and initiate change and improve the timely communication of new and ever-changing policies and procedures. This is no small effort given the magnitude of the workload. The third conclusion is the continual pursuit of excellence—having an attitude of: What can we do better and what are the obstacles to be surmounted? At the end of my presentations, I usually include a section about Hot Button Issues. These are the issues (obstacles) that keep me awake at night—the issues that are not readily resolved, but must receive persistent scrutiny and awareness. I want to use this forum to share with you the following Hot Button Issues that are high on my 2010 list, but are not in priority order nor all inclusive.

- Aggressively promote full and open competition. The Presidential Memo of March 4, 2009, directed fewer cost-type contracts, necessitated full justification for any noncompetitive contracts, required the choice of contract types to minimize risk and maximize value to the government, and obliged clarification for when governmental outsourcing for services is, and is not, appropriate. Office of Manpower and Budget (OMB) guidance on Phase I dated July 29, 2009, and Phase II dated Oct. 27, 2009, requires agencies to develop a plan to save 7 percent of baseline contract spending by the end of FY11. The OMB Phase II Memo provides guidelines for increasing competition and structuring contracts for the best results and lists three key questions to be applied to each contracting action. Metrics show that we are increasing competition: 64 percent of every contract dollar was competitively awarded in FY07, 65.4 percent in FY08, and 67 percent in FY09.
- Increased Procurement Management Review (PMR) program oversight. While this venue has proven to be successful, we are looking for ways to improve the outcomes. In 2009, we conducted 17 reviews and have scheduled 14 more for 2010. We are currently hiring for the PMR teams and continuing our focus on areas of management oversight, electronic data management, template use, and workforce training/education.

- Upward trend of Government Accountability Office (GAO) protests. Increased contracting workload has brought concomitant increased GAO audit activity. In FY08, only one protest out of 464 was sustained and, in FY09, seven out of 540 protests were sustained. The PMR program will be a venue to explore lessons learned in these situations.

I will address more Hot Button issues in future articles as we add to our portfolio. In the interim, I appreciate your continued commitment and support to our warfighters throughout the world.

Edward M. Harrington

Deputy Assistant Secretary of the Army (Procurement)

those positions in Contracting Support Brigades, Contingency Contracting Battalions (Bns), Senior Contingency Contracting Teams, and Contingency Contracting Teams (CCTs). This separation supports the independent procurement authority, but it was not intended to separate the bond between the contracting forces and the operational units. These elements are the Army's building blocks for a comprehensive contracting support plan. In Iraq and Afghanistan, the Army has deployed a few CCTs from both the Active Army and National Guard; however, the vast majority of KOs from all services are individual augmentees. This method of creating a contracting support structure using augmentees from all of the services presents some unique challenges and opportunities.

One of the major challenges is the integration of KOs into the planning and decision cycles of the units that they support. In many ways, the KO has to serve as a liaison between the supported unit and the contracting office. In doing so, the KO must first understand that integrating into the unit's structure is a key element of being a successful KO. KOs can no longer simply wait at the contracting office for the requirements packages to arrive. They must actively engage the unit and insert themselves into the unit's planning processes to understand the intent or purpose behind the requirements and the unit's desired end state. This knowledge will help acquisition planning before the requirements package arrives at the contracting office.

Observe-Orient-Decide-Act (OODA) Cycle

One method described in *FM 6.0 Appendix A, The OODA Cycle* (see figure), can help KOs model their approach. The *Observe Phase* is when the commander or key leader observes the situation and collects information. The KO should be doing the same by focusing on the unit's operational environment, the enemy situation, unit posture, and the contractor's ability to support the unit. In the *Orient Phase*, the commander gains situational awareness and learns the common operating picture (COP). During COP development, the KO will inject contracting support realities to the staff, ensuring that they have an appreciation of the challenges that local-national and third-country providers will have in supporting any operation. This requires that KOs have a keen understanding of the business and cultural environment in which they are operating. They must understand the limitations of the transportation network, the availability of air hubs for moving supplies in and out, and the skills and availability of the labor force to provide services and construction support. They then provide the staff a detailed assessment of the contracted support from U.S., local-national, and third-country national providers. KOs should be able to provide rough time lines for construction, services, and commodity acquisitions. These timelines and assessments can be used by the staff in developing the COP that will help manage expectations on what contracting can do and how long it will take.

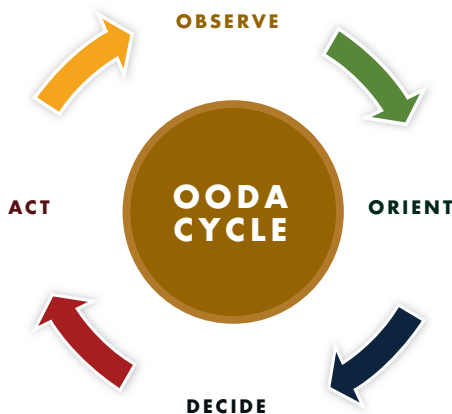
When the commander moves into the *Decide Phase*, his/her decision will be based on staff estimates that the KO provided and influenced in the previous phase. The plan is set

An Integrated Approach to Contracting Support

LTC William Bailey

Contracting support can be used along a continuum of support, ranging from reactive organizations to proactive organizations. Organizations that use contracting as a source of supply and services are forced into a reactive mode of simply filling requests per the unit's requirements. Units that use contracting officers (KOs) as key elements of their staff change the contracting office into a proactive organization that integrates contracting into the operational mission. These organizations consider the KO almost as a special staff member who advises the commander and conducts planning with logisticians, resource managers, and engineers to ensure that the commander can meet mission goals and achieve the final end state.

On Jan. 30, 2008, the U.S. Army Contracting Command was established, which further changed the Army's acquisition support structure by removing the authorizations for KOs and non-commissioned officers from operational units and consolidated



into motion within the *Act Phase*. The KO must expect that actions on the ground will cause the plan to change and must be ready to assist the staff in executing the branches and sequels that they have developed. Having the KO linked with the staff allows him/her to be a conduit of information. The KO receives information from the operational units on the status of support, much of which is provided by the KO's representative, and provides input to the operational unit. Often, the contractors have a better situational understanding of what is happening in a given area than the units operating there. They are operating on the roads and in the villages, interacting with the locals, and often have valuable intelligence information that the KO can relay to the operational unit. The KO uses the information from the unit and the contractors and begins the OODA cycle again. This is an ongoing process that enables commanders and staff to formulate plans and make decisions. If KOs can integrate into the staff and influence the OODA cycle, they can ensure that contracting support can truly enable the commander's mission goals rather than simply being a source of supply and services.

KOs, by doctrine, are the business advisors to the commander. They must also be the experts on the requirements vetting process and provide advice to the commander and staff on this process. Additionally, KOs must learn the craft of the logisticians, understand the financial/resource management processes, and have a basic understanding of the processes engineers use to develop their projects. Using this knowledge with their contracting technical skills, KOs can become an important and critical piece in the operational staff planning and enable the commander to use the contracting assets on the battlefield as force multipliers.

LTC William Bailey is the Commander, 902nd Contingency Contracting Bn. He is currently deployed as the Chief of Operations for the Principal Assistant Responsible for Contracting-Afghanistan. Bailey holds a B.S. in business administration from California State Polytechnic University, an M.S. in acquisition and contract management from the Florida Institute of Technology, and a master of public administration from Old Dominion University. He is Level III certified in contracting and is a U.S. Army Acquisition Corps member.

CECOM Contracting Center Continues BRAC Move

Debra Abbruzzese, Deborah Gilligan, and Ann M. Calvin

On Sept. 15, 2005, then-President George W. Bush signed a letter addressed to Honorable Anthony J. Principi, Chairman of the Defense Base Realignment and Closure (BRAC) Commission, giving his approval of the commission's recommendations to address the *BRAC Act of 1990, Public Law 101-510*. On Nov. 9, 2005, BRAC

recommendations became law. Accordingly, Fort Monmouth, NJ, will close no later than Sept. 15, 2011, requiring the U.S. Army Communications-Electronics Command (CECOM) Contracting Center to relocate to Aberdeen Proving Ground (APG), MD.

Under the leadership of Executive Director Edward G. Elgart, the CECOM Contracting Center provides advanced command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities to our warfighters, keeping them resilient, effective, and safe. In August 2008, the center sent an advanced team of 20 volunteers ranging from GS-12 to -15 (or broad/pay band equivalent) to APG. Throughout the year, members of the workforce continued to voluntarily transfer early, thus expanding the contracting workforce at APG while diminishing it at Fort Monmouth.

Through open continuous job announcements, the Contracting Center has been successful in expanding its APG workforce. The organization has made great strides in hiring interns, senior specialists, and supervisors from outside the government, as well as other federal agencies. However, it has been a challenge to obtain experienced contracting officers, resulting in employees being tasked beyond their normal significant duties and responsibilities. Those individuals who transferred from Fort Monmouth are invaluable assets at APG since they understand CECOM's core customers and commodities as well as the center's policies and procedures. Hence, they play an integral part in training the new employees joining the APG workforce to maintain our mission with minimal disruption.

Through collaboration and innovative ideas, successful transition of workload continues between New Jersey and Maryland. Although approximately one-third of the workforce remains at Fort Monmouth, the sector chiefs have established a philosophy that fosters knowledge sharing by operating on a split-base level. Fort Monmouth supervisors have been teamed with employees at APG to transfer the resident knowledge housed in New Jersey. By providing strategic direction, 24,770 actions valued at \$15.4 billion were awarded in FY09. The total award value of \$15.4 billion is the second highest in command history. Remarkably, this was accomplished as the organization embraced a tumultuous period of physical relocation from New Jersey to Maryland and had a workforce with 47 percent of its employees having less than 5 years of experience. Although the organization was in a state of extreme flux since the BRAC announcement, the total dollars awarded have been greater than any other years in the command's history, with a remarkable \$16.8 billion in FY08 and \$15.4 billion in FY09.

Even though the transition has its challenges, the light at the end of the tunnel is in sight. Our focus is to stay on track and retain a positive work atmosphere. The end state is near and center employees continue to maintain flexibility and a

willingness to work outside the normal working environment. The transition from New Jersey to Maryland has, and still is, a seamless transition and a work in progress. Because of the cohesiveness of operating at a split-base level, the CECOM Contracting Center has been successful in meeting its mission.

Debra Abbruzzese is a CECOM Contracting Center Sector Chief. She holds a B.S. in business/Spanish from Albright College and an M.B.A. from the University of Hartford. Abbruzzese is certified Level III in contracting and Level I in program management.

Deborah Gilligan is a CECOM Contracting Center Sector Chief. She holds both a B.A. in business administration and an M.B.A. from Monmouth University. Gilligan is certified Level III in contracting, Level II in program management, and Level I in logistics.

Ann M. Calvin is a Procurement Analyst in the Policy Branch at the CECOM Contracting Center. She holds both an A.A. in business administration and a B.A. in business administration with a concentration in management from Saint Leo University and a master of public administration with a concentration in management from Troy State University. Calvin is Level III certified in contracting and a member of the National Contract Management Association.

Defense Federal Acquisition Regulation Supplement (DFARS) Cases Stemming From the WSAR Act of 2009

Ann Budd

On May 22, 2009, the *Weapons Systems Acquisition Reform (WSAR) Act of 2009, Public Law 111-23*, was signed. Two sections of the act—*Section 202, Acquisition Strategies to Ensure Competition Throughout the Lifecycle of Major Defense Acquisition Programs [MDAPs]*, and *Section 207, Organizational Conflicts of Interest in Major Defense Acquisition Programs*—required the initiation of two DFARS cases. The content of these cases is discussed in this article.

DFARS Case 2009-D014 was initiated to implement *Section 202 of the WSAR Act*. This section directs that the Secretary of Defense (SECDEF) ensure that the acquisition strategy for each MDAP included measures to guarantee competition at the prime contract and subcontract level of the MDAP throughout its life cycle, as a means to improve contractor performance and adequate documentation of the rationale for selection of the subcontractor tier or tiers. It also outlines the measures to ensure such competition. Furthermore, it requires the SECDEF to take specific actions to ensure fair and objective “make or buy” decisions by prime contractors on MDAPs, and, when a decision regarding the source of repair results in a plan to award

a contract for performance of maintenance and sustainment of a major weapon system, to ensure that the resultant contract is awarded on a competitive basis with full consideration of all sources. An interim rule was prepared with a request for comments. The interim rule outlines a new *DFARS Subpart 207.10, Additional Requirements for Major Systems*. In January 2010, the *Defense Acquisition Regulations (DAR) Council* was informed that the case had cleared the Office of Management and Budget (OMB) review process and the *DAR* staff was preparing the case for publication in the *Federal Register*. Since the requirements are statutorily mandated, the rule will be implemented upon publication, and comments will be addressed and discussed by the *DAR Council* before the approval to publish a final rule is made.

The second *DFARS* case, *2009-D015*, initiated to implement *Section 207 of the WSAR Act*, requires revisions to the *DFARS* to “provide uniform guidance and tightening of existing requirements for organizational conflicts of interest by contractors in MDAPs.” The statute specifies the minimum requirements to be incorporated into the regulation and requires that the case developers consult with the Panel on Contracting Integrity to ensure that its recommendations were considered during the case development. The panel recommendations were due to the SECDEF within 90 days following the enactment of the *WSAR Act*. In addition, the findings and recommendations of the Administrator of the Office of Federal Procurement Policy and the Director of the Office of Government Ethics, pursuant to *National Defense Authorization Act for Fiscal Year 2009 Section 841(b), Review of Federal Acquisition Regulation Relating to Conflicts of Interest*, were also required to be reviewed and considered in the development of this case. This case has resulted in the preparation of a proposed rule with request for comments. In January 2010, the *DAR Council* agreed to a draft proposed rule and the *DAR* case manager will process it through the review process at OMB. Since it will be published as a proposed rule with request for comments, it will not require implementation until the comments have been received and addressed, and the rule has been revised accordingly and approved by the *DAR Council* for processing and publishing as an interim rule.

The rules that result from both of the above cases will be published in the *Federal Register* at a future date. For updates on these *DFARS* cases, please visit <http://www.gpoaccess.gov/fr/index.html> and browse the table of contents. The *DFARS* rules included in these cases will be published under DOD.

Ann Budd is assigned to the Office of the Deputy Assistant Secretary of the Army for Procurement by the U.S. Army Contracting Command and is a DAR Council member. She holds a B.S. in business administration from Mary Washington College, an M.B.A. from Strayer University, and an M.S. in national resource strategy from the National Defense University. Budd is certified Level III in contracting and Level II in program management and is a U.S. Army Acquisition Corps member.



Cynthia D. Hermes receives a Department of the Army Certificate of Achievement from Dean G. Popp, then-Principal Deputy Assistant Secretary of the Army for AL&T, in 2009. (U.S. Army photo by McArthur Newell II, BRTRC.)

Army AL&T Magazine Editor-in-Chief Retires

After serving the U.S. government for 30 years, *Army AL&T Magazine* Editor-in-Chief Cynthia D. Hermes is retiring. Hermes has been a part of the *Army AL&T Magazine* staff for 12 years, serving in many capacities and holding various positions, from Managing Editor to Executive Editor to Editor-in-Chief. She has contributed extensively to the success of the magazine, authoring articles, conducting interviews, and running the magazine's biannual Readership Survey, among other responsibilities. She has seen the magazine through leadership and staff changes and has always kept the magazine a priority to the Acquisition, Logistics, and Technology (AL&T) Workforce. The magazine staff would

like to thank Hermes for her years of hard work and dedication in making the magazine a success.

Hermes is also the Editor-in-Chief of our monthly sister publication, *Army AL&T Online*, which is distributed to the entire AL&T Workforce and has seen great success. She also has provided extensive support to the Strategic Communications Chief for the U.S. Army Acquisition Support Center (USAASC). In addition to her magazine duties, she lent her editorial talents to various USAASC marketing, event, and Web site projects.

Before *Army AL&T Magazine*, Hermes was a technical writer-editor for the

U.S. Navy (USN), editing USN and U.S. Marine Corps aircraft procedural and tactical manuals for the Navy Tactical Support Activity (NTSA). She was also a program analyst at NTSA, managing the government contract for file conversion of these manuals from print to CD-ROM and overseeing mass production and distribution.

Hermes' continued guidance and expertise throughout her tenure with *Army AL&T Magazine*, as well as that of her entire government career, are much appreciated and valued by all who work with her. We thank Hermes for her years of service and wish her a blessed, healthy, and happy retirement.



U.S. Army Acquisition Corps (AAC) Annual Awards Call for Nominations

It is time for the U.S. Army Call for Nominations for the Army Acquisition Excellence (AAE) Awards, the Secretary of the Army Acquisition Director and Project and Product Manager of the Year (PM/AcqDir) Awards, the ASA(ALT) Contracting Noncommissioned Officer (NCO) Award for Contracting Excellence, and the David Packard Excellence in Acquisition Award. The winners of these awards (excluding the Packard Award) will be presented at the 2010 AAC Annual Awards Ceremony on October 24, 2010. The Packard Award will be presented on another date.

- The **AAE Awards** recognize an Army acquisition workforce member and/or team whose performance and contributions set them apart from their peers. The nominees work at all levels of the acquisition community, from senior leadership to newly hired interns. The award directly reflects the outstanding achievements in support of the Army's Soldiers and the Army's transformation initiatives. The Call for Nominations for this award is **March 3 to April 28**.
- The **PM/AcqDir Awards** applaud the PM and Acquisition Director whose outstanding contributions and achievements merit special recognition and provide a forum to showcase exceptional leadership within the AAC. The Call for Nominations for this award is **March 17 to May 12**.
- The **NCO Award** applauds the ASA(ALT) Contracting NCO whose outstanding contributions and achievements merit special recognition and provides a forum to showcase exceptional leadership within the U.S. Army Acquisition Corps. All Army Acquisition NCOs are eligible and will constitute the considered population for this award. The Call for Nominations for this award is **April 14 to June 9**.
- The **Packard Award** recognizes Department of Defense (DOD) civilian and/or military organizations, groups, or teams, who have made highly significant contributions which demonstrated exemplary innovation and best acquisition practices. These are multiple awards reflecting achievements that exemplify goals and objectives established for furthering life cycle cost reduction and/or acquisition excellence in DOD. The Call for Nominations for this award is **March 31 to May 26**.

For more information on the awards and upcoming Call for Nomination dates, please visit our Web site at <http://asc.army.mil>.

Searching for Our Brightest Acquisition Stars!

ARMY ACQUISITION, LOGISTICS & TECHNOLOGY

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IN THIS ISSUE:

- **Program Executive Office (PEO) Integration Aligns Joint Weapon Systems Across Brigade Combat Teams (BCTs)**
- **Joint Program Executive Office Chemical and Biological Defense (JPEO-CBD) Provides Joint Weapon Systems Total Life-Cycle Management**
- **Joint Combat Identification (ID) Marking System (JCIMS) Continues to Save Lives**



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