AFGHANISTAN

R4D

## RETROGRADE RESET REDEPLOYMENT REDISTRIBUTION AND DISPOSAL

**BRIGHT 'IDEA'**
ARDEC's IDEA program
jumpstarts innovation

**EXIT STRATEGY**
SDDC overcoming
obstacles to get materiel
out of Afghanistan

**SYNCHRONIZING
THE FORCE**
In depth with
Army G-8 on R4D

# From the Editor-in-Chief

"Here we go again/Same old stuff again/Marching down the avenue/Few more days and we'll be through …" That basic-training marching cadence reflects our R4D mission in Afghanistan, if you substitute "LOC" (lines of communication, whether land, sea or air) for "avenue" and "One more year" for "Few more days." We have been down this road before—figuratively and literally.

Because Afghanistan is landlocked, actually leaving the country is more difficult than in previous wars. (See back cover.) Equipment can be flown out of the country, driven to ports along a variety of routes and put on ships for transport, or in some cases moved to pre-positioned storage locations, but at great cost. Since Operation Enduring Freedom began, acquisition professionals have studied Afghanistan for the quickest, securest, most cost-effective routes out, which will help us meet President Obama's directive to leave there no later than the end of 2014.

Using lessons learned from the Iraq drawdown, the Army is conducting the Retrograde, Reset, Redeployment, Redistribution and Disposal (R4D) mission and saving billions of dollars in the process, while continuing to provide needed equipment to U.S. and coalition forces.

How can this mission save money, you ask? Well, even though DOD estimates it will cost $5.7 billion to remove the equipment that remains in Afghanistan, detailed tracking, identifying unit needs, repairing versus replacing, and foreign military sales will save many times more. For instance, repairing war-damaged equipment might cost $10 billion, but replacement costs for those items would be double that, according to estimates. Also, shipping an item to the right unit with a need for it or sending it home with the unit, versus shipping to a central location and figuring out the proper use later (or, even worse, simply destroying it in place because you don't know what to do with it) improves readiness and reduces costs.

This issue is all about how the Army Acquisition Corps, and the military overall, are identifying and moving an estimated 750,000-plus individual pieces of military gear—ranging from small arms to larger platforms such as wheeled and tracked vehicles—from where they are in Afghanistan to where they need to be. Read, for example, about the V2DR process that the Military Surface Deployment and Distribution Command is using to determine best-value shipping of equipment from theater.

Speaking of moving equipment, did I mention that we're fielding equipment to Afghanistan while conducting R4D? Read about the Capability Set 13 network communications gear going into theater while equipment is flowing out. Also, learn about the Army Acquisition Lessons Learned Portal and how this developing storehouse of knowledge is already proving useful in current operations and is poised to be the go-to repository of R4D lessons learned.

This issue introduces two newly improved sections: BBP 2.0, an update to the former Efficiencies section that will feature Army successes in achieving DOD's Better Buying Power initiative; and Workforce, an expansion of the former Spotlight section that will include more features on AL&T professionals and their accomplishments.

As always, if you have ideas, comments or critiques to help make the magazine better, please contact me at **armyalt@gmail.com**.

*Nelson McCouch III*
*Editor-in-Chief*

**DESIGN** ▪ **DEVELOP** ▪ **DELIVER** ▪ **DOMINATE**

# ARMY AL&T

## OCTOBER–DECEMBER 2013

# FEATURES

**ON THE COVER**

Robots, medical supplies, UAVs, wheeled and tracked vehicles—the effort to scale down our materiel in Afghanistan by the end of 2014 is a monumental task, and it has already started.

# FEATURES

# p128

**HEADING OUT**
U.S. Army Soldiers from Assault Battery, 2-12 Field Artillery, board an Air Force C-130 as they depart FOB Farah for Joint Base Lewis-McChord, WA, following a two-month tour of duty with Provincial Reconstruction Team Farah. PRT Farah's mission is to train, advise and assist Afghan government leaders at the municipal, district and provincial levels in Farah province, Afghanistan. (U.S. Navy photo by Lt. Chad A. Dulac)

FROM THE ARMY ACQUISITION EXECUTIVE
THE HONORABLE HEIDI SHYU

# Doing *the* SEEMINGLY IMPOSSIBLE

In R4D, the Army AL&T Workforce is helping to do one of the most challenging missions ever faced by the U.S. Army

Last quarter's edition of Army AL&T magazine featured a team of forward-deployed Soldiers with the Office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology) (ASA(ALT)) serving in Afghanistan as members of the materiel enterprise team. (See Army AL&T magazine, June – September 2013, Page 112, "It Takes a Team.") Partnered with the Army Materiel Command (AMC), they ensure support to our Soldiers by continuing to field and upgrade equipment to those in the current fight, while supporting the retrograde of needed equipment for future missions.

I am inspired and humbled by the incredible Army team working together to meet the president's 2014 equipment retrograde deadline. In honor of that spirit of teamwork, I'm extending last issue's "It Takes a Team" theme to the current edition, with a focus on the ongoing Retrograde, Reset, Redeployment, Redistribution and Disposal (R4D) mission in Afghanistan.

In reviewing this important edition of the magazine, I hope you'll take some time to learn more about the specific challenges, successes and noteworthy contributions of the men and women working to ensure mission success. This edition features the experiences and lessons learned from various organizations, along with the intricate planning, resourcefulness, and innovation involved with executing the R4D mission. You will learn about the unique challenges presented by delivery of needed warfighting equipment as the retrograde takes place, our evolving network requirements as we conduct this drawdown, and the specific issues involved in retrograding some of our equipment, including Strykers and robotic systems. In addition, you'll receive some of the latest information of note to the acquisition community as a whole.

Because of its unique landscape and location, Afghanistan is one of the most challenging areas on the globe to support and sustain R4D efforts. Its transportation system is limited and landlocked, weather conditions are demanding and security requirements are atypical. During my travels to Afghanistan, I am always amazed by the complexity of the terrain there and by the exceptional capabilities of the deployed men and women who are accomplishing this seemingly impossible logistics operation. While the R4D mission in Afghanistan is conceptually similar to the past mission in Iraq, retrograding to the United States from Afghanistan is occurring within a much more complicated and fragile transportation network. Sporadic yet impactful

disruptions in that network mean that this drawdown is one of the most challenging in our Army's long and storied history.

Most equipment is moved across multimodal and surface routes, which requires deliberate planning with warfighting units, combatant commanders, program managers and other stakeholders. This mind-bogglingly complex process involves the transfer of cargo across a combination of air and ground transportation, including the Pakistan Ground Lines of Communication (PAKGLOC) and the Northern Distribution Network. The Army continues to efficiently and effectively use these routes to meet the retrograde timelines while minimizing cost.

To respond to these challenges, the R4D team has also developed and implemented alternatives to shipping equipment back to the U.S., including selectively transferring equipment to partner nations. The pursuit of foreign military sales (FMS) programs with participating nations is one such option. Ideally, equipment not designated for retrograde would be made available for FMS customers. Unfortunately, however, the cost of transporting the equipment is a burden other nations are not always prepared to undertake. Therefore, the timely retrograde of equipment requires us to pursue multiple options.

For equipment that is obsolete, damaged beyond repair, or cannot be responsibly and securely transferred, demilitarization can be the best option. The equipment we intend to keep must be moved through a complex combination of air and surface routes to its final destination in the United States or elsewhere.

Much equipment needs to be returned from theater for reset and reuse by our forces. It supports training for



**SORT AND SHIP**
SGT Sharmella Andrews verifies information on the outside of a container at the logistics retrograde area at Kandahar Airfield, Afghanistan, Sept. 13. Andrews, the logistics and supply noncommissioned officer in charge of Detachment 33, is assigned to the 335th Signal Command, Theater Provisional, Regional Command South. (U.S. Army photo by CPL Clay Beyersdorfer)



**PALLET PACKAGE**
Afghanistan is one of the most challenging areas on the globe to support and sustain R4D, and airplanes are indispensible. Here, Air Force SrA Zac Sidders, 774th Expeditionary Airlift Squadron loadmaster, maneuvers a pallet of cargo into a C-130 Hercules at FOB Sharana, Paktika province, Afghanistan, Sept. 28. This mission marked a retrograde milestone as the 774th EAS transported the last cargo from FOB Sharana before the base will be transferred to the Afghan Ministry of Defense. Sidders, a Peoria, IL, native, is deployed from the Wyoming Air National Guard. (USAF Photo by MSgt. Ben Bloker)

Soldiers, which is essential to our ability to respond to any future contingency. It also restores balance to our mix of equipment used heavily in the past decade of combat operations and helps to bring it to an acceptable level of readiness. This is accomplished through reset operations—a combination of repair, replacement, recapitalization and transition. It includes maintenance services, to include fault location and troubleshooting, removal and installation, disassembly and assembly and maintenance activity that restores serviceability to damaged items. We forecast the need to reset approximately 100,000 items at industrial facilities and more than 600,000 pieces of equipment on site, where units are stationed.

We estimate that equipment with a combined value of approximately $17 billion will need to be retrograded from Afghanistan. The Army will require funding to conduct this equipment reset for three years after the last piece of equipment has been retrograded from Afghanistan. This funding supports the substantial workload required for equipment retrograde, induction and repair, a process that can take up to three years for items that include rotary wing aircraft, tactical vehicles and individual Soldier weapons. Some of this work has already been delayed because of the impacts of the sequester in FY13.

While the Army faces significant challenges in completing these retrograde and reset activities, they remain a critical part of maintaining Army readiness for future contingencies. Much work remains to be done, as the articles in this edition attest.

However, the professionalism and dedication with which the Army is approaching this mission suggest that we will rise to meet any challenge.



**PROJECTILE PROJECT**
Much equipment needs to be returned from theater for reset and reuse by our forces. SPC Alexander Trujillo, left, and SPC Jasmine Hills, ammunition specialists assigned to 60th Ordnance Company, 152nd Combat Sustainment Support Battalion, 15th Sustainment Brigade, maintain the ammunition supply point at Kandahar Airfield, Afghanistan, Sept. 30. (U.S. Army Photo by SSG Ray Kokel, 15th Sustainment Brigade)



**FMS ON WHEELS**
The pursuit of FMS programs with participating nations is one alternative to shipping equipment home. Here, Mine Resistant Ambush Protected vehicles are loaded and secured on flat bed trucks in the 3-401st sustainment yard, Bagram, Afghanistan. The trucks are ready to convoy out for receipt by Hungarian soldiers. (U.S. Army photo by Robbin Duuck, civilian public affairs officer of the 3-401st Army Field Support Brigade)

# Enduring Communications

Network footprint in Afghanistan changes with retrograde mission while preserving critical capabilities

*by LTC Joel Babbitt and LTC Lamont Hall*

Leaving Afghanistan presents a new challenge for the Army's communications network. How does the Army provide the correct mix of new and enduring network equipment to support forces that are deployed or preparing to deploy, while also returning large volumes of legacy equipment to the United States to meet current and future requirements, and helping the Afghans secure their country?

The solution should leverage lessons learned from previous retrograde efforts in Iraq, as well as innovative, cost-effective ways to repurpose network equipment no longer needed in the Afghan theater. Providing the correct mix of new and enduring network equipment to support forces in such a variable operational landscape is paramount not only to the success of the mission, but also to the safety of Soldiers on the ground.

## KEY CAPABILITIES

As much of the force prepares to head home with its equipment, select brigade combat teams armed with the Army's new Capability Set (CS) 13 are heading in the opposite direction, deploying to Afghanistan to serve as security force assistance brigades (SFABs). They are working with Afghan National Security Forces to improve their capability and help the Afghans stabilize their country. CS 13, the first of the Army's integrated network fielding efforts, provides Soldiers with connectivity from the stationary command post to the tactical vehicle on-the-move to the dismounted Soldier.

Warfighter Information Network – Tactical (WIN-T) Increment 2 is the tactical communications network backbone for the capability set. As U.S. forces continue to dismantle fixed infrastructure and become more dispersed and mobile in conducting support operations, they will rely on CS 13, with WIN-T at its core, for critical reachback communications.

WIN-T Increment 2 provides high-speed, high-capacity voice, data and video communications, and for the first time extends these capabilities to on-the-move forces and down to company level. Increment 2 employs satellite and line-of-sight capabilities for optimum network connectivity and bandwidth efficiency, and its self-healing capability automatically reroutes blocked links so that critical information gets through. Its advanced suite of network operations tools also helps communications officers manage the network more effectively.

**MISSION-READY**

SFABs in Afghanistan use WIN-T Increment 2-equipped vehicles for mobile network communications. Here, Soldiers with the 3rd Brigade Combat Team, 10th Mountain Division train with a WIN-T Increment 2 Soldier Network Extension vehicle at Fort Drum, NY, April 19. (U.S. Army photo by Amy Walker)

By enabling mobile mission command, WIN-T Increment 2 speeds decision-making cycles and enables commanders and Soldiers to expand their area of operations. During retrograde operations in Afghanistan, much of the traditional fixed-site signal support will not be available because those units will have moved out, and their infrastructure will have been dismantled.

SFABs will still be able to conduct their missions by using the satellite communication capabilities of WIN-T Increment 2, both at-the-halt and on-the-move. SFABs with Increment 2-equipped vehicles can go out on patrol with their Afghan counterparts and be able to "talk" to each of the SFAB teams, send real-time reports back to headquarters and receive orders as missions evolve.

## RETROGRADING WIN-T INCREMENT 1

The shape of the network footprint in Afghanistan over the next couple of years will depend on which units remain, which deploy, and the timing of those movements—all factors still to be determined. Leaders are addressing the possibility of a residual U.S. military force in Afghanistan after 2014, when the NATO mission there formally concludes. What is clear is the challenge of gradually reducing the WIN-T Increment 1 equipment, while ensuring the correct mix of new and enduring network capabilities to support deployed and deploying forces.

The Army began fielding the first increment of WIN-T in 2004 to support operations in Iraq and Afghanistan. At

the time, it was referred to as the Joint Network Node Network. WIN-T Increment 1, which operates at-the-halt, is fielded to units at the battalion level and above. WIN-T Increment 1 is fully interoperable with WIN-T Increment 2, which operates on-the-move down to the company level. Increment 1 uses satellite communications (SATCOM) nodes that can be coupled with High-Capacity Line-of-Sight radio communications to successfully meet network communications requirements in theater.

WIN-T Increment 1 includes fixed and trailer-based satellite terminals, satellite nodes integrated on vehicles of various sizes, SATCOM and radio capability, including computer stacks, laptops and a host of other supporting equipment. It is not designated as Theater Provided Equipment, so none of it will remain in theater when units pull out. The current plan calls for equipment to be reset and refurbished to operational standards once it is back in the States, in line with a returning unit's Army Force Generation cycle.

However, some units equipped with WIN-T Increment 1 will be deactivated upon their return from Operation Enduring Freedom (OEF), and others with requirements for network mobility are scheduled to receive WIN-T Increment 2 when they redeploy. The fleet of retrograded WIN-T Increment 1



**INSIDE WIN-T**
The advanced capabilities of WIN-T Increment 2 provide network mobility down to the company level for the first time. Here, a Soldier works inside a vehicle equipped with WIN-T Increment 2 during the Network Integration Evaluation (NIE) 13.1 at White Sands Missile Range, NM, and Fort Bliss, TX, in fall 2012. (U.S. Army photo by Amy Walker)

equipment from these units will be reused for other requirements or maintained in a warehouse until needed. When the Army eventually reuses the refurbished equipment to meet other requirements, it is referred to as a "cascade" event.

Project Manager (PM) WIN-T, within the Program Executive Office Command, Control and Communications – Tactical (PEO C3T), has already completed a few iterations of cascade from OEF, achieving significant cost- and time-avoidance by not having to purchase new equipment. For example, retrograded equipment taken from deactivated units and from units that upgraded to Increment 2 supported

three regional training sites (RTSs) for the WIN-T Increment 1 Colorless Core upgrade. This upgrade increases interoperability with WIN-T Increment 2 and improves the network's security and efficiency. The RTS cascade event sped up training and kept the upgrade on the timeline envisioned by DA.

Retrograded WIN-T Increment 1 equipment from OEF will also fill a National Guard requirement for Joint Incident Site Communications Capability (JISCC), again eliminating the need to purchase new equipment. The National Guard in every state uses JISCC for homeland security and disaster relief efforts; the capability provides a global communication bridge among first responders and other local, state and federal agencies.

Additionally, PM WIN-T will use retrograded OEF WIN-T Increment 1 assets to address equipment obsolescence. Since its fielding began nearly a decade ago, some of the WIN-T Increment 1

> **RETROGRADE IS A COMPLEX ENDEAVOR THAT REQUIRES A GREAT DEAL OF PLANNING, COORDINATION AND ATTENTION TO DETAIL TO ENSURE AN EFFICIENT AND EFFECTIVE EXIT WHILE KEEPING CRITICAL COMMUNICATIONS INTACT.**

commercial off-the-shelf equipment is no longer available for purchase. When units need replacements, the PM can now redistribute retrograded equipment to them.

Regardless of the final footprint of WIN-T equipment at the end of retrograde operations, the Regional Hub Node (RHN) in U.S. Central Command's area of responsibility will be an enduring presence, continuing to support all WIN-T increments and U.S. forces worldwide. There are five RHNs strategically placed around the globe. They reside at the uppermost level of the WIN-T architecture, and their innovative baseband and satellite communications capabilities enable regionalized reachback to the Army's global network. All five RHNs will continue to receive upgrades to support future missions.

## LESSONS LEARNED FROM IRAQ

One of the biggest lessons learned from the drawdown in Iraq was the importance of accountability: Where is each piece of equipment currently? Who is responsible for it? What condition is it in?

At the start of the war in Iraq, a great deal of network equipment was delivered to the field very quickly to meet escalating communications requirements. When it came time to bring that equipment home, lack of accountability made the task more difficult. But as the WIN-T program evolved, the PM improved its processes for managing equipment, ensuring asset visibility and clarifying identification processes before equipment enters the field.

Now most WIN-T Increment 1 parts and equipment have standard line item numbers and national stock numbers, making them much easier to track and manage. The program office also takes



**COLORLESS CORE**
The Army used retrograded equipment for three RTSs, saving money by not having to purchase new equipment to fill requirements. Here, Soldiers train on upgraded WIN-T Increment 1 Satellite Tactical Terminals in June at the Colorless Core upgrade RTS 2, Fort Drum, NY. (U.S. Army photo by Lawrence Holgate)



**IT'S A SNAP**
As network infrastructure in Afghanistan is dismantled, Secure Internet Protocol Router/Non-secure Internet Protocol Router (SIPR/NIPR) Access Point (SNAP) satellite terminals like this one will continue to provide network services. Here, a company command post uses a SNAP during Network Integration Evaluation (NIE) 13.1 at Fort Bliss, TX, and White Sands Missile Range, NM, in fall 2012. (U.S. Army photo by Amy Walker)

over the period FY12-18. Additionally, combining reset efforts with the Colorless Core upgrade has resulted in a cost avoidance of more than $1 million with 18 units thus far, limiting equipment downtime.

If the Army gets the network retrograde right, the current force will remain well-equipped to conduct new missions. Furthermore, when filling future requirements, the Army will be able to repurpose existing equipment responsibly and keep it in the fight for a fraction of what it would cost to start again from the factory floor.

*For more information, go to **http://peoc3t. army.mil/c3t/**. For additional information, including the DOD encyclopedia entry on PM WIN-T, go to milWiki at **http://go.usa. gov/4Qvk** (Common Access Card login required). Or contact the PEO C3T Public Affairs Office at 443-395-6489 or **usarmy. APG.peo-c3t.mbx.pao-peoc3t@mail.mil**.*

**RENEW AND REUSE**

Deployable Ku-band Earth Terminals (DKETs) were designed to support larger hub locations for long-haul transport in and out of theater. Each retrograded and reused DKET could save more than $1 million, which includes refurbishing costs. (U.S. Army photo)

full advantage of the Army's Property Book Unit Supply Enhanced to improve accountability and accuracy throughout the fielding of equipment. Enhanced accountability has also enabled the PM to improve sustainment and maintenance for fielded assets so that when equipment does return, it is a good candidate for cascade.

**CONCLUSION**

Retrograde is a complex endeavor that requires a great deal of planning, coordination and attention to detail to ensure an efficient and effective exit while keeping critical communications intact. In addition, funding shortfalls have changed the way PM WIN-T has managed reset over the past fiscal year, and efficiencies have become a top priority.

In preparation for FY13, a Lean Six Sigma project of PM WIN-T's Product Manager (PdM) WIN-T Increment 1 transferred a portion of the work previously conducted by contractors to the Soldier, resulting in projected cost savings of $9.78 million

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# Preserving the Satellite Backbone

*by LTC Leonard Newman*

As Operation Enduring Freedom (OEF) winds down, ground satellite systems will still be necessary as a line of communications at the small forward operating bases that could remain after 2014 if the United States and Afghanistan reach such an agreement.

Secure Internet Protocol Router/Non-secure Internet Protocol (SIPR/NIPR) Access Points (SNAPs) are Theater Provided Equipment (TPE) designed for use at the company echelon and small combat outposts. They enable units in austere environments to pull down SIPR/NIPR-centric services and communicate with higher headquarters. As Warfighter Information Network – Tactical (WIN-T) Increment 1 equipment returns to the United States, SNAPs will fill some of the gap and support the small Army presence that could remain past 2014.

One of the challenges the Army will face will be ensuring that enough SNAPs stay behind in theater to fulfill operational requirements as they arise. Today, SNAPs continue to support the last of the Army personnel still in Iraq, and they are expected to be among the last of the Army's equipment to remain in Afghanistan.

Some of the SNAPs coming out of OEF will be refurbished in the United States and used to fulfill U.S. Central Command (CENTCOM) mission requirements in Kuwait and other locations in its area of responsibility. Additionally, over the next few years the Army plans to use 360 SNAPs and 550 Global Rapid Response Information

Packages (GRRIPs) as a bridge to future network programs of record.

This repurposing effort is expected to provide significant cost savings in the early stages of WIN-T Increment 1's Transportable Tactical Command Communications (T2C2) program. T2C2 will provide small teams with robust voice and data communications capabilities in the initial phases of joint operations. Until the T2C2 capability is fielded, repurposed GRRIPs and SNAPs will help fill those communications requirements.

Like SNAPs, GRRIPs are TPE and are fielded worldwide through operational needs statements (ONS). They provide voice and data capability without the need of fixed infrastructure. They are small enough to fit in the overhead bin of an airplane and take only a few minutes to set up. Unlike other network equipment being pulled out of theater, GRRIPs continue to be fielded into Afghanistan to fill ONS and support operations. The Army is repurposing GRRIPS no longer needed to support units deploying back to the States to fill other ONS in OEF.

The WIN-T network architecture in Afghanistan also includes Deployable Ku-band Earth Terminals (DKETs), which were designed to support larger hub locations for long-haul transport both intra- and inter-theater. They provide much larger bandwidth capabilities and volume distribution than the smaller SNAPs. However, as the force in Afghanistan shrinks and the Army retrogrades DKETs, SNAPs will provide the network

backbone necessary to support communications for remaining forces.

Some of the retrograded DKET equipment will stay forward to support contingency operations, some will move to a warehouse to fill requirements as they arise, and the rest will return to the States for distribution to other services or combatant commands.

Already, one of CENTCOM's new and unused DKETs was sent to fill requirements in the Horn of Africa, avoiding the time and the $1.6 million needed to buy a new unit. In the future, the reuse and redeployment of each retrograded DKET could realize a cost avoidance of more than $1.1 million (the cost of buying a new unit, less the cost of refurbishing a used unit), as well as the significant time savings of not having to acquire brand-new equipment.

PM WIN-T is working to ensure that the proper mix of equipment remains in theater to support enduring operations, while keeping efficiencies at the forefront of its retrograde efforts.

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# FACTOR 13

Capability Set 13 fills the gap as other
communication systems leave Afghanistan

*by LTC Bill Venable, Mr. Michael Valdez and Mr. Clifton Basnight*

Austere, treacherous terrain. Few routes in and out. Limited resources and personnel to execute a daunting mission. These are the well-known challenges of retrograde from Afghanistan. But they also apply to the flip side: fielding brand-new network technologies in the midst of drawdown operations.

By overcoming these challenges, the Army has delivered an essential communications capability to many of the troops who remain.

## CS 13 ARRIVES IN AFGHANISTAN

In the spring and summer of 2013, a small, skilled "surge" team deployed to Operation Enduring Freedom (OEF) to execute the final phases of fielding CS 13. Composed of technologies including satellite-based systems, advanced data radios, smartphonelike devices and the latest mission command software, CS 13 provides the Army's first integrated network connectivity across the entire brigade combat team (BCT) formation, from the fixed command post to the commander on-the-move to the dismounted Soldier.

The Army targeted CS 13 capabilities to arrive in the OEF theater at a critical time. As U.S. forces continue to retrograde, they are closing many of their forward operating bases (FOBs) and removing communications infrastructure such as hard lines, towers and other equipment. With CS 13, the BCTs tasked with removing this infrastructure still have the ability to communicate at the tactical level and exchange voice and data across their entire area of operations.

This connectivity is also critical for U.S. troops as they advise and assist the Afghan National Security Forces, often in mobile operations distributed over great distances and terrain obstructions. As one brigade commander described the CS 13 network, "It gives us the ability to extend our reach, even as we reduce our presence."

CS 13 has been fielded to two security force assistance brigades (SFABs) and one combined joint task force (CJTF) headquarters (HQ), the 101st Airborne Division HQ. Select units across that CJTF's area of responsibility will use the technology, which is expected to be an enduring capability for the next two SFAB rotations until the U.S. mission in Afghanistan concludes.

CS 13's arrival in theater culminates a total Army effort to quickly field the technologies, spanning dozens of commands and locations and requiring constant coordination among network and vehicle project managers, production facilities, brigade staffs, fielding personnel and training professionals.

The final phase of fielding was especially complex. Not only did the team complete the integration of more than 265 networked vehicles on the ground in theater, but it also managed the arrival of additional vehicles and components from the United States. The team balanced CS 13 priorities, schedules and requirements with the massive OEF retrograde effort.

## BALANCING ACT

The CS 13 architecture divides network systems between two types of platforms, "key leader" and "lower tier." Key-leader vehicles, designed for leaders at company level and above, include on-the-move network and mission command capability through Warfighter Information Network

**CAPABLE COMMUNICATIONS**

The Army targeted CS 13 to arrive in Afghanistan at a critical time to support U.S. forces in retrograde and advise-and-assist missions. CS 13 provides critical connectivity for U.S. troops still operating in theater, often in mobile operations distributed over great distances and terrain obstructions. Here, a Soldier from the 4/10 MTN trains on CS 13 technologies at Fort Polk, LA, in February. (U.S. Army photo by Claire Heininger, PEO C3T)

– Tactical (WIN-T) Increment 2, networking radios, mission command (MC) applications, and secure situational awareness (SA)/Blue Force Tracking (BFT) and messaging technology. Lower-tier network vehicles include only the networking radios and secure SA/BFT and messaging technology. They also incorporate dismounted Soldiers' position location information from Nett Warrior handheld devices.

Both capability levels use variants of the Mine Resistant Ambush Protected (MRAP) vehicle. The key-leader MRAP All-Terrain Vehicles (M-ATVs) were integrated with WIN-T Increment 2 and

other CS 13 components in the United States and then delivered to the 3rd and 4th BCTs of the 10th Mountain Division (3/10 MTN and 4/10 MTN) at their home stations for several months of training beginning in October 2012.

But the lower-tier vehicles were a different story. Since those vehicles were needed in much larger quantities—approximately 134 per BCT instead of a total of 48 key-leader variants—it would have been extraordinarily expensive and complicated to build them in the States and ship them to a theater where access is limited and terrain is difficult. Instead, the Army in 2012 began identifying

M-ATVs and MaxxPro Dash MRAP vehicles that were already in Afghanistan, and started to "cordon off" those vehicles from the retrograde effort, setting them aside for CS 13.

Back in the United States, the Army installed the lower-tier network systems on approximately 330 High Mobility Multipurpose Wheeled Vehicles (HMMWVs), which replicate the lower-tier fleet so that units receiving capability sets could conduct individual and collective training in the States on the communication systems they would be using in theater.

More than MRAPs had to be set aside from retrograde, however. Several other CS 13 components, including antennas, mounts and AN/PRC-117G network radios and other single-channel and tactical satellite legacy radios, were also distributed throughout Afghanistan from previous individual fieldings in support of OEF. When the retrograde mission began to pick up, the CS 13 team worked to track down and redirect these assets to the dedicated integration area at Bagram Airfield.

The process wasn't always smooth, but it worked. In the case of the AN/PRC-117G, the Army ultimately fielded approximately 1,700 radios in support of CS 13, but had to buy only about 1,140 of them new. The recovered radios received upgrades with new software to ensure interoperability with the rest of the capability set.

Once at Bagram, the vehicles entered a "racetrack" setup, moving to various stations to be equipped with the lower-tier network components and receive required theater upgrades and maintenance. The process benefited significantly from lessons learned through the semiannual Network Integration Evaluations (NIEs), the CS 13 Network Verification event and other previous integration and validation efforts in the States, but it was still a challenge to execute on the ground. A limited number of engineers and field support personnel had to try to match designers' blueprints for each vehicle variant by combining equipment harvested from theater with new CS 13 installation kits shipped from the States.

After some trial and error and much hard work, the configured vehicles went through a validation and checkout to ensure functionality before being shipped to the designated FOBs occupied by 4/10 MTN. Both the key-leader vehicles and



**REALISTIC TRAINING**
The Army installed the lower-tier network systems, one of two types of platforms in the CS 13 architecture, on approximately 330 HMMWVs so that units receiving capability sets could conduct individual and collective training in the States on the communication systems they would be using in theater. Here, Soldiers from the 4/10 MTN train at Fort Polk in using a HMMWV integrated with CS 13 components. (U.S. Army photo by SSG Kulani Lakanaria, 4/10th MTN)



**MAINTAINING SA**
Nett Warrior, a handheld SA and messaging tool, is a key component of CS 13, which extends the tactical network down to the dismounted Soldier. Here, a Soldier from the 4/10 MTN uses Nett Warrior to communicate with his higher headquarters during a training exercise at Fort Polk in March. (U.S. Army photo by Claire Heininger, PEO C3T)

**NO TIME TO WASTE**
The 4/10 MTN received an accelerated deployment schedule that not only compressed its training timeline, but also sped up the delivery dates for CS 13, posing a challenge for the BCT and the CS 13 fielding team. Here, Soldiers from the 4/10 MTN train using Rifleman Radios at Fort Polk. (U.S. Army photo by SSG Kulani Lakanaria, 4/10 MTN.)

lower-tier vehicles are assigned by bumper number down to the specific individual duty position to each unit within the brigade. So as the M-ATVs rolled out of Bagram Airfield, each had a specific FOB destination—and all the terrain and transportation challenges that came with it.

## CHALLENGES AND LESSONS LEARNED

A tremendous challenge with CS 13 was timing. While still at Fort Polk, LA, in the midst of fielding CS 13, 4/10 MTN received an accelerated deployment schedule. The change not only compressed the unit's training timeline, but also sped up the delivery dates for CS 13.

Some of the components for lower-tier vehicles were still in production as the unit left for theater, while the key-leader vehicles and more than 8,000 other pieces of equipment that had been fielded at Fort Polk needed to be shipped to Afghanistan. Before shipment, the CS 13 systems also needed to be loaded with the correct software and configurations to operate in theater, which differed from the setup used during 4/10 MTN's Joint Readiness Training Center rotation.

To meet the needs of the mission, 4/10 MTN was task-organized into an SFAB formation, meaning that the unit would deploy fewer Soldiers in different combinations than a typical BCT. CS 13 technologies are scalable and tailorable to such changes, and the network can be adapted to meet the needs of the unit. However, the systems are also interdependent—a great advantage on the battlefield, but a challenge when each adjustment has a ripple effect. For example, extending the network down to the Soldier level with Rifleman radios and Nett Warrior handheld devices significantly boosts SA, but also multiplies the density of fielded systems that need to be "touched" with any change or upgrade. To address this

issue, the Army is aiming to introduce an over-the-air update mechanism for future capability sets.

There are numerous other lessons learned for ongoing and upcoming fieldings—including for 3/10 MTN, whose lower-tier vehicle integration began in OEF in July, as well as the 2nd and 3rd BCTs of the 101st Airborne Division training with CS 13 at Fort Campbell, KY. In FY14, the Army plans to field four additional BCTs with the follow-on CS 14, which introduces Joint Battle Command – Platform, the Manpack radio, secret capability for the Rifleman radio and other network enhancements.

The first takeaway is that with so many variables at play, communication among all of the players is paramount. The Army could not have accomplished CS 13 fielding in OEF without a strong partnership among the 401st Army Field Support Brigade, Task Force Signal, CJTF-101 headquarters, the receiving BCTs, and Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) organizations, including the System of Systems Engineering and Integration (SOSE&I) Directorate, Program Executive Office Command, Control and Communications – Tactical (PEO C3T), PEO Soldier and Joint PEO MRAP.

Faced with changing operational conditions and numerous funding challenges, we relied on timely guidance and decision-making from HQDA G-3/5/7, G-8 and others. Among our own organizations, it was essential to synchronize ASA(ALT) efforts in order to provide consistent, accurate communications with CS 13 receiving units and other theater elements.

That brings up another lesson in need of reinforcement: the system-of-systems approach. The Army's capability set

**ADDING IT ALL UP**
CS 13's arrival in theater culminates a total Army effort to field the technologies quickly. The effort spans dozens of commands and locations, requiring constant coordination among network and vehicle project managers, production facilities, brigade staffs, fielding personnel and training professionals. Several key CS 13 integration efforts took place at the Space and Naval Warfare (SPAWAR) Systems Center Atlantic, Charleston, SC, shown here. (Photo courtesy of SPAWAR)

fielding strategy hinges not just on integrated equipment, but also on integrated delivery, training and troubleshooting. We have made good strides in that direction, assigning an ASA(ALT) "trail boss" to oversee CS fielding to each unit; providing units with training on what the entire capability set brings to the fight, rather than just individual system functionality; and cross-training field support personnel so they can develop subject-matter expertise across the CS portfolio.

But there are more steps we can take—for example, creating a formal mechanism to capture and transfer the engineering and integration knowledge gained at the NIE events for better use by personnel on the ground in theater. There is also value to formally implementing a leader's course to help commanders understand how to fight using the integrated network capabilities. Just as we have training for commanders to fight

using heavy weapons capabilities, air support capabilities, indirect fire capabilities, etc., commanders need to understand the network as a combat multiplier, not just a collection of signal capabilities.

Another important lesson learned from this process is that no matter how sophisticated the technology or high-profile the campaign, we need boots on the ground to actually make it happen. It was fortunate that the right people with the right skill sets converged in Afghanistan to coordinate with retrograde efforts, gather the necessary equipment and put it all together to meet the unit's timeline. The Army needs to develop more of these technically savvy individuals and support them when they go into harm's way.

**CONCLUSION**
When asked during their training rotations to describe CS 13, leaders from 4/10 and 3/10 kept coming back to the

same phrase: "Game changer." While the systems—and the process that delivered them—are far from perfect, they offer a dramatic improvement over what Soldiers had before. As U.S. forces close out their missions in Afghanistan, the network will be there to support them until they come home.

For more information, go to **http://peoc3t. army.mil** or **http://www.army.mil/asaalt**.

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PROGRAM EXECUTIVE OFFICE COMMAND, CONTROL AND COMMUNICATIONS-TACTICAL

# CONNECTING
## TOMORROW'S WARRIORS

The Program Executive Office for Command, Control and Communications-Tactical provides our Soldiers with the networks, radios and other communications hardware and software they require to succeed in any operational environment. We rapidly develop, field, train and support fully networked and integrated capability sets in order to connect the warriors of today and tomorrow. The first of these capability sets, CS 13, is currently supporting Soldiers of the 10th Mountain Division in their advise-and-assist mission in Afghanistan.

*"The various platforms of CS 13 give us a digital reach like we've never had before."* - MAJ Gary Pickens, communications officer for the 4th Brigade Combat Team, 10th Mountain Division, which is the first unit to deploy CS 13 in theater.

**U.S.ARMY**

# PEO★C3T
PROGRAM EXECUTIVE OFFICE COMMAND CONTROL COMMUNICATIONS-TACTICAL

HTTP://WWW.FACEBOOK.COM/PEOC3T          HTTP://PEOC3T.ARMY.MIL

# Homing *in on* SAVINGS

How Product Manager Radars is converting a quick-reaction capability radar to a program of record

*by MAJ Loren D. Todd*
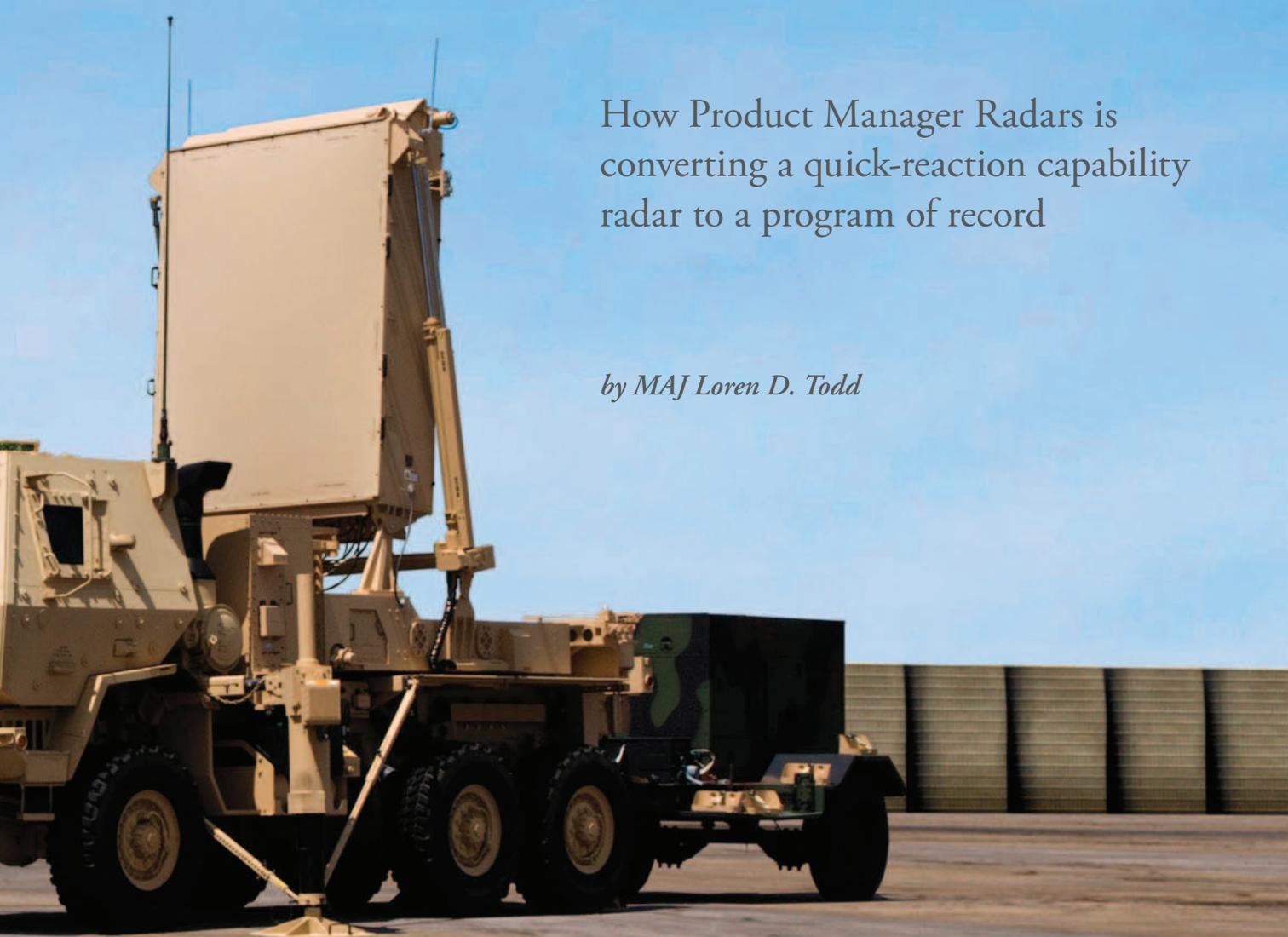
**NEXT-GENERATION RADAR**
The AN/TPQ-53 system, shown here in its fully upgraded configuration, is the Army's next-generation counter-fire target acquisition radar, scheduled to replace the EQ-36 QRC in 2019. (Photo courtesy of Paul Salce, Lockheed Martin Corp.)

Product Manager (PdM) Radars has a clever plan to save the Army three-quarters of the cost of new radar systems.

PdM Radars, assigned to Project Manager Cruise Missile Defense Systems in Program Executive Office Missiles and Space, is producing the next-generation counter-fire target acquisition radar, the AN/TPQ-53. The system will replace the legacy AN/TPQ-36 and AN/TPQ-37 "Firefinder" radar systems by 2020. The AN/TPQ-53 was initially fielded in 2010 as the Enhanced AN/TPQ-36 (EQ-36) Quick Reaction Capability (QRC).

Rather than purchase new radar, PdM Radars is using the legacy systems that are retrograding from Afghanistan in the near term, a scheme that is expected to save the Army approximately 73 percent of what new systems would cost. The retrofit effort will begin next year and be completed in 2016.

This economical approach will convert QRC radars that the Army no longer needs in Operation Enduring Freedom to the same configuration as the brand-new systems, then field them to support future deployments wherever necessary.

A branch of the AN/TPQ-53 program of record (POR), the EQ-36 has been saving lives in Iraq and Afghanistan since 2010. PdM Radars now stands poised to retrofit the QRC systems fully into the POR configuration.

Following retrofit, the 32 QRC systems will add to the low-rate initial production systems currently in production and the full-rate production (FRP) systems scheduled to begin production next year to satisfy the Army's acquisition objective. This plan, part of PdM Radars' acquisition strategy since 2009, saves roughly $224 million compared with procuring new AN/TPQ-53 systems and serves as a model for the effective, orderly transition from QRC program into a POR.

## AN EVOLUTIONARY DEVELOPMENT

The EQ-36, which grew from a multi-mission radar research and development initiative that followed the cancellation of the AN/TPQ-47 program, was the Army's solution to fill a gap in long-range, 360-degree counter-fire radar coverage. This gap, identified as early as 1967, was confirmed in nonlinear, forward operating base (FOB)-centric operations in Afghanistan and Iraq.

Indirect fire is often a 360-degree threat around a FOB. In the days of counter-fire target acquisition radars that could search only one 90-degree slice of the battlefield at a time, insurgents quickly adapted their firing positions to avoid radar search sectors. To address this, the Army accelerated the development of a long-range, 360-degree counter-fire radar capability, making incremental improvements to the EQ-36 during production based on feedback from testing and combat operations.

The result of the evolutionary development was the delivery of 32 QRC EQ-36 systems between 2010 and 2013, with five distinct configurations. The earlier a QRC radar was produced, the greater the difference between that radar's configuration and the current configuration in production.

To mitigate the risk of building a QRC product that would be impossible to upgrade to the POR configuration, PdM Radars made the retrofit of the QRC systems an integral part of its acquisition strategy and emphasized the development of a suitable, stable physical configuration during system design. The result was a relatively close correlation between the oldest EQ-36 QRC system's physical configuration and that of the AN/TPQ-53 POR.

On average, the retrofit of one system is expected to cost about 28 percent of the cost of a new system. Retrofitting the QRC to the POR configuration will return a fully mission-capable AN/TPQ-53 to the Army that has been in use 24 hours per day in a combat environment for the past three years.

To complete the retrofit, each QRC system will be integrated into the production line. The program will customize each radar's upgrade to FRP configuration on a system-by-system basis based on its pre-retrofit configuration. The numerous improvements and enhancements will include refurbishing all systems' antennas with the installation of an advanced

THIS SITUATION HIGHLIGHTS A CRITICAL RISK IN THE RETROFIT STRATEGY: THE COST WILL INEVITABLY CHANGE WITH MODIFICATIONS IN HARDWARE BASED ON CHANGING REQUIREMENTS, LESSONS LEARNED AND TEST RESULTS.

water intrusion prevention kit, and a new single-board computer that will support software upgrades and enhancements to the system's electronic protection capability. The older systems will get a new armor-ready prime mover, an improved leveling system and a Blue Force Tracker. All of the retrofitted systems will undergo normal production acceptance testing before fielding.

PdM Radars will synchronize the retrofit schedule with both the redeployment schedule of the QRCs and the delivery schedule of the POR radars; this synchronization will make the QRC systems available for retrofit as the POR systems are delivered and fielded.

## FINELY TUNED SYNCHRONIZATION

Lessons learned from the Iraq retrograde have helped PdM Radars fine-tune its retrofit synchronization plan with an eye toward minimizing the total cost.

Program managers found that the systems that redeployed from Iraq as a part of a unit's organizational property (as opposed to the mass redeployment of Theater Provided Equipment) arrived in the best condition and with the best accountability of components and basic issue items. Since a system's condition and component accountability directly affect the cost of its retrofit, the program office has coordinated with the Army G-8 and G-4 to ensure that the AN/TPQ-53 systems in Afghanistan will redeploy as organizational equipment.

Once the redeployed systems have arrived stateside, PdM Radars will defield them and prepare them for retrofit. The first step will be to ensure that the Family of Medium Tactical Vehicles (FMTV) prime movers and 60-kilowatt generators meet organizational and



**COUNTERING FIRE**
Indirect fire is often a 360-degree threat around a FOB, and the EQ-36 was the Army's solution to fill a gap in long-range, 360-degree counter-fire radar coverage. Here, SPC Bradley Gruendle, a radio telephone operator with 1st Battalion, 76th Field Artillery, 4th Infantry Brigade Combat Team, 3rd Infantry Division, prepares modular artillery charges June 14 for the M777 Lightweight 155 mm Howitzer at FOB Shank, Logar province, Afghanistan. The Soldiers were preparing their weapons for counter-fire missions. (Army National Guard photo by SGT Julieanne Morse)



**MISSION-READY**
PdM Radars rapidly fielded the AN/TPQ-36 and AN/TPQ-37 Firefinder target acquisition radar systems in 2010. Here, from left, PVT Jared Beier, PVT Zachary Hilleary and SPC Alexander Clements of 1st Battalion, 37th Field Artillery Regiment ground the generator that powers the EQ-36, Jan. 26, 2012, at Joint Base Lewis-McChord, WA. (Photo by SGT Austan Owen, 5th Mobile Public Affairs Detachment)

**SHELTERING THE SYSTEM**
The AN/TPQ-53's shelter, shown here at Yuma Proving Ground, AZ, allows for extended-duration operations in all environments. (Photo courtesy of Lockheed Martin Corp.)

depot-level maintenance standards. The AN/TPQ-53 is not an automatic reset induction item, so program personnel will send the QRC systems directly to Letterkenny Army Depot, PA, and the program will fund the FMTV and generator maintenance.

After depot maintenance, the program will induct the systems into retrofit, run them through the production line and test them against the system's specification requirements. The retrofitted AN/TPQ-53s will be fielded to units in fully mission-capable condition and in the FRP configuration, and the field service representatives will ensure continued operability of the systems until the program completes its transition to organic maintenance support in FY17.

**TRACKING SPECS AND COSTS**
PdM Radars has found the process of planning for retrofit funding to be a persistent challenge as the system's physical configuration has evolved. The importance of continuously updating the program office estimate (POE) assumptions to overcome this challenge cannot be overstated.

The development and integration of the improved automatic leveling system provides an excellent example of a configuration change that significantly affected the program's anticipated retrofit costs. Program officials redesigned the system's first-generation leveling system midway through QRC production to better and more reliably support the weight of a fully armored prime mover.

The benefit of the improved system has been dramatic, but the cost of the leveling system added to initial retrofit estimates. Only through a careful bottom-up review of the POE was PdM Radars able to confirm that the retrofit cost was still affordable.

This situation highlights a critical risk in the retrofit strategy: The cost will inevitably change with modifications in hardware based on changing requirements, lessons learned and test results. The program must meticulously account for every configuration change in the POE and, if possible, plan far enough in advance for the retrofit to be able to influence the budget submission and program objective memorandum once the configuration is stable.

**CONCLUSION**
In an era of budget pressure and difficult choices, one of the great benefits of a baked-in strategy for retrofit is that it can provide a scalable menu of program options to enable cost trades. Depending on the missions that retrofitted systems will support after fielding, programs might be able to forgo or defer certain upgrades on a system-by-system basis to free up funds for other priorities.

Production and deployment of the QRC systems enabled PdM Radars to incorporate lessons learned from theater into the POR configuration, accelerating the POR. Retrofitting the QRC systems allows the program to maximize the QRC return on investment and keep POR costs down.

Program managers adopting the retrofit strategy should stabilize the physical configuration as early in production as possible to minimize the cost of the eventual retrofit. They also should carefully monitor the estimated costs of any changes to the baseline. Finally, they should work closely with the user community to determine whether they can save money by choosing not to make certain upgrades, based on the specific missions that the systems will support.

It's a strategy for all seasons. Whether we're tightening belts or not, saving the government money is always a good idea.

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# ASK *the* EXPERTS

Acquisition Lessons Learned Portal is trusted
source for relevant, timely best practices

*by Mr. Kevin Guite*

A s Army acquisition programs strive to deliver cutting-edge capabilities for the warfighter, program managers run into thorny situations now and then and find themselves in need of a solution.

There's no better way to find a way out of those situations than to talk to someone who's been there and done that—and survived to talk about it. Historically, however, finding a single, trusted source of acquisition lessons has not been easy. The Army Acquisition Lessons Learned Portal (ALLP) aims to change that.

The final report of the 2010 Army Acquisition Review, "Army Strong: Equipped, Trained and Ready" (online at **http://usarmy.vo.llnwd.net/e2/c/downloads/213465.pdf**), noted that "there is no database to guide one to appropriate programs, issues, trends, solutions and successes in acquisition programs." One of the recommendations in the report was to establish a Center for Army Acquisition Lessons Learned and develop best practices that could be shared throughout the Army acquisition enterprise. The result was to create the Army's Acquisition Lessons Learned mission.

The Army acquisition executive (AAE), the Hon. Heidi Shyu, officially initiated the mission through her signed memorandum of Jan. 8, 2012, in which she directed the U.S. Army Materiel Systems Analysis Activity (AMSAA) to "create a Web-enabled database for Acquisition Lessons Learned (ALL) and provide analytical capability to conduct the analysis." The memo tasked program, project and product managers of all acquisition category (ACAT) programs to conduct an after-action review (AAR) following each milestone event and program termination, and to submit the resulting lessons learned through the website in order to share this knowledge with the greater Army acquisition community.

As a result of that tasking, AMSAA established an ALL team to create and maintain the Web-based portal and to analyze submissions in order to determine trends and identify impacts on the Army acquisition process. (See Figure 1 on Page 28.) The result of those efforts is the ALLP, which became operational on Oct. 1, 2012. ALLP now has more than 325 registered users throughout the Army acquisition enterprise and more than 300 individual acquisition lessons.

## COLLECTING LESSONS LEARNED

The next challenge for the Army ALL team was to collect and store relevant, timely and useful lessons for the portal's

**AFTER-ACTION REVIEW**

In initiating the ALL mission, the AAE, the Hon. Heidi Shyu, tasked PMs of all ACAT programs to conduct an AAR following each milestone event and program termination, and to submit the resulting lessons learned through the Web-enabled ALL database that she directed AMSAA to create. Here, Soldiers with 2nd Battalion, 506th Infantry Regiment, 4th Brigade Combat Team (BCT), 101st Airborne Division (Air Assault) conduct an AAR June 20 with instructors from the 49th Explosive Ordnance Disposal Company after going through a counter-improvised explosive device lane at Camp Parsa, Afghanistan. (U.S. Army photo by SGT Justin A. Moeller, 4th BCT Public Affairs)

customer base. "We have to put data in and have the program managers [PMs] use it, or it is just a repository. It comes down to how easy it is to search, digest the information and identify trends," Shyu stated.

The AMSAA ALL team mined program lessons through sources such as the U.S. Government Accountability Office, the Congressional Research Service and Selected Acquisition Reports from the Office of the Secretary of Defense (online at **http://www.acq.osd.mil/ara/am/sar/**). The team sought input from program executive office (PEO) representatives dedicated to supporting the ALL mission, and participated in program reviews conducted through the Army Systems Acquisition Review Council (ASARC). Team members documented acquisition issues noted during ASARC sessions and worked with PEO representatives to capture correctly the background, lessons learned and recommendations for submission to the ALLP database.

The portal's database now hosts a valuable collection of practical lessons learned from real-world acquisition challenges, submitted by Army acquisition professionals. These challenges most likely could not be addressed using just the guidance in official Army acquisition training courses.

For example, the use of a system reliability model as part of an effective failure reporting analysis and corrective action system has been shown to yield significant

**FIGURE 1**

# Practical

*Source of timely and relevant real-world acquisition lessons learned and best practices*

- Authoritative source for Army acquisition lessons and best practices.
- Historical and emerging lessons.
- Formal milestone AAR and termination submissions.
- Unscheduled submissions welcomed.
- Collaborative site for PEO professionals.

**Enhance the performance of the Army's project management offices.**

**ALLP PORTAL**

**Requirements derived by PEO community**

# Strategic

*Independent analyses focused on systemic Army acquisition challenges*

- Trend analysis identified through portal submissions.
- Independent analysis providing basis for:
  - Strategic decisions.
  - PEO/PM process changes.
  - Acquisition policy changes.
- Case studies documenting past issues and best practices.
- Effect change in acquisition training.

**Influence Army acquisition policies, planning and decisions.**

**THINKING SHORT AND LONG TERM**
The ALL mission has both a practical and a strategic focus: to gather and share lessons learned, and to identify trends and best practices that could benefit the Army acquisition enterprise. (SOURCE: Kevin Guite, AMSAA)
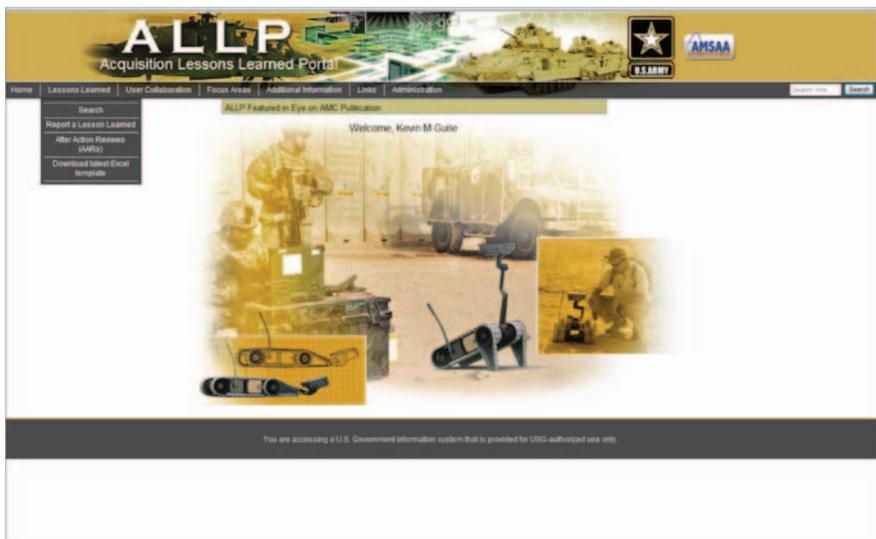


**325 USERS AND COUNTING**
Since the ALLP became operational on Oct. 1, 2012, it has gained more than 325 registered users and gathered more than 300 individual acquisition lessons. (SOURCE: Kevin Guite, AMSAA)

cost savings over the life cycle of a system, thanks to reliability improvements. A 10 percent improvement in reliability can equate to hundreds of millions of dollars in savings. In another example, increasing the number of test articles can reduce the time frame required for test completion. Cost avoidance of more than $530,000 has been reported in this case, as well as a 31-week reduction in test duration.

Submissions collected in ALLP, which are grouped by category to aid in searching and trend analysis, focus primarily on real-world lessons learned, from pre-Milestone (MS) A events to production decisions at MS C. However, the ALL team is actively encouraging those with lessons learned in the production and deployment phase and the operations and support phase to share them.

Lessons learned about already fielded systems could yield improvements in the earlier phases of system development. Impacts from adjusting requirements, additional test and evaluation (T&E), or improved reliability planning would be excellent lessons from these later acquisition phases that would benefit planning for current or future systems. The ALLP has several lessons learned from surge recovery and retrograde operations in theater that address planning for continuous configuration control board discussions, the benefit of Army field support brigades in getting products to the users, and the need for dedicated government contracting officer's representatives on forward operating bases.

Currently, the greatest numbers of lessons by category are in program management and documentation and reviews, followed by program requirements, contracting, and T&E. In the program management category, for example, submissions describe lessons in underestimating integration

costs, the benefits of enterprisewide licenses for commercial products, and the dangers faced in re-baselining programs, or adjusting the requirements, schedule and cost to make a program more affordable and attainable. In the documentation and reviews category, submissions highlight lessons with materiel development decision templates, analysis of alternatives study guidance, and Defense Acquisition Board interactions.

## PORTAL CAPABILITIES

The primary purpose of ALLP is not just to collect but also to disseminate timely and relevant real-world acquisition lessons. Thus the ability to search the database quickly is a top priority. ALLP users can locate lessons by acquisition lifecycle phase, milestone and ACAT level. Keyword searches provide a "Google-like" ability to look through the entire website and return highlighted entries.

The principal deputy to the AAE highlighted this capability during a recent demonstration of ALLP, remarking that "the most useful aspect is to filter lessons, depending on milestone or phase, to easily find the information needed." It is easy to export filtered lessons and best practices as documents to share within and across government acquisition organizations.

User forums and document library features have enhanced the collaborative nature of ALLP. The forums provide users with a mechanism to ask focused questions of other Army acquisition experts who may have experienced similar issues or challenges in their programs. Being able to find the right answers from the right people at the right time is at the heart of the ALLP mission. The library features documents provided by ALLP users to assist their contemporaries in the acquisition community. Available documents include sample ASARC templates,



**A WALK THROUGH THE PORTAL**

The Hon. Heidi Shyu, AAE, discusses the ALLP's capabilities during a demonstration of the portal April 2 at the Pentagon. (Photo courtesy of Kevin Guite, AMSAA)

DOD or Army acquisition guidance, memorandums from the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)), and acquisition program case studies.

## GETTING THE WORD OUT

Informing the Army acquisition community of the ALLP's capabilities and the need to capture their expertise required a major marketing effort from the ALL team. The team conducted nationwide road show visits to every Army PEO organization. Additional visits and teleconferences reached key stakeholders from the contracting, requirements, science and technology, and testing communities. Continued interaction through ASARC program reviews and quarterly integrated product team teleconferences gives the ALL mission momentum as it continues to grow.

The toughest challenge for the ALL mission has been making the use of lessons learned a formal part of the Army acquisition process. Program managers have little time for inefficient efforts that do little to improve the cost, schedule and performance of their products. By providing valuable real-world lessons that can be used at the proper time in acquisition planning, the ALLP will demonstrate the value it adds to the process.

In an April 18, 2013, memorandum to the Army PEOs, the AAE reiterated her support for institutionalizing the use of acquisition lessons learned within ASA(ALT). Shyu wrote that acquisition lessons "will be considered at the beginning of a program's acquisition process" and that they "will be established as entrance and exit criteria for each milestone review."

**LESSONS LEARNED ON LEMV**

The ALL team helped to capture and catalog lessons learned from the recently terminated Long Endurance Multi-Intelligence Vehicle (LEMV) technology demonstration program. By surveying LEMV program managers, subject-matter experts and associated Army staff personnel, the team obtained 94 unique lessons learned and added them to the ALLP. Here, the LEMV takes flight Aug. 7, 2012, over Joint Base McGuire-Dix, NJ. (U.S. Army photo)

## OPPORTUNITIES FOR KNOWLEDGE

The ALL team participated in the ASA(ALT)-directed T&E Efficiencies Task Force established earlier this year and chaired by the ASA(ALT) deputy for acquisition and systems management. The mission of the task force, which released its report in July, was to identify T&E efficiencies and lessons learned across a large cross-section of Army acquisition programs and to propose specific adjustments in the areas of data availability, modeling and simulation (M&S), policy, reliability, requirements and test conduct. The ALL team compiled an extensive list of reliability, T&E, M&S and Network Integration Evaluation lessons learned that are applicable throughout the Army acquisition enterprise.

Additionally, the ASA(ALT) requested that the ALL team help capture and catalog lessons learned from the recently terminated Long Endurance Multi-Intelligence Vehicle (LEMV) technology demonstration program. The ALL team surveyed LEMV program managers, subject-matter experts and associated Army staff personnel, obtaining 94 unique lessons learned and adding them to the ALLP, where they are available for the benefit of the enterprise.

## CONCLUSION

The success of the Army ALL mission is a direct reflection of the number and quality of submissions and the sharing of those entries throughout the Army acquisition enterprise. As the variety of lesson submissions continues to grow, so, too, does the benefit of the portal. ALLP is evolving as the trusted source of lessons learned to enhance the performance of the Army's PMs while influencing Army acquisition policies, planning and decisions.

*For those who wish to share their acquisition lessons and best practices, or to learn from those facing similar challenges, go to the ALLP portal at* **https://allp.amsaa.army.mil** *to request an account.*

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# Wired
## *for* Success

Reserve component IT installations
set precedents for efficiency

*by LTC Jeffrey T. Yon and Mr. Jeffrey C. Faulkner*

What began as a mission to improve information technology (IT) infrastructure, equipment and networks on Army reserve component installations has evolved into a potential model for military construction (MILCON) IT projects across the Army Reserve.

The Reserve Component Automation Systems (RCAS) MILCON IT team, in conjunction with the U.S. Army Reserve (USAR), created a standardized solution that became known as USAR's "golden configuration" for voice and data implementation.

The MILCON IT team also established streamlined processes and a firm-fixed-price (FFP) procurement approach for network installations that included equipment, labor, travel and materials. The team assessed the first two years of site installations using a cost-plus model to establish metrics and to identify potential future cost and schedule savings. Team members then devised a by-site FFP model that made it unnecessary to process site proposal changes with every modification in equipment or travel requirements.

By standardizing all new-construction facilities in this manner, the USAR is well-positioned to move all of its voice traffic across the Army Reserve Network (ARNet) to Voice over Internet Protocol (VoIP) in the future.

## THE RCAS MISSION

The RCAS project provides integrated Web-based software solutions and support services that enable the USAR and Army National Guard (ARNG) to manage mobilization, safety, personnel and force authorization more efficiently. In addition, RCAS supports hardware integration. Since 1989, it has established the IT standard baseline and configuration for all ARNG units; now it provides the equipment to maintain database support for all USAR commands and ARNG activities in the 50 states, three U.S. territories and the District of Columbia.

RCAS continues to support basic IT infrastructure needs with the refresh of

**CONNECTING USERS**

Brian Harris, a MILCON IT project network engineer, connects a fiber-optic link to a user data switch at a USACAPOC facility in Prince George's County, MD. (Photo by Brian Blankenship, RCAS MILCON IT team)

equipment tailored to specific requirements reviewed and validated by the ARNG and USAR G-6.

In October 2009, the USARC G-2 and G-6 requested that RCAS provide contractual oversight of the IT infrastructure design, equipment procurement and network implementation on all Base Realignment and Closure (BRAC) Commission MILCON projects for which the USARC was responsible. Previously, compatibility issues had prevented the seamless integration of VoIP solutions.

The variety of models of phones, call managers and phone capabilities dictated a move to a standard configuration, which was vetted and subsequently received an authority to operate (ATO). This USAR golden-configuration solution for voice and data implementation brought true configuration management to the situation.

The initial emphasis of the project was on providing IT integration at BRAC installations. However, the USARC requested expansion of the MILCON IT project to include network installations within all MILCON categories. The project also began serving BRAC sites that had ARNG oversight.

From December 2009 through June 2013, the team planned, designed and installed 78 USAR-led BRAC data and VoIP network installations;

58 USAR-led data and VoIP network installations; and 24 ARNG-led BRAC data and VoIP network installations.

The team established a Cisco Unified CallManager and Tandberg 8000 MXP integration and installation at a Pennsylvania ARNG facility. With this unique solution, the team was able to integrate VoIP, which incorporated the data and voice requirement for much of the Pennsylvania ARNG.

The USAR asked the MILCON IT team to work on two other initiatives as well. One involved the U.S. Army Civil Affairs and Psychological Operations Command (USACAPOC) Secure Internet Protocol Router (SIPR) Holocom Protected

RCAS

Reserve Component Automation Systems

Serving The Soldier... Serving The Nation

Distribution System (PDS) and Non-secure Internet Protocol Router (NIPR) infrastructure upgrades. A critical challenge for the team was to implement the upgrade in an operational environment without disrupting network operations. After identifying requirements, the team used new military standards, IT best business practices and innovative technologies to engineer a viable solution. This provided a clear road map to implement more than 1,125 PDS drops that included full power and telecommunications room upgrades.

The second initiative involved a USAR-led Intrusion Detection System (IDS) data cable extension from target locations to the nearest ARNet data closet. This was done in conjunction with the Army Reserve Installation Management Directorate, USARC G-6 and the Army Reserve Office of the Provost Marshal. The intent of the initiative was to upgrade USAR facilities to newer, more reliable and automated technologies. Since October 2012, the MILCON IT Team has completed 321 IDS extensions at USAR facilities, so that the IDS can connect to the ARNet. The MILCON IT team's expertise with IDS and the work related to the cable extensions allowed it to complete 26 more sites than initially projected over a seven-month period.

The team also created a hybrid VoIP migration solution that was implemented in conjunction with the golden configuration across all subsequent MILCON IT

projects for data and VoIP network installations. Having this standard solution allowed the MILCON IT team to realize significant cost and schedule efficiencies: a 60 percent reduction in the time required to design and develop initial cost estimates for sites, and a significant reduction in the time needed for the USAR to approve and fund the sites. The use of VoIP in the standard configuration also allowed a savings of approximately $600 per voice primary rate interface (PRI)—the industry standard for supplying telecommunications services to offices—at each site and saved on future fees to change voice lines. Total estimated savings to date exceed $200,000.

## PROJECT IMPACT

For the data and VoIP network installations, the MILCON IT team developed

**THE RCAS PROJECT PROVIDES INTEGRATED WEB-BASED SOFTWARE SOLUTIONS AND SUPPORT SERVICES THAT ENABLE THE USAR AND ARNG TO MANAGE MOBILIZATION, SAFETY, PERSONNEL AND FORCE AUTHORIZATION MORE EFFICIENTLY.**

a hybrid solution using a Joint Interoperability Test Command-approved VoIP technology and implemented those capabilities in 2010 for the first time in USAR facilities. The approach allowed for full VoIP capabilities within the Reserve's complex while still being integrated using traditional PRI circuits.

In one noteworthy success, the MILCON IT team did the installation at a new Armed Forces Reserve Center (AFRC) facility in Tuscaloosa, AL, ahead of schedule; as a result, the center was operational shortly after a series of tornadoes demolished the old AFRC facility in April 2011.

In another success, the MILCON IT team designed and installed a Holocom-certified PDS for the USACAPOC G-2 and G-6 offices at Fort Bragg, NC, allowing for relocation of the G-2 and G-6 staffs into a building that had been refurbished from a storage facility. This effort, including all labor and materials, allowed for the emplacement of more than 100 secure drops while maintaining the SIPR Network ATO. The work took three weeks, one week less than projected, and the $393,000 cost was approximately half of what the government expected. The surge effort allowed the USACAPOC headquarters relocation to stay on schedule.

## CONCLUSION

RCAS' efforts on MILCON IT, IDS and USACAPOC projects met or came

in ahead of schedule and came in at or below cost. RCAS will continue to partner with the U.S. Army Corps of Engineers (USACE) and other Army agencies to provide world-class IT installations on MILCON projects for USAR and ARNG facilities, and is positioned to assume any future BRAC MILCON IT missions.

RCAS is currently coordinating with the USAR Office of the Provost Marshal to fulfill 500-plus additional IDS cable extension installation requests for FY15. USACAPOC has identified two additional facilities that require immediate re-cabling; those projects are under consideration for the first quarter of FY15.

The model used can be adapted to more USAR and ARNG facilities that require IT and VoIP implementation. Funding will be the challenge.

*For more information on this project and other RCAS efforts, contact LTC Yon at 703-325-4898 or **jeffrey.t.yon.mil@mail.mil**; or Mr. Faulkner at 703-325-4296 or **jeffrey.c.faulkner.civ@mail.mil**.*

*LTC JEFFREY T. YON is the assistant project director for RCAS and chief, RCAS Infrastructure Integration Division. Yon, who has served in the Colorado National Guard both as an NCO and as an officer, is a graduate of the U.S. Army Command and General Staff College. He is currently is enrolled in Defense Acquisition University courses.*

*MR. JEFFREY C. FAULKNER is the RCAS IT infrastructure integration and refresh lead. He has an IT Level III certification and Security Plus certification, and is pursuing a B.S. in information technology at the University of Maryland University College.*



**ALIGNING COMMUNICATIONS**
Army Reserve PFC Mary Tang, a network cable systems installer with the 490th Signal Company (Tactical Installation and Networking – Enhanced), checks a cable alignment during a SIPR-NIPR Access Point class June 2 at Fort Gordon, GA. (Photo by SPC Anthony Hooker, 359th Signal Brigade)



**INFRASTRUCTURE NEEDS**
The RCAS MILCON IT team, which supports basic IT infrastructure needs for the USAR and ARNG, created a standardized solution in conjunction with the USAR that became known as USAR's "golden configuration" for voice and data implementation. Here, CPT Kerstin Hedlund, a chaplain for the USACE Sacramento District, salutes the flag during a groundbreaking ceremony March 6 at the U.S. Army Garrison, Parks Reserve Forces Training Area in Dublin, CA, marking the largest U.S. Army Reserve real property exchange in DOD history. (U.S. Army photo by Todd Plain, USACE Sacramento District)

# Heavy Lifting

## AMC uniquely positioned to support R4D

*by COL Albert J. Cole*

The Retrograde, Reset, Redeployment, Redistribution and Disposal (R4D) mission in Afghanistan is a herculean effort. Launched in January 2012 and unprecedented in complexity, R4D requires innovation and creativity to meet the national objective of bringing equipment back to the United States.

As of Sept. 4, the Army alone had tens of thousands of vehicles and shipping containers—more than a million pieces of equipment overall, valued at approximately $23.5 billion—that must move within a landlocked and land-constrained environment. With more than 70,000 personnel situated around the world and missions ranging from research and development to reset, the U.S. Army Materiel Command (AMC) is uniquely suited to play a pivotal role.

As the R4D mission continues, each of AMC's major subordinate commands plays a part in the successful conduct and eventual completion of this monumental task.

Perhaps the most visible AMC asset involved in the R4D mission are the forward-deployed members of U.S. Army Sustainment Command's Army field support brigades (AFSBs). The 401st AFSB, located primarily in Bagram and Kandahar, serves as the first line of effort in AMC's support to the R4D mission, providing logistics synchronization. Early in the retrograde process,

180 days before the first unit's redeployment under R4D, the 401st sent property accountability assistance teams to forward operating bases (FOBs) and combat outposts (COPs) to help with turn-in paperwork, and pushed out mobile redistribution property assistance teams (MRPATs) to relieve redeploying units of excess property before the units arrived at one of the nine permanent RPAT yards in Afghanistan. Command emphasis and early planning between the 401st and commanders on the ground helped ensure a steady flow of equipment throughout the process.

Other forward-deployed AMC assets also play a critical role in processing and returning equipment from theater.

AMC's Logistics Support Activity forward training teams provide on-the-ground Logistics Information Warehouse (LIW) training, including Automated Reset Management Tool (ARMT) training and Theater Provided Equipment (TPE) Planner training, and can help units with any issues they may have with the systems critical to R4D. (See related article on Page 44.)

### DISPOSAL ASSISTANCE

TPE Planner and the Decision Support Tool (DST) also support the disposition of items for foreign military sales, which are managed by U.S. Army Security and Assistance Command (USASAC). During the current R4D process, USASAC is working closely with AMC and DA so that once materiel is identified

**HANDLE WITH CARE**
Munitions require careful treatment in the R4D process, a mission supported by JMC. Here, SPC Jacob Lanting of the 426th Brigade Support Battalion, 1st Brigade Combat Team, 101st Airborne Division opens munitions containers March 26 during a munitions burn near Jalalabad in Nangarhar province, Afghanistan. The burn was to destroy munitions that had passed their useful life. (U.S. Army photo by SPC Ryan Hallgarth, 55th Combat Camera)

**LOAD 'EM UP**
More than 1 million pieces of Army equipment, at an estimated value of $23.5 billion must move out of Afghanistan. Here, a rough-terrain container handler loads a 20-foot shipping container of retrograde materiel onto an outbound convoy vehicle. (U.S. Army photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion Public Affairs)

as no longer required for the current force structure, it may become a candidate to support the excess defense article (EDA) program. Countries' requests for EDA items go through the service departments and Office of the Secretary of Defense. Once the items become available, they are offered to the country. USASAC is working several cases for EDA items in Afghanistan and throughout the United States in support of building partner capacity.

Another AMC asset, Joint Munitions Command (JMC), assists with the inventory, retrograde and disposal of munitions in theater, a critical role. In Operation Ammunition Clean Sweep, teams of quality assurance specialists (ammunition surveillance), explosive ordnance disposal contractors and Soldiers travel throughout Afghanistan to search ammunition handling areas and containers for explosives and munitions. The team separates

them by lots, inspects the lots for safety and serviceability, and segregates them by condition code. Serviceable and safe munitions and explosives are repacked for use by the warfighter or to be retrograded out of theater. The operation allows for adequate planning for packing into containers, air movement and vessel requirements.

**KEEP IT MOVING**

The Military Surface Deployment and Distribution Command (SDDC) is responsible for that air and vessel movement. SDDC is the Army service component command of U.S. Transportation Command and a major subordinate command of AMC. SDDC is a critical partner for the 401st's equipment retrograde mission, providing strategic lift capability to move retrograde equipment from theater. Multimodal equipment movement requires a carefully coordinated series of actions to ensure that the

right equipment is ready and staged for movement to an aerial point of departure, where it will be flown to a seaport for surface transportation to its final destination. (See related article on Page 50.)

To best support the R4D equipment retrograde from Afghanistan, SDDC created the Velocity Volume Distribution Retrograde (V2DR) approach. V2DR

*THE TACOM AND AMCOM LCMCS ARE USING THE RESET REQUIREMENT AS AN OPPORTUNITY TO ENHANCE EQUIPMENT CONFIGURATIONS, RATHER THAN SIMPLY RETURNING THEM TO THEIR ORIGINAL LEGACY DESIGNS.*

**MATERIEL ON THE MOVE**
With more than 70,000 personnel situated around the world and missions ranging from research and development to reset, AMC has the daunting task of executing the disposition of enormous amounts of materiel, including tens of thousands of shipping containers and vehicles, and more than 1 million pieces of Army equipment. Thus it plays a pivotal role in the retrograde and reset of equipment from Afghanistan, through collaboration and synchronization with its strategic partners. (U.S. Army photo)

is designed to balance volume (the vast number of items that must be moved) against velocity, or the speed at which returning equipment must move. V2DR includes best-value routing, sound equipping forecasts, and a free flow of carrier multimodal sites, while adhering to equipment required-delivery dates. (See related article on Page 56.)

According to SDDC transportation experts, the V2DR approach was developed under the assumption that Pakistan ground lines of communication and the Northern Distribution Network would be open.

Once the Army has determined the disposition of equipment and vehicles in Afghanistan, SDDC coordinates the appropriate transportation. For many pieces of equipment, including rolling stock, that involves second-order transportation to one of AMC's life cycle management command (LCMC) depots or arsenals for reset and redistribution. In FY12, AMC depots reset the equipment-equivalent of 24 brigade combat teams.

The U.S. Army Aviation and Missile Command (AMCOM) LCMC, TACOM LCMC and Communications-Electronics Command have the responsibility of life-cycle maintenance, resetting equipment to ensure that it can return to the materiel enterprise in the best condition possible. Often, this means refurbishing aircraft and vehicles to better-than-new condition. This reset process ultimately saves the Army money by revitalizing war-worn equipment and returning it to units in ready condition for whatever mission awaits them.

The TACOM and AMCOM LCMCs are using the reset requirement as an opportunity to enhance equipment configurations, rather than simply returning them to their original legacy designs.

The U.S. Army Contracting and Expeditionary Contracting Commands (ACC and ECC) also play significant roles in the R4D process, offering full-spectrum contracting support. In addition to ensuring support to the on-the-ground forces, ACC is conducting its own drawdown in theater, consolidating contracts as FOBs and COPs close and

**RPAT YARD**
Teams of Soldiers from both the active and reserve components assist in vehicle and equipment retrograde operations at bases across Afghanistan. The Soldiers work as part of RPATs, inspecting Mine Resistant Ambush Protected vehicles, other vehicles, containers and non-rolling equipment for ammunition, explosives, brass or anything else that may prevent vehicles or equipment from passing through customs on the way back to the United States. (U.S. Army photo by SSG Peter J. Berardi, 316th Sustainment Command (Expeditionary))

> **AS THE R4D MISSION CONTINUES, EACH OF AMC'S MAJOR SUBORDINATE COMMANDS PLAYS A PART IN THE SUCCESSFUL CONDUCT AND EVENTUAL COMPLETION OF THIS MONUMENTAL TASK.**

ensuring that the contracting population reduces in conjunction with the retrograde.

**CONCLUSION**

During the entire R4D process, Headquarters, AMC maintains overwatch from its 24-hour Global Logistics Operations Center, which can follow the numbers of tracked and wheeled vehicles and containers leaving the country, and facilitate communication and action between subordinate commands and other key participants, including the Army G-4 and 1st Theater Support Command.

*For more information on AMC, go to* **www. amc.army.mil.**

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# UNITED STATES ARMY MATERIEL COMMAND

## AMC DEVELOPS AND DELIVERS GLOBAL READINESS SOLUTIONS TO SUSTAIN UNIFIED LAND OPERATIONS, ANYTIME, ANYWHERE
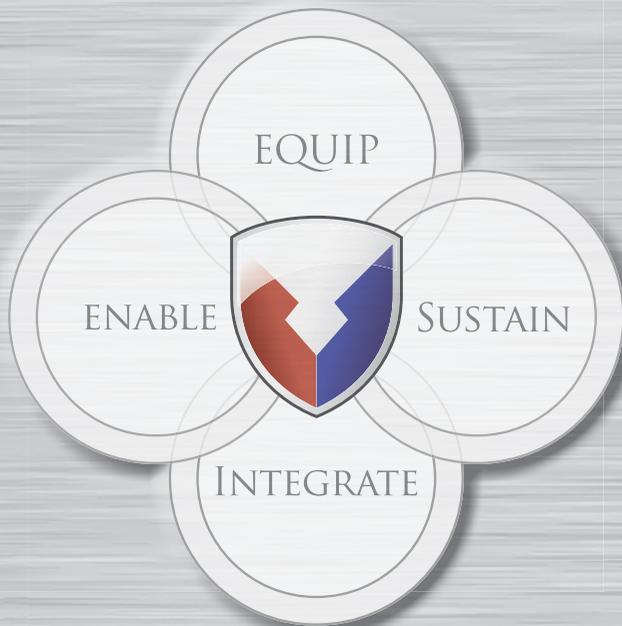
**CMA**
Chemical Materials Activity

**AMCOM**
Aviation and Missile Life Cycle Management Command

**ACC**
Army Contracting Command

**JMC/JM&L**
Joint Munitions Command/Joint Munitions & Lethality Life Cycle Management Command

**CECOM**
Communications - Electronics Life Cycle Management Command

**USASAC**
U.S. Army Security Assistance Command

**TACOM**
Tank-automotive and Armaments Life Cycle Management Command

**ASC**
Army Sustainment Command

**SDDC**
Surface Deployment and Distribution Command

**AMSAA**
Army Materiel Systems Analysis Activity

**RDECOM**
Research, Development, and Engineering Command

**LOGSA**
Logistics Support Activity

EQUIP
ENABLE
SUSTAIN
INTEGRATE

U.S. Army Materiel Command ~ 4400 Martin Road ~ Redsone Arsenal, AL 35898 ~ www.amc.army.mil

# Who's Doing What: Logistics Support in Afghanistan

*These are some of the U.S. Army Materiel Command (AMC) forward-deployed assets supporting the Retrograde, Reset, Redeployment, Redistribution and Disposal mission.*

**4-Corners operation—**One-stop shop for vehicles before going to the redistribution property assistance team (RPAT) or ready-for-issue yard. Used to download and sort all classes of supply, quickly remove trash, and zero-out all sensitive communications security items. Established as needed for major off-ramp operations.

**Brigade Logistics Support Team (BLST)—**AMC team aligned to support a single brigade combat team wherever that unit operates, as well as other units within their areas of operation. Provides training, troubleshooting, supply and transportation assistance. Executes national-level reachback to resolve tactical and operational logistics-related problems that affect unit and/or materiel readiness. Provides equipment condition verifications for turn-in paperwork and coordinates with life-cycle management command (LCMC) program managers (PMs) for disposition of PM-managed equipment.

**THE SUM OF MANY PARTS**
Moving or disposing of the massive amount of equipment in the Afghan theater of operations involves a host of forward-deployed AMC assets, among other players. (U.S. Army photo)

**Logistics Support Activity Forward Training Team**—Team of trainers that can visit unit areas and provide training in the Army Reset Management Tool, Theater Provided Equipment (TPE) Planner and Logistics Information Warehouse. They also provide Army Force Generation concept briefings and can help units with any issues after training.

**Logistics Support Element (LSE)**—AMC element aligned to support a regional command. Provides training, troubleshooting, supply and transportation assistance. Executes national-level reachback to resolve tactical and operational logistics-related problems that affect unit and/or materiel readiness. Like a BLST but larger, an LSE can help coordinate logistics enablers. It also provides equipment condition verifications for turn-in paperwork and coordinates with LCMC PMs for disposition on PM-managed equipment. Also provides support to the forward BLSTs when additional capabilities or equipment experts are required. Coordinates LSE support through supporting BLST or directly when no BLST is assigned.

**Logistics Task Force (LTF)**—AMC modular task force established at larger forward operating bases that provides regional support away from major regional bases and hubs. The LTF is task-organized to support equipment in the area but may also command and control an RPAT, a U.S. Army Communications-Electronics Command regional sustainment center or electronic sustainment support center. Also provides contract maintenance and logistics-capabilities contracting oversight.

**Mobile Container Accountability Team (MCAT)**—A team that travels to unit locations to identify, inventory and process containers, bringing them to record for tracking ownership and/or retrograde. MCATs are coordinated through the supporting regional sustainment brigade.

**Mobile RPAT (MRPAT)**—Performs the same function as an RPAT but travels to unit areas for early mass turn-in operations without burdening other unit missions. An MRPAT visit also provides an opportunity for units to ensure that turn-in paperwork is accurate before executing final RPAT operations.

**Mobile Redistribution Team (MRT)**—A team that goes out to the unit's location to take care of any supply that is not Class V, VII or VIII. The team identifies, classifies, sorts and inventories supplies and equipment, then ships it back to the retrosort yard to establish accountability or to Defense Logistics Agency Disposition Services for disposal.

**Retrosort yard**—Operated by the sustainment brigades to receive bulk serviceable supplies and repair parts previously issued to units that are serviceable or repairable. Yard personnel then identify, classify and bring to record these items that can again be issued through normal supply support activity channels.

**RPATs**—Staffed with LCMC and PM representatives, TPE property book-responsible officers and contractors, and run by the 401st Army Field Support Brigade, RPAT yards provide a one-stop shop to turn in excess property and clear TPE hand receipts and property books. RPATs handle mostly Class VII items (major end items, including vehicles), but can accept limited quantities of Class II (including individual equipment) and Class IX (construction materials and installed equipment) found or excess items. RPATs then transfer equipment from retail-level property books to the wholesale Army War Reserve Deployment System and process equipment for shipping to reset facilities worldwide.

*—Headquarters, AMC*

# RETROGRADE *Through* AUTOMATION

Improving the flow of data helps
improve the flow of equipment in R4D

*by Ms. Marcia Byrnes and Ms. Kim Hanson*

**ATTENTION!**
Automated tracking systems allow for visibility of equipment through all stages of deployment and redeployment. Here, MRAPs wait in a staging area March 20 at an undisclosed base in Southwest Asia. The team of Soldiers, Sailors, Marines and Airmen of the U.S. Central Command Deployment Distribution Operations Center has a major role in moving the estimated 50,000 coalition U.S. and NATO military vehicles in Afghanistan that will need to be redeployed or pre-positioned in worldwide contingency stocks. (U.S. Air Force photo by SMSgt George Thompson)

**PACKED, STACKED AND READY**
Automated systems enable the Army to track the movement of materiel at every level, from remote outposts in theater to home stations in the States. Here, truckloads of supplies are ready to move from Combat Outpost Terra Nova in Kandahar province, Afghanistan, June 12 as part of the retrograde process. (Photo by SSG Jason Ragucci, 1st Stryker Brigade Combat Team, 1st Armored Division)

Working behind the scenes in support of the massive Retrograde, Reset, Redeployment, Redistribution and Disposal (R4D) mission from Afghanistan is a highly sophisticated set of tools and applications, managed by the U.S. Army Materiel Command (AMC) Logistics Support Activity (LOGSA).

With the mission of providing the Army a consolidated view of the Army supply chain, LOGSA turns data into information intelligence and provides tracking visibility of equipment through all stages of deployment and redeployment.

LOGSA accomplishes this mission through the Logistics Information Warehouse (LIW), the Army's authoritative source for logistics data. Integrating the data from more than 90 different automated systems across the Army and DOD, LIW is the repository for tactical and strategic logistics information from unit property books all the way up to wholesale-level inventories in depots and arsenals. LIW integrates logistics information to provide a common view enabling any stakeholders to access, acquire, analyze and present data and information for managing materiel. Widely used across DOD, LIW currently has more than 65,000 users, is queried at least 19,500 times per day, has 18 terabytes of data stored and represents more than 40 million transactions daily.

LIW plays a critical role in the R4D mission, from tracking Theater Provided Equipment (TPE) through lateral transfers in theater to support mission requirements or as it declared excess and turned in for retrograde from theater, to providing decisions on organizational equipment requiring Automatic Reset Induction (ARI) through the reset process. Additionally, the use of the Lead Materiel Integrator Decision Support Tool (LMI DST) provides materiel managers with visibility of future and known requirements as equipment is reset.

LIW has a record of requirements based on data received from the Property Book Unit Supply Enhanced (PBUSE) and Army authorizations for specific quantities of each item. These requirements are vetted in the LMI DST to determine who needs that item and who should get it first.

**TPE PLANNER**
The TPE Planner within LIW is the primary system used to manage the disposition of TPE in Iraq, Afghanistan and Kuwait. Developed to alleviate the use of spreadsheets passed from unit to brigade to country to theater, the TPE Planner automated the lateral transfer, redistribution and disposition process for TPE. Since TPE Planner's deployment in January 2010, it has processed more than 1.2 million items of equipment laterally transferred or redistributed through the theater, declared excess

**RETIRED TIRES**
Disposal is one of the options available in R4D. Here, Soldiers from the 1462nd Transportation Company guide a forklift operator in loading damaged tires for transport. (Photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion Public Affairs)

to the theater and returned to the States, or disposed of in theater.

For example, a unit may be issued a Mine Resistant Ambush Protected (MRAP) vehicle upon arrival in theater. The theater property book officer would hand-receipt the MRAP to that unit in PBUSE, simultaneously capturing the transaction in LIW. In planning for redeployment, the unit would submit an evaluation of the MRAP in TPE Planner, indicating the condition of the equipment. That evaluation goes automatically to brigade and division levels within the TPE Planner to determine whether the MRAP is to transfer laterally to another unit that needs it within the brigade or division or be deemed excess.

If the division indicates within TPE Planner that it deems the MRAP to be excess, TPE Planner pushes the evaluation on to the country level—U.S. Forces – Afghanistan (USFOR-A)—and then to theater, U.S. Army Central (ARCENT).

ARCENT looks theaterwide to determine whether the MRAP would be useful to coalition forces or for foreign military sales, for example.

At this phase, another system within LIW comes into play—the LMI DST. This system compares Army resources with validated, prioritized requirements. ARCENT uses LMI DST to see requirements and then determines whether to send the equipment home with the unit (TPE to organization), or to a life-cycle management command (LCMC) for reset and further distribution.

The LCMC—TACOM, in the case of the MRAP—determines whether to bring the MRAP back to the States and, if so, where to send it, based on known requirements. If the LCMC determines that the MRAP will go to an Army depot for reset, the LCMC provides the disposition in TPE Planner, which concurrently triggers the Army War Reserve Deployment System (AWRDS). AWRDS

serves as the conduit between the property book and the wholesale system to build the necessary due-in records with LMP that will ensure visibility and accountability of equipment throughout the retrograde process.

**ORGANIZATIONAL EQUIPMENT**
Although similar, the process and systems vary slightly for equipment that a unit brings to theater. The Automated Reset Management Tool (ARMT) within LIW provides disposition instructions for organizational equipment that requires some form of reset upon the unit's redeployment.

Organizational equipment normally falls into one of two categories: automatic return items (ARI), which normally go to a depot for reset; and intensively managed items (IMI), which normally are reset locally at a source of repair (SOR). The Unit Reset Planner in ARMT identifies which equipment is an ARI item,

**SERVICE CHECK**

LIW has a record of requirements against which Army logisticians and others can determine who needs a particular item, including items returned from Afghanistan that are still serviceable, and who should get it first. Here, Calvin Blackshire, a stock clerk for the Material Redistribution Team, analyzes the servicability of a part received earlier that day, April 11, at Fort Bragg, NC. (Photo by SGT Christopher Freeman, 50th Public Affairs Detachment)

such as a generator, and where to send the items for reset. ARMT triggers the LCMC Disposition Provider, which facilitates the electronic transmission of instructions back to the unit for turning in the ARI items in theater. The generator then would come off the unit's property book at the redistribution property assistance team (RPAT) yard where the item is picked up on AMC's property book, sent to an Army depot for reset and then to another unit based on known requirements.

For IMI, the LCMCs facilitate turn-in from theater to the logistics readiness centers or contractor facilities for reset by providing the SOR and special instructions for each of these items within the LCMC Disposition Provider in LIW.

## ADVANTAGES OF AUTOMATION

Based on lessons learned from the retrograde out of Iraq, LOGSA had three main areas of focus. The first was to improve velocity, especially as it related to non-standard equipment (NS-E) and standard items not managed by LCMC. NS-E items represent a large percentage of the overall TPE in theater, yet there was no stable support base in theater to provide the required SOR DOD activity address code in a timely manner.

To remedy that, AMC first provided clear business rules to automate the process, which significantly improved the velocity of the items being processed. Second, AMC improved the ease of making changes to the original equipment condition-code classification, based on the true condition of the equipment, improving efficiency in the TPE Planner process. Automating business rules for NS-E and non-LCMC-managed standard items also improved efficiency. Finally, LOGSA made it possible to save on transportation by creating and maintaining automated tools such as TPE Planner, ARMT and DST, thus allowing the LCMCs to provide accurate and timely SOR and shipping instructions, and ensure that units would know where to ship their equipment for reset.

Having this information before the unit redeploys avoids unnecessary second-destination transportation costs by shipping items directly to where they need to be reset, rather than shipping first to the unit's home station and then to the correct locations for reset. A recent TPE Planner improvement allows notification of turn-in dates and shipment location at least 30 days in advance of the actual turn-in to the RPAT. This provides transportation personnel with the time they need to schedule the actual shipment and movement from the RPAT to the shipment location.

## CONCLUSION

LIW and its associated tools and applications such as TPE Planner and LMI DST incorporated systems effectively, eliminated spreadsheets and automated decision capabilities. Now the Army can track movement of equipment through the entire R4D process, and all stakeholders in the materiel community benefit from unprecedented visibility of equipment.

*For more information, go to* **https://www.logsa.army.mil/index.cfm?fuseaction =home.main** *or* **www.amc.army.mil**.

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# PEO AMMUNITION

## Efficiently and Effectively Supporting the Warfighter with the World's Best Ammunition, Weapons and Counter-IED Systems

**THE ARMY'S SINGLE MANAGER FOR CONVENTIONAL AMMUNITION**

# EXIT
# STRATEGY

## How SDDC is working to overcome political and other obstacles to get materiel out of Afghanistan

*by Mr. Clay G. Carter and Mr. Mark Diamond*

The withdrawal of U.S. forces and equipment from Afghanistan is, without a doubt, one of the most complicated logistics operations in recent history. Aside from the mountainous terrain, undeveloped roads and enemy attacks, U.S. military transporters must deal with unpredictable border issues and a variety of other political and environmental constraints.

Despite these obstacles, U.S. Army transportation experts at Military Surface Deployment and Distribution Command (SDDC) say they are prepared to meet President Obama's Dec. 31, 2014, withdrawal deadline. SDDC has been responsible for moving the vast preponderance of military cargo into and out of Afghanistan since operations there began more than a decade ago. As the Army service component

command to U.S. Transportation Command (USTRANSCOM), SDDC is responsible for moving about 87 percent of all cargo into and out of Afghanistan.

DOD estimates that more than 750,000 pieces will need to be moved out before the 2014 deadline, equating to an estimated $36 billion in cargo and including everything from Mine Resistant Ambush Protected (MRAP) vehicles and High-Mobility Multipurpose Wheeled Vehicles, to unit equipment and more.

SDDC, a major subordinate command to U.S. Army Materiel Command, plans, books, ships and tracks cargo; conducts port operations; and manages personal property moves for America's warfighters, other federal employees and their families. The command also partners with the commercial transportation industry as

the coordinating link between DOD surface transportation requirements and the capability that industry provides.

## MULTIPLE CHALLENGES

Marisa Bealor, deputy chief of SDDC's Command Operations Center (COC), said one of the command's biggest challenges in moving more than 750,000 pieces of cargo is freedom of movement, mostly dictated by political circumstances.

"We know that, depending on the political climate in any given country, the rules for moving cargo can change, or we can incur additional fees," said Bealor. "And cargo can get held up at the border for many reasons, including inaccurate or missing paperwork, incorrect cargo dimensions, the type of cargo, which country the cargo in transiting through, and much more."

**ROUND-THE-CLOCK SHIPPING**
Personnel assigned to SDDC's COC plan, direct, synchronize, coordinate and monitor global surface movements and port operations through subordinate operational commands and strategic seaports. The COC maintains operational oversight of all SDDC operations 24 hours a day, 365 days a year. (U.S. Army photo by Mark Diamond, SDDC Public Affairs)

To handle the numerous issues involved with transporting the enormous volume of equipment across dozens of countries using multiple modes of transportation, personnel assigned to SDDC's 595th and 598th Transportation Brigades are located throughout Afghanistan and various locations along the Northern Distribution Network (NDN) to closely manage customs issues along with contract and cargo operations.

The 595th Transportation Brigade provides transportation expertise at major forward operating bases (FOBs) and redistribution property assistance team (RPAT) yards in Afghanistan, as well as several U.S. embassies and multimodal sites within that theater of operations. Once cargo crosses the Afghanistan border into the NDN,

brigade personnel hand off operations to the 598th Transportation Brigade.

When it comes to moving equipment out of Afghanistan, a common expression around SDDC is, "Everyone knows Iraq and Afghanistan are different, but they still want Iraq results." But Scott Wadyko, lead traffic management specialist and movement execution supervisor with the COC, said comparing the redeployment operations in Iraq and Afghanistan is like comparing apples and oranges.

"They're both fruit, but that's where it ends," he said. "In Iraq, we had Kuwait. In Iraq, if I moved something to an RPAT yard and there wasn't room, I could move it to the next RPAT yard, and if there still wasn't room, I could

move it into Kuwait; and I could put U.S. military eyes on the cargo throughout the entire process. We don't have those luxuries in Afghanistan."

Another issue with moving cargo out of Afghanistan is the number and types of supply routes, or what U.S. Army transportation experts call "ground lines of communication" (GLOCs). While most of the cargo travels out of Afghanistan through Pakistan—called the Pakistan GLOC (PAKGLOC)—cargo also moves out of Afghanistan to the north, through the NDN. SDDC officials said the NDN stretches from the Baltic ports in the northern part of eastern Europe to Afghanistan, traversing Russia and more than a dozen other countries. Additionally, some cargo leaves Afghanistan via

**NO LUXURIES HERE**
While the successes of the U.S. drawdown from Iraq have raised expectations for the retrograde from Afghanistan, the geographic circumstances are vastly different. Bordering Iraq is Kuwait, where the U.S. military maintained on-the-ground control of cargo movement throughout the entire process. No such luxury exists in the Afghan theater. Here, the last MRAP to depart Iraq is lifted aboard ship at the Port of Ash Shuaiba, Kuwait, March 24, 2012, for transport to the United States. (U.S. Army photo by David Ruderman, 402nd Army Field Support Brigade Public Affairs)

military and commercial air transport. Although SDDC is DOD's "surface" transportation expert, the command adapts as circumstances dictate. When the PAKGLOC closed for more than a year from 2011 through early 2013, SDDC moved more cargo out of Afghanistan by air than the U.S. Air Force. Every day brings new challenges, Wadyko noted.

**BY LAND, SEA OR AIR**
"We have a significant number of mostly commercial contracts that enable us to move the cargo," said COL Glenn Baca, SDDC director of operations, who described the Afghanistan redeployment as a continuing effort.

For example, he said, "Universal Services Contract 7 enables us to move cargo by surface (e.g., truck, rail or ocean vessel), and a multimodal contract allows us to move the cargo by air and then by sea. In the broadest sense, everyone generally agrees there are four modes of transportation: trucks, trains, vessels and airplanes. Any time you use more than one of those conveyances, it's multimodal."

Under the multimodal contract, commercial aircraft transport cargo out of Afghanistan. Most multimodal cargo is flown to one of several nearby ports, where it is transferred to an ocean vessel for the final leg of the journey to the United States. Because of the high cost of air transport, usually only high-value or sensitive cargo travels all the way to the United States by air, Baca said. "The reason multimodal is significant is

because it gives us flexibility," he added. "If you can't move it out by land, you can fly it out." By contrast, ships are slower, but they can carry much more cargo than planes.

Bealor said it is important to note that SDDC is executing a great number of multimodal operations because of the command's new contractual relationships. Before, she noted, discussions of multimodal operations centered on the Air Force's Air Mobility Command (AMC) or AMC's Tanker Airlift Control Center. "Now, SDDC can contract for that [air] service much the same way we contract for vessels, trains and trucks."

Although SDDC is responsible for transporting most of the cargo out of Afghanistan, Wadyko said the combatant commands normally decide the route and mode of transportation. Every move requires extensive planning and back-and-forth coordination involving multiple organizations. "As DOD's distribution process owner, USTRANSCOM conducts the orchestra," said Baca, but "the orchestra—USTRANSCOM's service component commands—makes the music."

## COST VS. SPEED

Wadyko said, "I like to tell people, 'You get three things: speed, cost and reliability … pick two.' If you want speed, you go multimodal, but you're going to pay much more. If you want low cost, then it's going through the PAKGLOC, but that's going to take more time; you're going to lose speed. Or, you can take it north through the NDN where you'll lose speed and the cost goes up. It's always a balancing act."

Part of that balancing act is knowing what can and cannot move along the NDN. Sensitive cargo, unit cargo and weapons are prohibited along the NDN, SDDC officials said. Other political



**REDISTRIBUTE OR REDEPLOY?**
The more than 750,000 pieces of U.S. military materiel in Afghanistan are scattered among numerous far-flung locations. Here, SGT Andrew Markley, NCO in charge at FOB Sharana Materiel Redistribution Yard, and Mobile Container Accountability Team leader SPC James Moore sift through items Jan. 15 at the FOB Shank redistribution yard in Logar province. (U.S. Army photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion Public Affairs)



**LEAVING THE FOB**
Inessential equipment on FOBs is either relocated to other areas in Afghanistan, transported back to the United States or destroyed. Here, SGT Wayne Young of 426th Brigade Support Battalion, 1st Brigade Combat Team, 101st Airborne Division secures chains to equipment during a retrograde operation June 1 on FOB Joyce, Nangarhar province, Afghanistan. (U.S. Army photo by SPC Vang Seng Thao, Combat Camera Afghanistan)
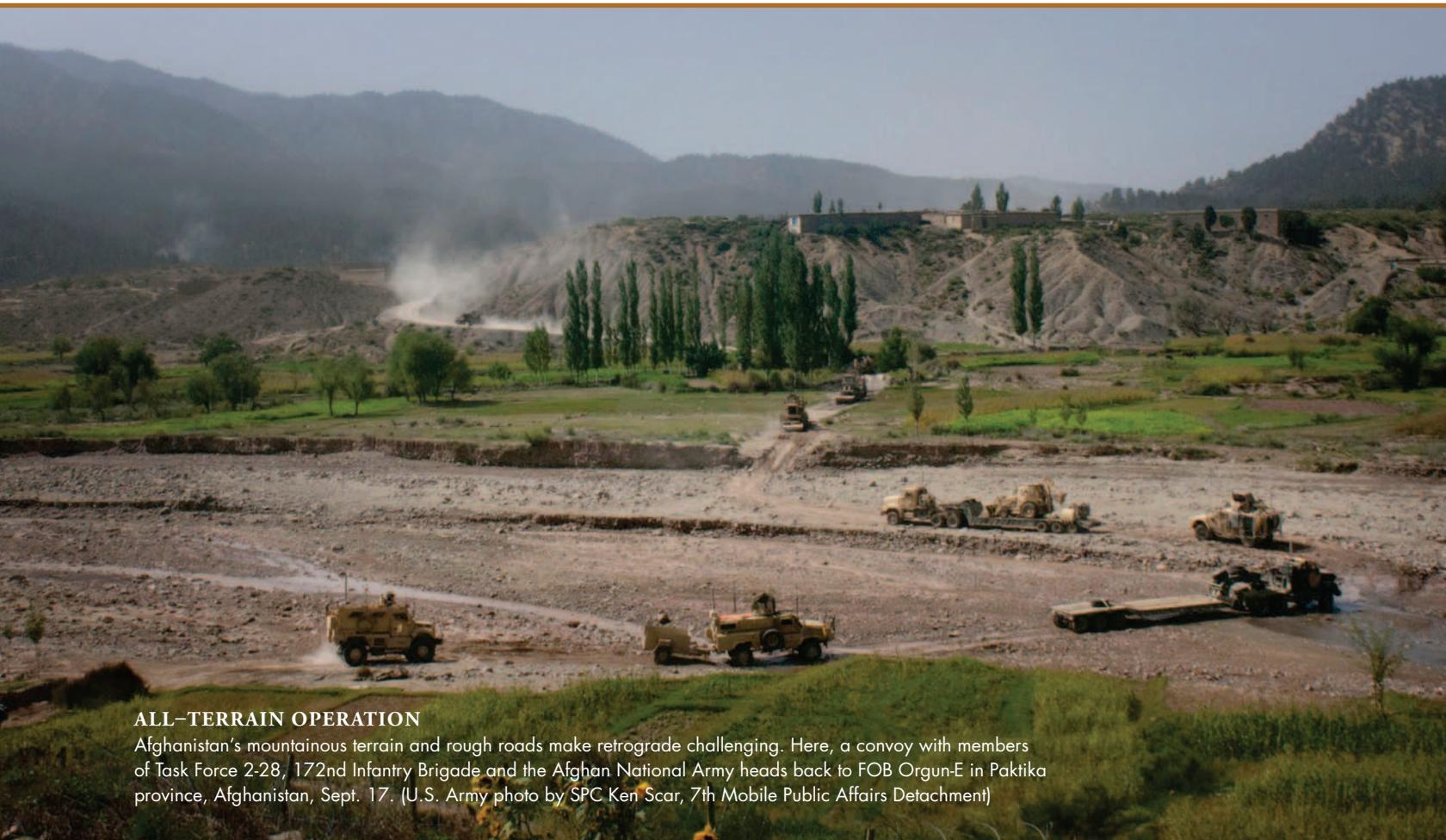
**ALL–TERRAIN OPERATION**
Afghanistan's mountainous terrain and rough roads make retrograde challenging. Here, a convoy with members of Task Force 2-28, 172nd Infantry Brigade and the Afghan National Army heads back to FOB Orgun-E in Paktika province, Afghanistan, Sept. 17. (U.S. Army photo by SPC Ken Scar, 7th Mobile Public Affairs Detachment)

constraints pose additional difficulties in transporting retrograde cargo through the northern routes. Because of these restrictions, SDDC officials said the NDN currently is used primarily to bring in sustainment cargo.

Wadyko added that although it costs three to four times more to take cargo through the NDN versus the PAKGLOC, it's still significantly cheaper than air transport.

All told, Baca said the transportation costs associated with moving all the equipment out of Afghanistan are estimated at about $6 billion. "That number can potentially move up or down, depending on what routes are available to us coming out of Afghanistan," he added. "If we have to fly a lot of cargo out, that number will probably go up, and if we can use the PAKGLOC

and go to vessels, the number could go down."

**BEST-VALUE TRANSPORT**
No matter which route is used, Baca said they know it will be expensive to bring cargo out of Afghanistan. However, by using a new approach to logistics called Velocity Volume Distribution Retrograde (V2DR), he said, the command can off-set that cost once the cargo reaches the stateside seaports. (See related article on Page 56.)

Essentially, V2DR is designed to balance the volume of cargo with the velocity at which the cargo needs to travel. It does this by identifying early what cargo is being shipped and which routes and modes of transportation will be used to expedite the movement of cargo out of Afghanistan. Additionally, V2DR

extends the retrograde delivery window from 10 to 21 days, which allows for aggregation of cargo at stateside ports and, in turn, for best-value routing decisions (e.g., trains versus trucks) on how to move the cargo to its final U.S. destination.

"When the cargo comes across the ocean and gets to the United States," Baca said, "we plan to use the volume concept to move as much cargo as we can by train. If you're going over 300 miles, it's cheaper to move large amounts of cargo by train than by truck. We want to aggregate as much cargo as we can at the U.S. ports, move it by train to its final destination and save more money doing it.

"When we were leaving Iraq, we were fortunate to have Kuwait," Baca added. "As long as we got the stuff across the border

**CLEAN SWEEP**
Soldiers, DA civilians and contractors work March 5 during the training portion of Operation Ammunition Clean Sweep 13. The operation sought to determine how much serviceable ammunition needed to be transported back to the United States. (U.S. Army photo by CW4 David Turner)

into Kuwait, we could put it there, sort it out and then move it. Because we don't have that same situation in Afghanistan, we need to make sure we're generating enough velocity that we can get the cargo well clear of Afghanistan in a timely enough manner to meet the timelines associated with the drawdown that the president has announced."

## CONCLUSION

According to Baca, one of the biggest challenges is knowing what needs to be moved. "We need to know definitively what we have to move. The network has plenty of capacity, as long as we move the

cargo in a timely manner. If the cargo isn't identified until very late and there's a huge amount of cargo that has to move late, the challenge will become very difficult."

*For more information, go to **http://www.army.mil/sddc.***

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*Defense Transportation Tracking System in SDDC. He has received numerous military and civilian awards.*

*MR. MARK DIAMOND is a public affairs specialist assigned to Headquarters, SDDC. He has more than two decades' experience in various positions supporting communications for the U.S. Army and U.S. Air Force. Diamond has earned dozens of command- and service-level military journalism awards, and is a four-time recipient of the Department of Defense Thomas Jefferson Award.*

**SMOOTH SAILING**
The Army is rehearsing all parts of the retrograde process, from loading to shipment to docking at a U.S. port, to anticipate and smooth out any problems before retrograde operations accelerate. Here, the U.S. Army Vessel Churubusco slices the waters of the Persian Gulf Jan. 9 during a training mission called Operation Spartan Mariner, in which Soldiers from several units loaded 19 vehicles onto four Army vessels for drills and exercises. (Photo by SGT Christopher Johnston, 3rd Armored Brigade Combat Team, 3rd Infantry Division)

# MANY POSSIBLE PATHS

## SDDC works toward best-value transportation

*by Mr. Clay G. Carter and Mr. Mark Diamond*

As U.S. forces prepare to withdraw troops and equipment and end combat operations in Afghanistan, Army transportation experts with the Military Surface Deployment and Distribution Command (SDDC) are working behind the scenes to ensure that all the pieces are in place to meet President Obama's Dec. 31, 2014, deadline as efficiently as possible.

According to SDDC officials, the massive withdrawal of equipment from Afghanistan must focus on increasing the velocity and flow of cargo while balancing the efficiency of the transportation network.

Part of the process is the Retrograde, Reset, Redeployment, Redistribution and Disposal (R4D) mission. Although the word "retrograde" sometimes describes "an organized movement away from the enemy," in the jargon of U.S. military logistics it also refers to a specific disposition of cargo known as Theater Provided

Equipment (TPE), or permanent theater assets. TPE is assigned to units when they arrive in theater; when the units depart, the TPE is available again for use by another unit. As the Afghanistan mission draws down, the TPE becomes part of the R4D process.

### BREAKING IT DOWN

The five categories of disposition are:

- Redeployment, which applies to cargo that belongs to the units.
- Redistribution of equipment, "cross-leveling" it from one unit to another.
- Retrograde and reset, or returning cargo to Army and U.S. Marine Corps (USMC) logistics depots in the United States for refurbishing and reissue to forces in the field.
- Disposal, a process already taking place in Afghanistan.

DOD "is making decisions on what equipment in theater is not economically

**HOMEWARD BOUND**

The SDDC's V2DR tool identifies early what cargo, large and small, is being shipped out of Afghanistan and which routes and modes of transportation will expedite moving it. Here, Soldiers with the 1st Air Cavalry Brigade, 1st Cavalry Division (1/1 CAV), redeploying to Fort Hood, TX, after a year in Afghanistan, load bags onto an open trailer May 14 at Camp Marmal, Balkh province, Afghanistan. The bags then went to the flight line for shipment stateside. (Photo by SGT Richard Wrigley, 1/1 CAV Public Affairs)

worth moving back to the United States," said COL Glenn Baca, SDDC's director of operations. "Currently, they're saying there is about $7 billion in property that's more economical to either destroy in theater or donate to our partners as excess defense items."

The vast majority of equipment will be moved out of Afghanistan. No matter what the process—retrograde, reset, redistribution or redeployment—and no matter which service owns it, once the cargo is ready to move, in most cases SDDC is responsible for making that happen.

To ensure the success of the Afghanistan redeployment, SDDC officials said U.S. forces must overcome physical, environmental, political and operational constraints, as well as enemy threats and cost factors. Marisa Bealor, deputy chief of SDDC's Command Operations Center, said the command also must balance the velocity (speed of moving cargo) that commanders on the ground want with the efficiency (low cost) that the services want and current fiscal constraints demand.

Although challenges exist, SDDC experts have answers. To handle the monumental task of moving equipment out of Afghanistan, SDDC last year unveiled a new approach to logistics dubbed Velocity Volume Distribution Retrograde (V2DR).

As Bealor put it, V2DR is designed to balance the volume of cargo against the velocity at which the cargo needs to travel. It does this by identifying early what cargo is being shipped, and which routes and modes of transportation will expedite moving the cargo out of Afghanistan. Additionally, V2DR extends the retrograde delivery window from 10 to 21 days, which allows for aggregation

**A JOINT EFFORT**
SDDC will move the vast majority of the equipment in theater back to the United States, but some of it is being disposed of or donated to local partners. Here, Navy PO3 Lucas Benavidez, Expeditionary Disposal Remedial Team member, guides a column of local national trucks transporting scrap metal Jan. 14 out of the Forward Operating Base Sharana Materiel Redistribution Yard, Paktika province, Afghanistan. (U.S. Army photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion Public Affairs)



**A HEAVY LOAD**
Mine Resistant Ambush Protected vehicles such as this one, shown being loaded onto a U.S. Air Force C-5 Galaxy transport aircraft at Bagram Airfield, Parwan province, Afghanistan, Feb. 2, are among the more than 750,000 pieces that DOD estimates will need to be moved out of theater before the Dec. 31, 2014 deadline. (U.S. Army photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion Public Affairs)

at stateside ports. With more cargo aggregated stateside, SDDC can make best-value routing decisions (e.g., trains versus trucks) in moving the cargo to its final U.S. destination, typically an Army or USMC depot.

## REHEARSING RETROGRADE

To ensure that the V2DR process runs smoothly, SDDC personnel and various other military partners participated in a series of SDDC-sponsored rehearsal-of-concept (ROC) drills in May and July. The drills took place in two phases, said Scott Wadyko, lead traffic management specialist and movement execution supervisor with SDDC's Command Operations Center. The first phase involved all the processes for moving the equipment out of Afghanistan, from the redistribution property account-ability team (RPAT) yard to a seaport of debarkation, and onward to a U.S. port. In the second phase, the fictional vessel approached the U.S. port. This phase involved offloading the cargo and preparing it for movement to the final destination by rail or truck.

In opening statements before SDDC's second V2DR ROC drill, the SDDC commander described the importance of ensuring that everyone does their part.

"During the first ROC drill, we discovered some processes that needed to be fixed," said MG Thomas J. Richardson, SDDC commanding general. "That's why we have ROC drills. It's about seeing ourselves through the entire process, and then understanding what actions are going to occur and who is responsible for each action. We have to understand all the moving pieces, and there are a lot of moving pieces.

"It's not just the action of moving something on a truck or train," Richardson

**REHEARSING THE DETAILS**
Led by Commanding General MG Thomas J. Richardson, left, SDDC hosted rehearsals for retrograde operations in May and July at SDDC headquarters, Scott AFB, IL. The events included a detailed review of the many tasks involved in quickly and efficiently moving military equipment out of Afghanistan. The ROC drills had support from a number of key military transportation partners, including U.S. Transportation Command, U.S. Army Materiel Command, the U.S. Army TACOM Life Cycle Management Command and the U.S. Air Force Air Mobility Command. (U.S. Army photo by Mark Diamond, SDDC Public Affairs)

said. "We do that every day. It's the synchronization of the entire process to make sure everybody can handle the cargo at the same time. When we're talking about the logistics of moving this much military equipment out of Afghanistan, there are no little issues."

During the second phase of the drill, Wadyko said U.S. military transportation experts discussed a variety of issues, and raised and answered some important questions. At this point in the process, he said, SDDC can start working best-value transportation decisions. For example, he said, moving cargo by rail costs about half of moving it by truck. "If we can wait two or three days until we have enough cargo to 'build a train,' we can save a lot of money," Wadyko explained.

**FLEXIBLE DATES**
According to Wadyko, one of the most important pieces to the V2DR process is the extension of the required delivery date (RDD), when retrograde cargo must reach its final destination.

"In the past, we were treating retrograde cargo the same as unit cargo. Unit cargo must get back, reset and be ready to go. Retrograde cargo isn't as urgent," he said. "You can still have a required delivery date, but with retrograde cargo there's little difference between 14 days and 21 days. With a 14-day RDD, we're going to get the cargo on a truck and get it out of the port as quickly as possible. That costs more money. With a 21-day RDD, however, we can take the extra time to make decisions based on both value and velocity."

Additionally, he said, in the past, SDDC battalions based their productivity on how fast they could get the cargo out of the port, which works against using more cost-efficient transportation options such as trains. "The V2DR process fixes that. Now we can massage the flow. If the depots are getting flooded with equipment, we can stop or slow the flow. If the depots need reset vehicles (e.g., vehicles that are going back into the system for reissue right away), we can identify those vehicles and get them

out of the port quicker. We have that level of detail and flexibility."

*For more information, go to http://www.army.mil/sddc.*

MR. CLAY G. CARTER is the SDDC deputy director of operations, G-3 directorate. Carter holds a B.S. in business management from Park University. He retired from the U.S. Air Force after 22 years of service. Before being promoted to his current position, Carter was the program manager for the Defense Transportation Tracking System in SDDC. He has received numerous military and civilian awards.

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# SYNCHRONIZING
## *the* FORCE

### Army AL&T magazine talks with Army G-8 about its role in R4D

*T*he Retrograde, Reset, Redeployment, Redistribution and Disposal (R4D) mission in Afghanistan has a lot of moving parts. More than 750,000 major end items worth more than $36 billion are currently in Afghanistan, according to DOD estimates. This R4D effort is expected to cost some $5.7 billion and will require intricate planning, teamwork, creativity and innovation. The Army G-8 will be at the heart of it.

*Army AL&T magazine wanted to understand the G-8's overarching role in R4D better. We sat down on July 25 with Mr. Donald Tison, assistant deputy chief of staff, G-8, and COL Gregg Skibicki, chief, G-8 Force Development Operations and Integrations Division, to discuss the G-8 role in coordinating the reset aspect of the massive R4D effort.*

*The Army G-8 is the service's lead for matching available resources to the defense strategy and the Army plan. G-8 accomplishes this through participation in defense reviews and assessments led by the Office of the Secretary of Defense; the programming of resources; materiel integration; analytical and modeling capabilities; and the management of DA studies and analyses. The G-8 team comprises one field operating agency, the Center for Army Analysis; three directorates—the Army Quadrennial Defense Review Office; Program Analysis and Evaluation; and Force Development—and the Army Study Program Management Office.*

*The team works to plan, develop and resource programs supporting Soldiers by balancing current force needs with future force capabilities. As part of this mission, the team equips the Army through a balanced investment program to provide Soldiers the equipment that they need to succeed in full-spectrum operations, now and in the future. G-8 does so by bringing to the table all the lines of effort to integrate and coordinate activities.*

**Army AL&T:** We understand that the G-8 primarily focuses on the reset portion of R4D. What is the Army G-8's role?

**Tison:** G-8 synchronizes activities for the reset task force that looks at the requirements, the resources and the assets. We received our first $17 billion of reset funding [in 2006] when Secretary [of the Army Francis J.] Harvey and GEN [Peter J.] Schoomaker [chief of staff of the Army] were here. MG [Stephen M.] Speakes was the G-8 director of force development. The leadership decided the Army needed a centralized effort to coordinate the reset of Army equipment returning from overseas. Army leadership asked the G-8, since the predominance of the equipment was G-8-related, to put together what I will call a task force. It isn't really a task force in the conventional sense, but it's a task-organized team to plan, coordinate and provide oversight for reset operations.

With our integration role, we put together a group that has Army Materiel Command [AMC], G-4, the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology [ASA(ALT)], the Army Budget Office [ABO] within the Assistant Secretary of the Army for Financial Management and Comptroller [ASA (FM&C)], G-8 and other organizations' subject-matter experts (i.e., lines of effort) to coordinate the programmatics in terms of the resources and the requirements to get it done.

We have worked reset through a variety of efforts since 2006, in both Iraq and Afghanistan. And, like anything, once you do it for a while, folks get comfortable with how it is done, so you move past the biases of organizations and folks come to the table to make reset decisions. We had a reset task force meeting yesterday and brought up a number of important issues not just about execution, but also how we are looking at fiscal

## FIGURE 1
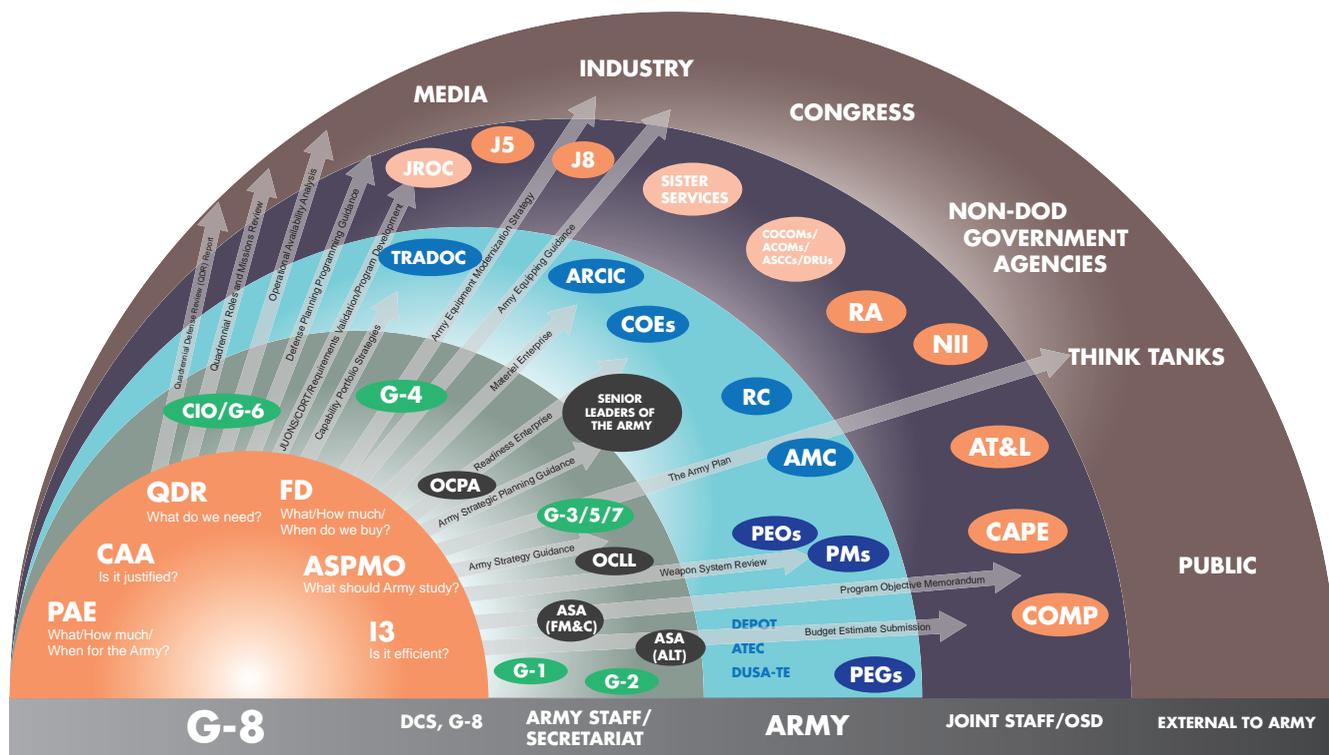


**Legend and Definitions**

ACOM = U.S. Army Command
AMC = U.S. Army Materiel Command
ARCIC = U.S. Army Capabilities Integration Center
ASA(ALT) = Assistant Secretary of the Army for
    Acquisition, Logistics and Technology
ASA(FM&C) = Assistant Secretary of the Army
    (Financial Management and
    Comptroller – Budget and Execution)
ASCC = U.S. Army Service Component Command
ASPMO = Army Study Program Management Office
ATEC = U.S. Army Test and Evaluation Command
AT&L = Undersecretary of Defense for
    Acquisition, Technology and Logistics

CAA = Center for Army Analysis
CAPE = Director, Office of the Secretary of Defense
    (OSD) Cost Assessment and Program Evaluation
CDRT = Capabilities Development for Rapid Transition
CIO = Chief Information Officer
COCOM = Combatant Command
COEs = Centers of Excellence
COMP = OSD Comptroller
DRU = Direct Reporting Unit
DUSA-TE = Deputy Undersecretary of the Army
    for Test and Evaluation
FD = Force Development Directorate, G-8
I3 = Integration, Improvement Initiatives Office

JUONS = Joint Urgent Operational Needs Statement
JROC = Joint Requirements Oversight Council
NII = Former Assistant Secretary of Defense for Networks
    and Information Integration (now DOD CIO)
OCLL = Office of the Chief Legislative Liaison
OCPA = Office of the Chief of Public Affairs
PAE = Program Analysis and Evaluation Directorate, G-8
PEGs = Program Evaluation Groups
PEOs = Program Executive Officers
PMs = Program Managers
RA = Reserve Affairs
RC = Reserve Component
TRADOC = U.S. Army Training and Doctrine Command

**FOLLOWING THE LINES OF EFFORT**
The Army G-8 reaches well beyond the Pentagon to bring all the players to the table, which is a key role in the R4D mission. (SOURCE: HQDA G-8)

year 2014 and the budgetary reductions on reset.

There's no permanent structure behind it. We call the lines of effort together, and they come to the meetings ready to discuss and work issues. So we quickly develop a briefing strategy—what should we brief, how should we brief it—and lay out how we are executing the funding.

ABO provides current funding status, what money was deferred for reset and what we are doing on procurement. AMC talks to the sustainment process. We go through each one of these areas monthly. Then, if we have any issues, we take action items to solve them. It is a classic way to do business. You task-organize around the problem [and work it].

**Army AL&T:** Can you give us an example of a particular issue that you've worked?

**Tison:** Sure. We're looking at the helicopter sustainment program. We have a program called Special Technical Inspection and Repair—STIR. When helicopters come back from theater, we employ an enhanced, phased maintenance approach whereby we work to get them ready for the next cycle. It's predominantly [overseas contingency operations] OCO-funded. The conversation we're having now is that, once the war stops in [20]14 and '15, what follows STIR? Do we go back to phased maintenance, based mainly on flying hours? Or do we perform enhanced maintenance,

**REDEPLOYMENT**
Moving people and materiel is a task with many moving parts, and Army G-8 is at the center of it, working to help make sure all players are at the table. Here, U.S. military members board a C-17 Globemaster III during a redeployment mission at Bagram Airfield, Afghanistan, Sept. 9, 2012. (Photo by 2LT Clay Lancaster, U.S. Air Force)

improvements or modernization to meet long-term sustainment objectives?

We've had a series of conversations about the follow-on for STIR, and we believe that's going to be the aircraft inspection maintenance and sustainment program. But if we don't decide quickly, there are issues. You get past '14, with all the helicopters back, and there's no enhanced sustainment-level program in place for '15. We may lose our window of opportunity if we don't fix them in 2014-15. When will the opportunity present itself to get our helicopters up to the highest standards? And where do we do it? Do we use Corpus Christi [Army Depot, TX], or do we give more work to the local directorates of logistics, which are now operated by AMC, versus the local installation? We're actively working on this issue, because I think we're going to lose an opportunity

if we don't get a program in place over the next couple of months as we work the 2015 OCO budget and look at transition with the requirements. The G-4 is heavily involved, AMC, Army Aviation and Missile Life Cycle Management Command and, of course, ASA(ALT). They are critical for any enhancements.

**Army AL&T:** What are the biggest challenges that G-8 is facing with respect to R4D, and how are you dealing with them?

**Skibicki:** There are actually three different working groups that are dealing with Afghanistan and equipping, when equipment is arriving, leaving and retrograding. The reset task force was the first, because that was all during Iraq. We also stood up a task force called the EDR2B, the Equipment Deployment-Redeployment Review Board, based on

lessons from Iraq. We tried to meter the equipment going into and out of Afghanistan, and built the Theater-Provided Equipment [TPE] sets in Afghanistan to minimize the traffic flow in and out. We just stood up the third one in spring of 2013—the R4D process. In R4D, we focus on how we integrate the retrograde and redeployment with our reset task force work. The biggest challenge we have with the R4D is making sure we get the right equipment home at the right time to get it back into the hands of the next deployers.

**Army AL&T:** How does automatic reset induction [ARI] work? What role do tools such as the Lead Materiel Integrator [LMI] Decision Support Tool [DST] and the redistribution property assistance team [RPAT] play?

**BAGGAGE CHECK**
As some Soldiers leave theater and others come in, G-8 plays a role in ensuring that the right equipment is left behind and redistributed where needed, and the right equipment stays with the unit. Here, Soldiers with 4th Cavalry Regiment, 4th Infantry Brigade Combat Team, 1st Infantry Division lay out their personal bags before redeployment at FOB Sharana, Paktika province, Jan. 15. (U.S. Army photo by SPC Raymond Schaeffer, 55th Combat Camera)

**Skibicki:** In ARI, every year we review the list of equipment and have a big conference with AMC, the lead materiel integrator for the Army Forces Command [FORSCOM], which is the readiness enterprise, and then the Headquarters, Department of the Army staff. All of the life-cycle management commands [LCMCs] are there, and most of the program managers and program executive officers are there. We review what the readiness drivers are across the Army over time, and then look at pieces of equipment that have been impacted by wear and tear, prioritizing what needs to go into sustainment-level repair first, and in what quantities.

**Tison:** Or what equipment [regularly] comes back and needs to be fixed. [For example,] generators—a generator goes over, and you know it's being used, and you know it's going to be automatically inducted to get maintenance. We review the status every year, because we found that some of the generators were going over and were never taken out of the box, so there was no need to bring them back through the depot to a reset line.

**Skibicki:** As we're looking at the equipment coming out of theater, we actually have three different paths of equipment return. First, we review the equipment in the ARI program to make sure we have the right equipment that must go to the depots for reset based on the extended wear and tear due to desert conditions; the overall operational readiness impacts of the equipment over time, the amount of stress on the equipment; and the overall readiness in the force. Predominantly, everyone thinks of tactical wheeled vehicles first. They are the biggest pieces of equipment going into the depots for reset. But, we also have a lot of communications equipment—radars and such—that are in the ARI program.

Second, we have TPE that is returning to units, and those units are allowed to bring that set of equipment home. That equipment is field-level reset versus a sustainment (depot-level) program. We want to get most of the equipment out of theater that is not being used, when a unit is not backfilled or when equipment becomes excess based on changed mission requirements. We are transferring that equipment onto unit property books so the units can bring it back to home station for proper redistribution.

**Tison:** The beauty of the LMI approach is that as a unit brings equipment back onto their property books, the Army can get it into the correct unit through redistribution using the LMI DST. The LMIs, as they look at the equipment after it has been through the field-level reset, can redistribute it directly to units with the most need or to the next deployers, based on DST. We have seen that most of this equipment may be able to be used at a

specific installation. Alternately, it may be redistributed within that geographical region. The unit can then act as the vehicle to bring it back from the area of operations.

**Skibicki:** The third way for the equipment to flow back is through the RPAT process and then be redistributed after sustainment-level reset. If the equipment is non-standard, it goes to the original equipment manufacturer for repair. Again, the LMI DST will redistribute the equipment based on the needs of the force.

**Army AL&T:** How does the Army balance the need for next-generation capabilities with the disposition of older materiel when resources for both are limited?

**Tison:** It's typically less expensive to fix something than to buy something new. What we were able to do with reset and recapitalization—and you can use your fighting vehicles or your tanks as an example—was to bring them back and upgrade

them. As the Abrams came back, they came out as a System Enhancement Program or an Abrams Integrated Management tank. Bradleys came out as ODS [Operation Desert Storm] models or upgraded A3 models [with embedded diagnostics and integrated combat command-and-control digital communications suite]. We almost built them new. But you need a procurement office for that, so we worked closely with ASA(ALT) on the reset. That's important because, at least from an equipping perspective, your equipment is reset or recapitalized to the original or higher modernization level.

We also discuss the modernization issue, because equipment will age gracefully year after year, and so what is the future role? What's the role for Ground Combat Vehicle? For Joint Light Tactical Vehicle [JLTV]? For Kiowa follow-on? Do you continue to reset, recapitalize, or do you upgrade? Or do you have to go to a new system? That is the trade-off, and that's why you want the G-8 Force Development staff involved with the equipping portfolio and with ASA(ALT), because we can see the differences between classic equipping and modernization.

For JLTV, Mine Resistant Ambush Protected vehicles (MRAPs) proved very valuable in Afghanistan and Iraq, but would they be of value in other geographical areas? Or do we need something lighter and more flexible? And do we encounter technological issues because there is a protection/weight conversation? How do you get the right balance? But we really do need something to follow on the HMMWVs [High-Mobility Multipurpose Wheeled Vehicles], and so that's why JLTV seemed very practical.

**Army AL&T:** Virtually everything coming out of Afghanistan is going to need to be reset. Are there particular capabilities that are going to receive a higher priority?

**Skibicki:** Yes, there are. We took this on in G-8. Force Development introduced an initiative to develop a prioritized list of equipment for retrograde, reset and redistribution. It was actually three separate lists. The idea was to make sure that we did it in accordance with the equipment that was most needed for readiness and for the next deployers. The conversation starts with FORSCOM, the force provider and readiness enterprise. FORSCOM tells us what their priorities are for equipping the next deployers and building readiness across the force. We look at the most-needed capabilities across the Army based on shortages of equipment. Then, we look at what equipment we need to reach our aim points to get to the

Army Force Generation [ARFORGEN] gates of the units being ready at a certain time, being available at a certain time, and what equipment is needed to make those units deployable.

We took that list, and then we went back and prioritized the equipment needed based on requirements, and worked with AMC and the LCMCs to determine what they could reset in that time period. For example, when we looked at tactical wheeled vehicles, we developed a prioritized list of light, medium and heavy tactical wheeled vehicles. We did a similar prioritized list for our combat vehicle priorities, as well as across our other assets (engineer equipment, artillery/air-defense artillery, aviation, weapons/night vision devices, communications, force protection, logistics and medical). In addition to developing priorities within each of

those assets, there was also an overall prioritized list for the Army's retrograde, reset and redistribution. We did it for rolling stock, non-rolling stock, and now we're doing it for non-standard equipment. As we bring that equipment back, there are some pieces of non-standard equipment, such as MRAPs, for which the depots are conducting reset. We prioritize according to what we believe the needs are, and we vet it with G-3 for the requirements.

And G-3 then publishes the list that says, "Here's what the Army is going to retrograde out of theater, what we need to reset, and what we're prioritizing for redistribution across the force to meet the needs of the next deployers, fill our readiness needs and support the ARFORGEN gates." But the timeline is implemented in reverse. Redistribution is the equipment we need in the next 6

to 18 months, and that equipment is in reset right now. Our priorities for reset in the next fiscal year are the equipment needed in the next 24 to 36 months. And, finally, what's prioritized for retrograde is needed out to 48 months, or sometimes even further out because of delays in the programs [due to sequestration or continuing resolutions].

**Tison:** To give you an idea of what we do: The Army needs to have the resources to redistribute, reset and retrograde. On a monthly basis, we track operational work and all the procurement for AMC, for the depot maintenance, for all the field-level materiel—whether it is Army prepositioned-equipment sets, aviation STIR, the organizational clothing and individual equipment—we track what's happening, what's changed, what sequestration has done, to work through the process where we are now.

**TEARDOWN COMPLETE**
Even before the time a unit moves from a FOB to turn in equipment, the G-8 prioritizes the equipment to return home. Here, the deconstruction of FOB Hadrian, the last FOB manned by the International Security Assistance Force in Uruzgan province, is now complete, as shown in this June 22 photo. (Photo by OR-6 Mark Doran, Combined Team Uruzgan)

**KEEPING UP THE FLEET**
Sustainment of the Army's helicoper fleet is one of the key questions that the G-8 faces as it looks at the next steps after bringing materiel home from Afghanistan. Here, AH-64 Apache helicopter maintenance Soldiers with 1st Attack/Reconnaissance Battalion, 501st Aviation Regiment (1/501 ARB), Task Force Dragon, conduct a 500-hour phase-maintenance inspection June 27 at FOB Fenty, Nangarhar province, Afghanistan. (U.S. Army photo by SGT Armando Avila, 1/501 ARB Public Affairs)

We turn next to ABO and look at how we are executing against it [the budget]. How is AMC doing? FORSCOM? TRADOC? What do we need to shift? This is what the reset task force is trying to bring together. We then go to talk to ASA(ALT) and say, "How are you spending the money? What's not been spent?" We do this each year. We try to synchronize requirements and resources with acquisition. It's relatively granular.

We also use the outcomes of this work to tee up conversations with the Hill. We frequently need to have dialogues with the House and Senate Armed Services Committees. A couple of years ago, we had too much money because there was a lot of equipment we thought we had to bring back to the States but instead

were able to divert from Iraq to Afghanistan. We thought we'd have a heavier track requirement than we did, so there was a lot of work programmed for track maintenance, which wasn't needed. The result was that we had about $1 billion left over. So, we went over to the Hill and talked to professional staff members and made sure they knew what we were doing and why. Our task force work helped to shape that conversation.

**Army AL&T:** Can you tell us what the most important lessons learned are from retrograde in Iraq?

**Skibicki:** I think the number one lesson we learned was to bring everybody, all the lines of effort, to the table. We did that prior to the drawdown from Iraq

with rehearsal-of-concept drills run by U.S. Army Central/Third Army (ARCENT) and AMC. ARCENT made sure that all the necessary participants were there, from the actual units that had the equipment and their higher-level commands, to the transporters, to the LCMCs that reset the equipment, the people developing requirements for diverting equipment from Iraq to Afghanistan, and ASA(ALT)—everybody was there. We made sure all of the subject-matter experts and members of the team were involved. The last session we had of the R4D General Officer Steering Committee, we made sure everybody was there—Army National Guard, U.S. Army Reserve, FORSCOM—all the affected commands, because everybody has a different perspective. U.S. Army Pacific Command has a different perspective on

**STRYKER ACCOUNTABILITY**
With Army G-8's help, redeploying units can account for equipment even before leaving their posts. Here, Sabrina Hill, the lead wholesale-responsible officer, and Brian Robinson, from Honeywell, verify the serial numbers of the 16 Strykers as part of the process to relieve the unit of equipment accountability. The officers, from the Army Field Support Battalion-Kandahar, 401st Army Field Support Brigade (AFSB), have the mission to provide command and control of wholesale accountability for TPE, ARI and intensely managed items. (Photo by Sharonda Pearson, 401st AFSB Public Affairs)

what they need their units to bring back from Afghanistan, or what was previously left in theater by one of their units that still hasn't been returned or repaid.

**Tison:** We worked to get numbers on cost savings. We worked very closely with the Defense Logistics Agency, our deputy assistant secretary of the Army for cost and economics within ASA(FM&C), our costing folks. It just makes sense, particularly with the non-standard equipment. We're not going to maintain it anyway. It would cost more to ship back, and even in the case of foreign military sales, you still have to get it out of the country. You may remember the Equipment Distribution Review Board, where we were working very closely with the U.S. Department of

State on foreign military sales. It's more challenging with Afghanistan because we don't have Kuwait next door; we can't drive the equipment and vehicles out as simply from Afghanistan as we could from Iraq.

It really is a village. We get all the various parties together and really try to keep the process synchronized with all of the various organizations. We do a lot of integration work in G-8, and the R4D process is very natural for us.

**Skibicki:** We are tracking every single unit—when they are coming out, when we have to build the Transportation Control Numbers for their movement—and are trying to automate so we can build the requirement for the transportation

earlier. "Left of the RPAT yard" is what we're calling it now: Even before they move from their forward operating base (FOB) to turn in their equipment, we've already prioritized their equipment to return home, based on what was programmed into ARI, or what the unit has programmed into Automated Reset Management Tool for their field-level reset when they get back. We execute DST runs to determine what equipment units can bring home to fill shortages within the unit or redeploy for another unit on the same installation back in the States. We are simply trying to get equipment out of country as quickly and in the most efficient way possible, while trying to support the needs of the depots for reset, and building readiness needed for the next deployers.

# A WEIGHTY PROPOSITION

## Finding efficiencies in complex Stryker retrograde

*by Ms. Catherine M. Doherty, Mr. Bill Good and Ms. Sharonda Pearson*

It's an eight-wheeled, 55,000-pound vehicle nicknamed "the Cadillac of the infantry" for its performance in the mountains and valleys of Afghanistan. Now it's time for the Stryker Light Armored Vehicle to come home, a process that could serve as a case study in complexity and lessons learned in retrograde efficiency.

The Stryker poses two striking differences compared with most other vehicle programs: the complexity of the vehicle, and the fact that Strykers have been retrograded once before, with the fielding of the Double-V Hull (DVH) variant, a major upgrade in Soldier protection.

Developed, produced and deployed in the first decade of the 21st century, the Stryker is designed to combine speed, agility and firepower with a high level of protection for the Soldiers who operate and fight from it, and sometimes eat and sleep in it. A number of upgrades made to the Stryker since it was first fielded have resulted in an improved vehicle that is readily deployable, better-armored and easier to maintain than the original. These same qualities complicate the process of returning hundreds of Strykers from forward operating bases (FOBs) in Afghanistan to home bases in the United States.

## A PAINSTAKING PROCESS

While several units and organizations are involved in the Stryker retrograde mission, most of the hands-on work in theater falls to the 401st Army Field Support Brigade (AFSB), one of eight AFSBs under the command and control of the U.S. Army Sustainment Command (ASC), headquartered in Rock Island, IL. The 401st AFSB has served units redeploying from Afghanistan by taking Strykers off their hands and getting the vehicles ready for retrograde at Kandahar Airfield.

The departing unit drops off its Stryker with the Army Field Support Battalion – Kandahar at the 401st AFSB Redistribution Property Assistance Team (RPAT) yard. RPAT personnel, along with members of the redeploying unit, conduct a joint ammunition inspection to ensure that the vehicle is clear of all ammunition.

The next step is to inventory the government-furnished equipment (GFE), after which the redeploying unit signs the vehicle over to the RPAT yard. Then, 401st AFSB personnel remove all GFE for inventory, cleaning, packing and wrapping. Personnel then tag all GFE for shipping and send it directly to Joint Base Lewis-McChord (JBLM), WA, where it will be reinstalled eventually into the Stryker from which it was removed. Pallets of GFE, which have to clear customs, are weighed and measured for shipping by 401st AFSB employees.

Members of the 401st AFSB workforce then painstakingly clean the vehicle, piece by piece, to ensure that there will be no problems clearing customs at the vehicle's various stops on the way back to the United States. Like every piece of equipment leaving Afghanistan, the Strykers must meet exacting standards set by U.S. and Afghan customs regulations.

For example, the vehicle is inspected continually to make sure no ammunition, explosives or explosive debris were missed

**FLEET MULTIPLIER**
The Stryker battle damage repair facility in Qatar has supported the fleet's high operational readiness rate by enabling the Army to fix Strykers relatively close to theater and return them to the fight that much faster. In addition to repairing 422 Stryker vehicles for use by Soldiers fighting in Iraq or Afghanistan, the Qatar facility executed the reset of 80 Strykers in support of non-Stryker brigades in Southwest Asia. Here, pallets of replacement Stryker parts are staged outside the facility, ready for use. (Photo courtesy of PM SBCT)

earlier. Just one bullet found in a Stryker at a port of exit will delay an entire shipment for hours.

International agricultural standards aim to prevent the export of invasive plant and animal species from one nation to another. A single clump of dirt in a Stryker leaving Afghanistan might harbor a seed, insect or organism that could cause long-term harm to plants and animals native to North America. Features on the Stryker such as bolt-on ceramic armor and armored skirts, designed to protect Soldiers from threats such as small-arms fire, rocket-propelled grenades and improvised explosive devices, also create hiding places for dirt and foreign objects, and so complicate the process of ensuring that each Stryker is clean enough to clear customs and agricultural inspection.

In all, every Stryker retrograded through a 401st AFSB facility undergoes at least

five inspections, covering every nook and cranny, before and after cleaning.

Cleaning the vehicle inside and out can take up to 36 hours, according to CPT Lee Berry of the 401st AFSB, who oversees the RPAT yard at Kandahar Airfield. As a result, the average "production" of Strykers is two vehicles per day, including all inspections and documentation to stage them for air shipment and retrograde. In contrast, Berry said, cleaning an average armored vehicle usually takes fewer than six hours.

**STREAMLINING**
After the Stryker has been catalogued, stripped of GFE and cleaned, it is ready to begin its voyage to Anniston Army Depot, AL, for reset. After the reset is complete, the vehicle goes to JBLM, where state-of-the-art technology added to the vehicle in support of the mission will be reinstalled.

As the pace of retrograde has picked up, the 401st AFSB has operated wash racks around the clock to clean Strykers and other vehicles.

After cleaning and inspection, the vehicles are weighed, measured and tagged with bar codes for tracking. In some cases, part of the interior must be reassembled to enable the vehicle to be driven onto an aircraft. Traffic management specialists from the 401st AFSB complete all transportation and movement documents and forward the information to personnel from the Project Manager Stryker Brigade Combat Team (PM SBCT) of Program Executive Office Ground Combat Systems (PEO GCS), who are responsible for the final loading.

To speed the Stryker retrograde process at Kandahar, the 401st AFSB made improvements at the front end. Government engineers and their

**MAKING IT QUICK**
Soldiers from the 2/23, 4th Stryker Brigade tested a newly streamlined turn-in process in Kandahar in March with 16 Strykers they brought for retrograde. The operation took less than two hours, about one-third the time it had taken in the past. Here, the Soldiers arrive at Kandahar Airfield to turn in the Strykers and associated equipment to the 401st AFSB at the RPAT yard. (Photo by Sharonda Pearson, 401st AFSB Public Affairs)



**INVENTORY CONTROL**
An inventory of basic-issue items for a Stryker is the last step before a redeploying unit turns in the vehicle for retrograde. Here, Soldiers from the 1st Cavalry Regiment inventory basic-issue items before turning in three Strykers. (Photo by Sharonda Pearson, 401st AFSB Public Affairs)

contractor partners designed and built three lanes at the RPAT yard, tripling the previous capacity, with clearly identified areas for the turn-in of different classes of equipment. This marked a significant improvement over the previous setup in which units had to turn in their various classes of equipment at two different yards at Kandahar, through separate appointments with the 401st AFSB and 3rd Sustainment Brigade, and then travel to a third location to sign their Strykers over to the 401st.

The new "one-stop shop" was tested in March when Soldiers from the 2nd Battalion, 23rd Infantry Regiment (2/23), 4th Stryker Brigade brought 16 Strykers to Kandahar for turn-in and retrograde. The operation was completed in less than two hours, about one-third the time it had taken in the past.

"I've been through the process three other times, and this is the fastest we've gone through it," said SGT Daniel Maret of the 2/23. "Generally, we would have to do much of the process beforehand, prior to even turning in our equipment." A unit could not hand over a vehicle and associated property until all equipment was accounted for, the vehicle had been cleared of ammunition, the inventory inspected and a list of any shortages completed. "Here, we were able to unload everything on site, and it was set up in stations, which made the process much easier and faster," said Maret.

The 401st formed a working group that includes PM Stryker, the 3rd Sustainment Brigade, the Military Surface Deployment and Distribution Command and the U.S. Air Force. Members of the group have collaborated to identify and eliminate redundancies in the retrograde process and further streamline operations, now using one

process and one yard to retrograde all materiel, as opposed to the previously segregated locations for different types of equipment. A single group—with experts in transportation, packing, wrapping and shipping, and PM SBCT representatives—books airframes and sets priorities using a standard process.

"We've always had a weekly meeting to discuss our operations," Berry said. "Now we've taken our working group, where we discuss issues and coordinate operations, to the next level to ensure that we are all physically working together in the same location, which enables us to learn from each other and provide better support to the warfighter."

**GOING MOBILE**
The Kandahar battalion of the 401st also maintains a mobile RPAT that travels to FOBs in Afghanistan to facilitate the turn-in of excess equipment and resolve property accountability issues before the equipment goes to Kandahar for retrograde. In May, when the Pakistan ground lines of communication reopened, the mobile RPAT went to a FOB in Spin Boldak in southern Afghanistan to execute its first "fort-to-door" operation for the 4th SBCT.

In the fort-to-door operation, the mobile RPAT prepared select pieces of Stryker equipment for retrograde, obviating the need to send the equipment to Kandahar for shipment. Instead, the retrograded gear would be transported over land through Afghanistan and Pakistan directly to the Pakistani port of Karachi, where it would be loaded aboard ships for transport back to the States.

"Being able to travel to the unit and execute the retrograde mission made the process quicker and more streamlined, because the vehicles are being

picked up by the carrier as soon as they are ready for transport," said SFC Lesa Dash of the 401st AFSB, a member of the mobile RPAT team. "Fort-to-door keeps Soldiers off the road, since they don't have to convoy to Kandahar to turn in their equipment."

PM SBCT has another logistical asset during the drawdown: the battle damage repair facility in Qatar. Because of the high operational tempo for Strykers in theater, there was no time to send battle-damaged assets back to the manufacturer or a depot in the States. The only way to keep the Stryker fleet at a very high operational readiness rate was to establish a facility in the Middle East where assets could quickly be shipped, repaired and returned to the fight.

The final Stryker repair at the Qatar facility was completed in April. It was the 422nd Stryker vehicle repaired there and returned to Soldiers fighting in Iraq or Afghanistan. In addition to the 422 repaired platforms, the Qatar facility executed the reset of 80 Strykers in support of non-Stryker brigades in Southwest Asia, for a total of 502 vehicles. The facility has supported 19 Stryker deployments to Iraq and Afghanistan over the past decade.

While the Qatar operation is drawing down toward its anticipated closure in FY14, it will continue to support the retrograde of battle-damaged Strykers to the States for depot repair. A minimal number of ready-to-fight Stryker vehicles will remain in Qatar until the facility closes. The closure of the Qatar battle damage repair facility concludes a successful mission executed by the Army and industry team in Qatar.

**PRIOR EXPERIENCE**
In June 2011, after a rapid 18-month development, PM SBCT began fielding

the new Stryker with the DVH to units in Afghanistan. The new hull configuration adopted many of the principles of a Mine Resistant Ambush Protected vehicle, aiming underbody blasts away from the vehicle. With the fielding of this improved Stryker, the original, flat-bottom hull Strykers had to be retrograded. As of December 2012, PM SBCT had retrograded 450 flat-bottom vehicles under the management of MAJ William Clark, assistant product manager for Stryker DVH fielding.

"We gained a wealth of experience during our previous retrograde efforts," said David Dopp, PM SBCT. "As we draw down and begin the movement of our assets back to the U.S., the lessons learned during the retrograde of the flat-bottom hull Strykers will make the process much easier."

The biggest lesson learned was to lock in the unit line number (ULN) as soon as

*"THOSE OF US INVOLVED IN THE LOGISTICS MISSION ARE HERE TO SUPPORT OUR WARFIGHTERS, NOT HINDER THEM IN ANY WAY—NOT DISABLE THEM FROM EXECUTING THEIR MISSIONS BECAUSE THE TURN-IN PROCESS IS TEDIOUS AND CUMBERSOME."*

**PIECE BY PIECE**
Preparing a Stryker for retrograde is a multipart process that includes rigorous cleaning, numerous inspections and a complete inventory of all equipment in and on the vehicle. Here, Soldiers from the 2/23 unload equipment from a Stryker at the RPAT yard in Kandahar. (Photo by Sharonda Pearson, 401st AFSB Public Affairs)

possible. The ULN, a unique identifier given to all equipment moving out of theater, is the cornerstone of all logistical movement data. The ULN orders the airframe for movement of material. A ULN can take up to 21 days to secure.

The only way to successfully plan how many vehicles are leaving and when is to lock in the ULN as far in advance of departure as possible. This avoids delays and pileups of excess equipment in staging yards.

A problem arose in this process as U.S. Central Command (CENTCOM) required actual weight and size measurements for the Stryker platforms before creating a ULN. This meant that assets actually had to be on hand in advance, which could lead to a significant backlog of equipment during the four to six weeks required for the ULN.

CENTCOM allowed PM SBCT to provide estimated weight and size measurements to secure a ULN. This reduced the choke points, creating a much smoother and more consistent process. PM SBCT anticipated the number of platforms being turned in to the RPAT and built the ULNs based upon that flow. This significantly shortened the timeline for movement of vehicles and cleaned out the backlog that was forming in the RPAT yard. It also allowed for better planning on the front end for acceptance, inventory and cleaning of the vehicles.

## CONCLUSION

The 401st has received about half of the Strykers it will retrograde in the next four months, with a goal of retrograding 40 Strykers per month.

"It's easy to get focused on your mission and potentially lose perspective of the big picture," Berry said. "Those of us involved in the logistics mission are here to support our warfighters, not hinder them in any way—not disable them from executing their missions because the turn-in process is tedious and cumbersome. It's our responsibility to provide superior logistical support so that Soldiers can continue to fight."

Anniston Army Depot was scheduled to begin the Stryker reset Oct. 1. The depot received the first 16 Stryker DVH vehicles in July.

After the vehicles complete reset and go to JBLM, for reinstallation of GFE and communications suites, the vehicles will be ready for reissue to units.

*For more information on Stryker retrograde, follow PEO GCS on Facebook (**http://www.facebook.com/peogcs**) and Twitter (**http://www.twitter.com/peogcs**), or go to **www.peogcs.army.mil**.*

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# ROBOT ROUNDUP

## Only certain robots can be retrograded cost-efficiently

*by LTC Douglas King and Mr. Bill Good*



**FIGHTING IEDS**
Robots have proved indispensable in allowing Soldiers and Marines to investigate and disarm improvised explosive devices (IEDs) from a safe distance. Here, U.S. Marines with 3rd Battalion, 8th Marine Regiment, Regimental Combat Team 6 operate a PACKBOT-510, an IED disarming robot, Aug. 28, 2012, as part of a class on Forward Operating Base Geronimo, Helmand province, Afghanistan. (U.S. Marine Corps photo by LCpl Cesar N. Contreras, 2nd Marine Division Combat Camera)

When it comes to retrograding equipment from Operation Enduring Freedom, the Robotic Systems Joint Project Office (RS JPO) may have the most unusual mission in the Army. Because of how robotic systems have been acquired and fielded, rounding them up and returning them home is a significant challenge.

"Most other Army and Marine Corps products are programs of record, which is the opposite of the robotics portfolio. The vast majority of our robots are commercial off-the-shelf [COTS] systems that were acquired and deployed using rapid fielding initiatives. That means while some were issued to units through us, most went directly to units as theater-issued equipment," said LTC Benjamin Stinson, project manager, RS JPO.

Because most of the robotic systems are COTS, RS JPO's mission in theater takes on a unique character. Through its Joint Robotic Repair Facilities (JRRF), RS JPO is directly responsible for repairing damaged robots and training maintainers.

### OPERATION CLEAN SWEEP

Retrograde efforts for RS JPO began more a year ago when the Assistant

Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) issued guidance for units to begin evaluating the personnel and equipment they had on hand in anticipation of the coming drawdown. That effort, known as Operation Clean Sweep, spurred RS JPO to look into just how many robots were in Afghanistan.

"During Operation Clean Sweep, we were able to move a lot of our older, obsolete systems that were no longer being used back to the United States. Discontinuing the use of those systems in theater allowed us to also clear out the space that was being used for their spare parts. We really got a great head start on the overall drawdown," said LTC Greg Corbett, assistant product manager for logistics operations, RS JPO.

As the current drawdown continues, the retrograde effort for RS JPO takes a multifaceted approach. Units that received their systems from a JRRF must return them there before heading home. Units that received their robots as Theater Provided Equipment use the redistribution property assistance team (RPAT) yards. RS JPO then works with the RPAT to get the robots where they need to go.

"We give the RPAT yards different disposition instructions depending on what robots they receive. Most older models are shipped back or disposed of in theater. Current systems that are still in demand are repaired and reissued," said LTC Joe Conrad, officer in charge, Joint Robot Repair Detachment – Afghanistan.

## COST-BENEFIT ANALYSIS

A major issue for RS JPO is what to do with older systems when they are turned in. The cost of shipment and perishability



**PRE-COMBAT CHECK**
The use of robots has saved at least 822 lives since RS JPO began its count eight years ago. Here, the scout-truck team with Task Force Chain performs pre-combat checks July 8 on an IED reconnaissance robot at Bagram Airfield, Afghanistan, for a sustainment convoy escort mission in support of Task Force (TF) Lifeliner. (U.S. Army photo by SFC Mary Rose Mittlesteadt, TF Lifeliner)

of the technology call for a cost-benefit analysis to determine whether it is more economical to ship the robot home or dispose of it in theater.

"If it's valuable, we bring it home. However, if it's something that's broken, old or obsolete, we have to weigh if it make sense to pay to ship it home. Robots are an interesting case study, in that it takes more man-hours and dollars to dispose of them once they return stateside than to do it in theater. So we need to make that decision before we decide to ship them home," Stinson said.

Robots that have been turned in and selected for retrograde are shipped back to the RS JPO storage warehouse in Michigan. However, this is just a temporary stop. Unlike most Army systems returning from theater that are reset at a depot and then fielded to units,

the Army and Marine Corps haven't yet decided how many of each system they will carry into the future; they are exploring the issue.

"Reset is normally a follow-on piece to retrograde," Stinson said, "but it's not responsible of us to begin that process until we know what the future makeup of the robotics fleet looks like. We won't spend money to reset a system that could possibly have its fleet downsized or disposed of altogether."

Determining how many robots of each type to keep is an unusual acquisition challenge. The technology behind robotics evolves so rapidly that a traditional seven-year acquisition cycle doesn't make sense; by the time the military fields a system, it is already obsolete. The Army and the other services have the tough task to investigate which

**GROUND TRUTH**
The Army and Marine Corps are investigating how many of each robotic system they will carry into the future. Here, two bomb-disposal robots controlled by explosive ordnance disposal technicians assigned to Explosive Ordnance Disposal Mobile Unit 6, Detachment Mayport, investigate and disable an IED during an active shooter drill Feb. 22 for Exercise Citadel Shield 2013. (U.S. Navy photo by MC3 Damian Berg, Navy Media Content Services)



**BATTLE BUDDY**
The vast majority of the robots issued by the Army and Marine Corps are COTS systems acquired and deployed using rapid fielding initiatives. Most went directly to units as theater-issued equipment. Here, U.S. Marine Sgt Robert Sampson with Explosive Ordnance Disposal, Combat Logistics Regiment 2 conducts an operations check May 11 on a 310 Small Unmanned Ground Vehicle (SUGV) on Camp Dwyer, Helmand province, Afghanistan. The 310 SUGV is a man-portable robot with dexterous manipulator and wearable controller for dismounted mobile operations. (U.S. Marine Corps photo by Sgt Anthony L. Ortiz, 2nd Marine Logistics Group – Combat Camera)

of the current systems, if any, are a long-term fit for the military.

**CONCLUSION**
While the services wrestle with the question of what to do with the retrograded assets, the current plan calls for RS JPO to store the roughly 7,500 robots in its inventory in a climate-controlled warehouse.

"Our retrograde focus is to be the best stewards of taxpayer dollars that have already been spent on very capable systems. We will get them home and take the best care of them until the services decide how best to use them," said Stinson.

While retrograde is a top priority of RS JPO, it's not the number one mission. That will continue to be supporting the warfighter. RS JPO will be one of the last project managers to leave theater because its systems support the route clearance mission that will continue to be vital until all of the troops leave.

*For more information on robotics, follow Program Executive Office Ground Combat Systems (PEO GCS) on Facebook (http://www.facebook.com/peogcs) and Twitter (http://www.twitter.com/peogcs), or go to www.peogcs.army.mil.*

*LTC DOUGLAS KING is the robotics fleet manager and retrograde operations lead for RS JPO. He holds a B.A. in political science from Miami University of Ohio.*

*MR. BILL GOOD is a public affairs specialist for PEO GCS. He holds a B.A. in broadcasting from Siena Heights University and an M.A. in public relations and organizational communication from Wayne State University.*

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# MEDICAL RECOVERY

From beds to bandages, millions of dollars
worth of materiel move through medical sort point

*by CW4 Matthew S. Brenner
and SFC Carlos W. Rivera*

The beginning of retrograde operations in the Afghanistan theater of operations in the fall of 2012 made clear the need for a distinct sort point for Class VIII (medical) materiel and equipment within the redistribution property accountability team yard at Bagram Airfield.

The mission of manning and running this site for the U.S. Central Command Materiel Retrograde Element (CMRE) fell to the U.S. Army Medical Materiel Center – Southwest Asia (Provisional) (USAMMC-SWA(P)). Using its assigned medical logistics company, USAMMC-SWA supports this mission with the CMRE Class VIII Support Team, led by a senior NCO, with five or six biomedical equipment technicians and medical supply specialists.

Since the inception of the Medical Sort Point in 2010, the CMRE medical team has processed more than 600 large boxes of medical materiel, ranging from small pharmaceuticals to large surgical equipment, valued at more than $7 million. As of June, these efforts had recapitalized $5.3 million worth of medical materiel that otherwise would have been destroyed.

**TEAM MEDICAL RETROGRADE**
The Class VIII Retrosort Team at Bagram Airfield is responsible for sorting through medical materiel and equipment from all over Afghanistan. In back row, from left, are SPC Spencer Harman, SPC Sy Bee, MAJ Deon Maxwell and SFC Carlos W. Rivera. Front row, from left: SGT Zachariah Serna and SPC Mark Lee. (Photos courtesy of USAMMC-SWA)

## HOW IT WORKS

The Medical Sort Point serves as the entry point into the retrograde system, receiving 40-foot containers filled with large boxes of loose medical supplies and equipment. The team breaks down the containers and separates the Class VIII materiel into expendable, durable and nonexpendable items. The team then works to determine the condition of each category of materiel received.

Expendable medical supplies require careful inspection to see that packaging is intact, the item has not passed its expiration date, or if a pharmaceutical can be returned for a refund. The team is also responsible for the destruction of controlled substances, properly documenting the destruction and maintaining the chain of custody.

Based on the condition of the materiel, expendable and durable items are offered as free issue to units, placed into the Foreign Excess Personal Property (FEPP) program for transfer to the U.S. Department of State or Afghan National Army, or sent to the closest Defense Logistics Agency Disposition Services site for destruction.

The team handles nonexpendable equipment differently. These items, which include ventilators, hospital beds and X-ray systems, require testing and inspection to determine their condition code. If the team finds that an item is serviceable, or unserviceable but economically repairable, the team checks that item against a list of requirements for Army medical equipment sets. If the piece of equipment is on this list, the team packages it and sends it to the appropriate U.S. Army Medical Materiel Agency (USAMMA) depot for reset and reissue to other medical units in like-new condition. If USAMMA does not need the item, is the agency offers it as free issue or places it into the FEPP program. The team destroys all unserviceable equipment.

**PACKING UP**
The retrosort team starts off-loading boxes for sorting at Bagram Airfield. The team determines whether a piece of equipment or materiel is reusable or refurbishable, or needs to be disposed of.



**A BIG TASK**
SPC Harman, SFC Rivera, and SPC Lee start the sorting process of Class VIII materials at Bagram Airfield.

## LESSONS LEARNED

Some of the lessons learned from the withdrawal of equipment in Iraq during Operations Iraqi Freedom (OIF) and New Dawn (OND) have benefited Operation Enduring Freedom (OEF), such as the use of a CMRE Class VIII support team. However, some of the same documented issues continue to surface during OEF retrograde. For example:

- Medical equipment is not properly condition-coded before its arrival at the RPAT yard.
- Improper packing, blocking and bracing continue to be a problem, as during OIF retrograde operations. This includes the proper sealing of Tri-Walls (heavy-duty corrugated boxes) to reduce the dust and dirt that invariably enter the container and destroy delicate Class VIII equipment. Proper packing alone would significantly increase the potential for Class VIII reuse by limiting damage during transit.
- The FEPP process is bureaucratic and time-intensive, and units need to start the process early. Significant time, energy and resources could be saved by turning over equipment at local forward operating bases through FEPP rather than moving it to the RPAT yard at Bagram.

All has not been negative, however. The teams on the CMRE mission have been a mix of U.S. Army Reserve and Regular Army Soldiers. The small size of the team allows for the rotation of personnel every three to four months. This allows Soldiers to broaden their experiences and expertise without affecting USAMMC-SWA's core mission of supporting CENTCOM-wide efforts.

## CONCLUSION

The CMRE Class VIII Support Team is implementing a number of improvements.

These include a transportation agreement for movement of equipment to USAMMA depots and effective redistribution of serviceable Class VIII to appropriate units in theater. Currently, the free-issue process is reactive, and the CMRE team is eager to make it more proactive and predictable. A future initiative is to have units condition-code equipment at the unit level, rather than condition-coding the item at the RPAT yard, which will save time and money.

Finally, the CMRE Class VIII team is setting the conditions to receive a larger CMRE Class VIII team, responsible for covering at least three locations in Afghanistan and an ever-increasing volume of medical materiel and equipment as the pace of retrograde operations increases.

For more information, go to **www.usamma.amedd.army.mil.**



**CONDITION CODING**
SFC Rivera and SGT Serna inspect hospital beds upon arrival. If the beds are reusable or can be refurbished at a reasonable cost, they will go back into circulation.

*CW4 MATTHEW S. BRENNER is USAMMC-SWA's chief, Medical Maintenance Division in the 308th Medical Company (Logistics) maintenance office. He holds an A.S. in biomedical engineering from Colorado Tech University, a B.A. in business administration from Lakeland College and an MBA in finance from Concordia University. Brenner's civilian position is an imaging system specialist (CT/MRI) with the Clinical Engineering Department of Wheaton Franciscan Healthcare system. He has 27 years of military service.*

*SFC CARLOS W. RIVERA serves as the CMRE noncommissioned officer in charge of Class VIII retrograde while attached to the 247th Quartermaster Company, Bagram Airfield. Rivera is responsible for the rapid reduction and retrograde of medical materiel for the Combined Joint Operations – Afghanistan.*



**SORT POINT SAVES MONEY**
By moving beds according to condition code, the medical sort point team has saved millions of dollars of equipment that would otherwise have been destroyed.

# Inside the CENTCOM Materiel Retrograde Element

Army medical logisticians assigned to the U.S. Central Command (CENTCOM) Material Retrograde Element (CMRE) are leading efforts to ensure the responsible reduction and retrograde of medical materiel for the Combined Joint Operations Area – Afghanistan (CJOA-A). This effort is a key component of the U.S. Army Medical Materiel Agency (USAMMA) life-cycle management mission.



**MAINTAINING ACCOUNTABILITY**
SPC Tammy Hyden, a medic with the 864th Engineer Battalion, CMRE, inventories medicine within her battalion's aid station at Paktika province, Afghanistan, April 21. (U.S. Army photo by 1LT Elizabeth Lewis, 864th Engineer Battalion)

The CMRE has three main responsibilities in ensuring timely support to warfighter requirements. These responsibilities are base closures or transfers; materiel reduction; and retrograde. In a base closure, the base is no longer available for use by joint forces but instead is turned over to a private legal owner; no property is left behind. In a base transfer, joint forces relinquish control of the base to the Government of the Islamic Republic of Afghanistan (GIRoA), and donate remaining property through the Foreign Excess Personal Property (FEPP) program, which transfers property that U.S. forces no longer need, as confirmed by CJOA-A and USAMMA.

CMRE-enabler teams assist commanders with multiple issues during the base closure process and are among the last elements remaining to ensure that all retrograde and demilitarization requirements are complete. The identification, accounting and final disposition of excess property account for most of the time needed to transfer items to the GIRoA.

The CMRE Medical Logistics (MEDLOG) and retrosort yard teams are responsible for Class VIII materiel reduction—the decreasing of theater stocks through consumption, FEPP, or disposal of unserviceable items—and retrograde throughout CJOA-A. The teams process excess property and evaluate it for redistribution to forward-deployed U.S. forces, donation through FEPP or retrograde to a USAMMA depot.

**READY TO ROLL**
Medical supplies are loaded for delivery to the airfield. (Photo by SGT Khori Johnson, 43rd Sustainment Brigade)

USAMMA is responsible for the life-cycle management of theater equipment; after receiving retrograded materiel, USAMMA refurbishes each item to field the Army's future requirements. The USAMMA operates three regional medical maintenance depots that receive and repair equipment.

Theater medical logisticians, in partnership with unit commanders and hospital facilities throughout the CJOA-A, are responsible for ensuring the retrograde of all serviceable medical equipment, shipping it to either the U.S. Army Medical Materiel Center, Europe or one of USAMMA's three depots based on preapproved disposition guidance. Through the various centers, USAMMA manages the overall disposition of medical

materiel, reviewing it monthly to ensure that equipment is viable for refurbishment and reissue.

The monitoring and tracking of base closures and transfers plays a vital role in projecting retrograde requirements for future medical set builds. Base closures and transfers are tracked by month, and medical retrograde planning considerations are projected based on the number of medical facilities at each location and Theater Provided Equipment property book levels. USAMMA manages the overall disposition of medical materiel, reviewing it monthly to ensure that equipment is viable for refurbishment and reissue.

By retrograding materiel from forward tactical bases to strategic retrograde hubs

for sorting and processing, the CMRE supports commanders who must balance the conduct of current security missions with the drawdown to achieve future force posture goals.

The CMRE MEDLOG Team is committed to providing dedicated support to facilitate base closures and transfers and the retrograde of medical materiel theaterwide. The goal is to continue proactive retrograde support to units as they continue counterinsurgency operations, while simultaneously posturing the CJOA-A to meet future strategic and operational objectives.

— *MAJ Deon Maxwell and CPT David Smith*

The ARDEC Intellectual Property Team feels your project may be patentable.

IDEA
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Come to Jefferson Hall, Room 131 before 14:30 to have your project reviewed.

Please bring as many team members as possible and any written descriptions or data for your project

RMAMENTS RESEARCH, DEVELOPMENT AND ENGINEERING CENTER

# BRAINPOWER SURGE

## ARDEC's IDEA program takes systematic approach to encouraging innovation

*by Dr. Andrei Cernasov*

A gap is developing between the type and volume of innovations the Army needs and what the private sector is likely to provide, at least in the foreseeable future.

After reaching its peak in 2008-10, U.S. defense spending dropped for three consecutive years, a trend likely to continue as long as federal budgets remain under pressure. The defense market has responded with the current wave of mergers, acquisitions, divestitures and commercial spinoffs. Combined with the globalization of research and development, this consolidation and migration into commercial markets will likely result in fewer suppliers of innovative, defense-specific products. This poses an unacceptable risk to the Army, a force heavily reliant on technological superiority.

The IDEA program (short for Innovative Developments Everyday at ARDEC, the U.S. Army Armament Research, Development and Engineering Center) was created so that ARDEC employees could contribute more to closing this gap. Now, well into its fifth year and still evolving, the program is producing strong preliminary results. IDEA successfully identified and promoted a subculture of innovation that is now expanding through the organization. It also created a support network whereby both inventors and managers could grow ideas from their early stages through development and possible deployment. (See Figure 1 on Page 88.)

### SETTING UP THE PROGRAM

In 2008, Barbara J. Machak, as associate technical director for systems concepts and technology, tasked me and a team of ARDEC employees to develop a Six Sigma-compliant process for establishing an organic innovation program.

Machak recognized that new processes would encourage changes in ARDEC's workplace toward a culture that is more

### ENCOURAGING INVENTIVENESS

The IDEA program reaches out to USMA cadets to encourage innovation by offering help with patent applications. Here, ARDEC engineer Jeffrey Lukaszyk shows the business card he has used during visits to West Point for its annual Projects Day, when senior cadets present their research, innovations and theses to an audience of government and private industry sponsors. The cadet projects are fertile ground for new, useful and less obvious innovations with the potential to become Army intellectual property. (Photo by Timothy Rider, ARDEC)

## FIGURE 1
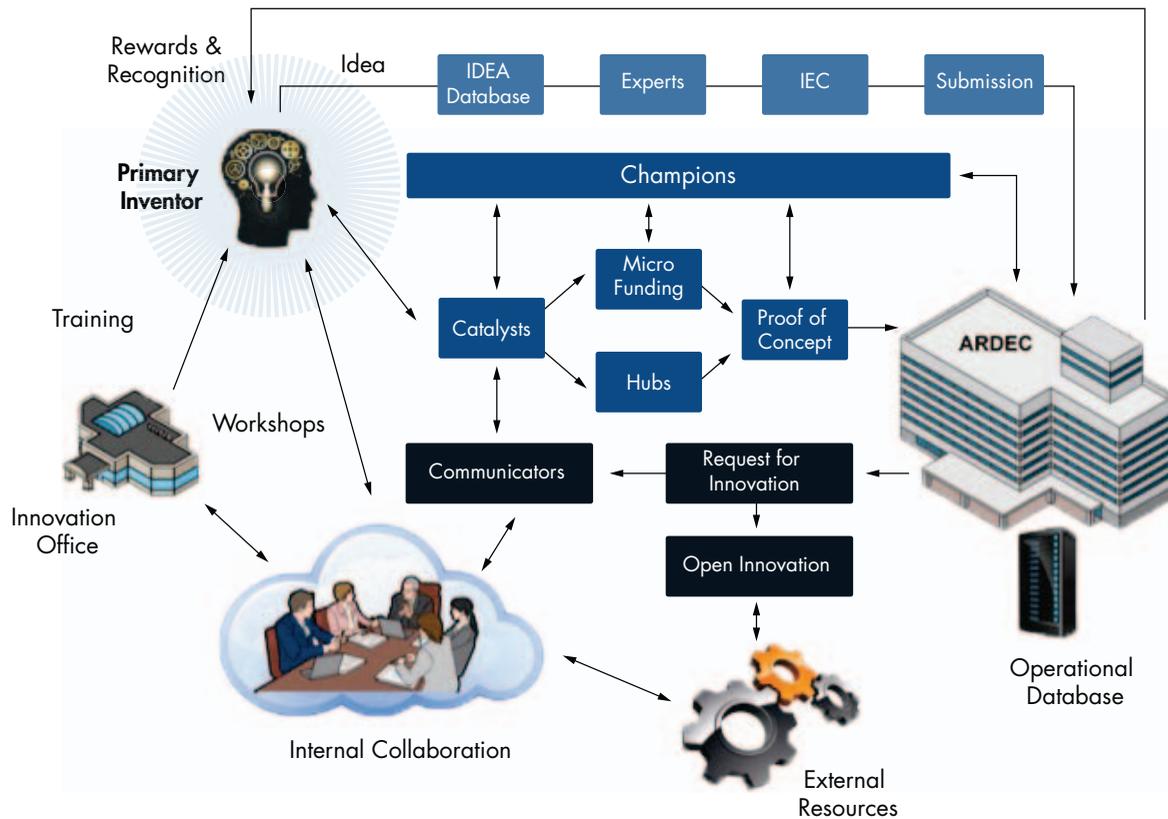


**GIVING IDEAS DIRECTION**
With IDEA, ARDEC established a scalable, innovation management program that works from both the bottom up and the top down, including a support network and established paths of inquiry so that both inventors and managers can develop ideas from the early stages through development and possible deployment. (SOURCE: ARDEC)

conducive to supporting innovation leaders. As she told The Picatinny Voice in February 2011, looking back at the formation of the IDEA program, "We had over 2,000 people solving problems or gaps in warfighter capabilities, meeting requirements, but I didn't get a sense that they all had an avenue to have their ideas [and] innovations heard."

The effort began in January 2008 with ARDEC officials benchmarking a number of "best in class" corporate innovation programs, followed by interviews with key stakeholders, including top- and mid-level managers, rank-and-file inventors and innovators, program managers and active-duty personnel. Between July and September 2008, we also conducted an "innovation climate" survey across the workforce and a targeted inventor survey to gather baseline data for future reference.

We based the innovation climate survey on the work of Drs. Scott G. Isaksen and Göran Ekvall, pioneers in the field of innovation climate research. A total of 892 ARDEC employees responded to the survey. Figure 2 shows the most frequent answers for six survey questions related to the discovery of an innovation.

While most answers were in line with the findings of Isaksen and Ekvall, the survey found ARDEC to be significantly more risk-averse than its commercial counterparts. Reducing the inherent risks of innovation and increasing ARDEC's

**FIGURE 2**

| 1 | How long after you became aware of the problem did you discover the inventive solution? | Longer than a week | 66.7% |
| | | Less than a week | 15.2% |
| | | Immediately or same day | 13.6% |
| 2 | Were you with co-workers, with friends, with family, alone? | Alone | 45.5% |
| | | With co-workers | 39.4% |
| 3 | Where were you? | At work or in the lab | 56.1% |
| | | At home | 13.6% |
| 4 | What were you doing? | Looking for a solution | 35% |
| | | Daydreaming | 15% |
| | | Brainstorming with others | 15% |
| 5 | What was your source of inspiration? | Knowledge I acquired before I learned of the problem | 35.4% |
| | | Knowledge I developed after I learned of the problem | 18.5% |
| 6 | Did you experience a "eureka moment"? | Yes | 48.5% |
| | | No | 51.5% |

**HOW INNOVATION HAPPENS**
ARDEC conducted an innovation climate survey in 2008 across the workforce before launching the IDEA program. A total of 892 ARDEC employees responded to the survey. These are the most frequent answers for six survey questions related to the discovery of an innovation.
(SOURCE: ARDEC)

tolerance to moderate failures became a priority.

What emerged from these efforts was a snapshot of ARDEC's climate for innovation and a comprehensive innovation support program that we named IDEA. In June 2009, we put in place a two-year pilot program and a DMAIC (define, measure, analyze, improve and control) process to optimize it. In July 2011, we proceeded to full deployment.

**HOW IT WORKS**
IDEA is a scalable, bidirectional (top-down and bottom-up) innovation management program designed to meet the needs of ARDEC innovators and managers. The bottom-up path starts with an inventor who has an idea that he or she believes has value for our warfighters. The inventor enters the idea into a secure database, where it is time-stamped and sent to a subject-matter expert for evaluation.

One of five specially trained IDEA team members called "innovation catalysts" then helps the inventor produce a proof-of-concept prototype if necessary, using dedicated micro-funding provided under DOD's Section 219 authority and one of four ARDEC innovation hubs: 3-D printing and fabrication; materials; simulations and gaming; and collaboration. (Section 219 of the National Defense Authorization Act for Fiscal Year 2009 enables the secretary of defense to grant funding authority to the director of a defense laboratory to use up to 3 percent of all available funds for certain purposes, including innovative basic and applied research.)

The next step for an IDEA initiative is for one of three senior-level managers, working on a part-time basis as an "innovation champion," to monitor its every step, ensuring that the idea is aligned with our strategic plans, Soldier needs, gaps and/or requirements. If so, the innovation champion may recommend the idea for additional funding or forward it to the ARDEC Invention Evaluation Committee (IEC) for potential patenting or other forms of intellectual property protection.

**FIGURE 3**

| Year | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Patent Awards | 23 | 38 | 30 | 31 | 41 |

**PATENTLY PRODUCTIVE**
Over the past five years, ARDEC received 153—22 percent—of the 691 patent awards issued to the Army, a higher percentage than at any time in ARDEC's recent history. While ARDEC does not require inventors to use the IDEA program or record their ideas in its database, 33 of the 36 patent applications that ARDEC filed in the past two quarters were based on ideas from the database. (SOURCE: ARDEC)

> **THE INNOVATION PIPELINE IS ROBUST, WITH ALMOST 300 IDEAS MAKING THEIR WAY THROUGH THE IDEA DEVELOPMENT PROCESS. WITHOUT THE IDEA PROGRAM, THOSE 300 IDEAS WOULD NOT BE RECORDED, DEVELOPED OR TRACKED UNLESS PART OF AN OFFICIAL PROJECT.**

The IDEA program minimizes financial risks by providing the inventor with the resources needed to further incubate his or her concept, before launching a more substantial project. Given that some of the ideas inevitably will fail, the ARDEC organization thus becomes more accustomed to accepting the moderate hazards associated with innovation.

One example of how the process works is the Wireless Universal Fire Control (WULF) concept that arose from one of our innovation hubs and, with assistance from the IDEA program, became a Section 219-funded Technology Exploration, Exploitation and Examination (TEX3) project. Once the TEX3 project report showed it to be feasible, WULF became an Army 6.2 applied research program. WULF is now being considered for insertion into a program of record under Program Executive Office (PEO) Ammunition's product manager for guided precision munitions and mortar systems.

On a different occasion, in November 2011, an ARDEC employee who had served in the U.S. Marine Corps contacted an innovation catalyst and asked, "Did you know that 15 percent of our Soldiers are left-handed … and all the Army's hand grenades are right-handed?" Then he produced sketches of his new ambidextrous grenade design, for which a patent is now pending. Such common-sense, practical innovation is the purpose of the IDEA program's bottom-up path.

The top-down path, by contrast, starts when one of ARDEC's senior managers, clients or government entities issues a "request for innovation." An IDEA manager formats the request for internal or external release and organizes collaborative workshops to address the problem. Participants include the problem owners, top ARDEC inventors and subject-matter experts. The search for solutions may be internal, external or a combination of both.

**PROMISING RESULTS**
Eventually, the success of the IDEA program will be measured by the number and quality of deployed systems it helped create. But for now, leading indicators such as patent counts and idea metrics are positive.

Over the past five years, ARDEC received 153 patent awards of the 691 total issued to the Army—representing 22 percent, a higher percentage than at any time in ARDEC's recent history. (See Figure 3.) Last year alone, ARDEC received 41 patents, or 24 percent of the Army total of 172 patents. Relative to our workforce, this translates into 14.6 patents per 1,000 employees per year.

ARDEC, in partnership with PEOs and other stakeholders, has also won 34 of 100 Army Greatest Invention Awards since the program's inception in 2002, and 10 out of 20 in the past two years.

The innovation pipeline is robust, with almost 300 ideas making their way through the IDEA development process. Without the IDEA program, those 300 ideas would not be recorded, developed or tracked unless part of an official project. The ARDEC workforce is now more aware that innovation is a dimension to consider in everything ARDEC does. While ARDEC does not require inventors to use the IDEA program or record their ideas in its database, 33 of the 36 patent applications that ARDEC filed in the past two quarters grew out of ideas from the database.

The degree of support that the IDEA program provides to patent initiatives varies widely, underscoring the program's role as a facilitator of innovation, not an "owner" of patents or development programs. For example, one of the main activities of the IDEA program is to conduct innovation training classes and ideation sessions. Their output often results in patents that require no further assistance from the program. That said, most of the patents filed today benefited from some degree of help from the IDEA program.

"The IDEA program provides enterprise-level processes and capabilities that lubricate the innovation engine that existed within the organization, with very promising emerging results," said Dr. Gerardo J. Meléndez, ARDEC director. "That is not surprising, as what I hear from the ARDEC workforce is that their basic motivators are the desire to support the warfighter and to innovate. The IDEA program provides an excellent venue to focus efforts that meet both motivators."

## LESSONS LEARNED

Along the way, the IDEA program overcame many obstacles. Innovation demands change, and change is rarely easy. But change happens, if incrementally, and a climate that favors innovation in the workplace helps to accelerate that change. Among the many lessons learned:

- The size of a program depends on available talent, not on the number of employees. Innovation programs must reflect the volume of ideas that a given enterprise is likely to generate. ARDEC, as well as many similar DOD facilities, is working closely with a wide array of partners in an intricate and balanced defense and aerospace ecosystem. Most of ARDEC's engineers occupy positions related to project monitoring and testing. Only a minority of our personnel are directly involved in state-of-the-art science: technology and engineering tasks, where 90 percent of all innovations develop. Their number determined the size of the IDEA program. Still, 10 percent of all ideas come from unexpected sources, and they need to be equally well serviced.
- Not all "best practices" are equally relevant. When it comes to innovation, the best practices of organizations structurally similar to ours were the most useful. In our case, ARDEC is a value-added complex systems integrator, similar to Raytheon Co. or Lockheed Martin Corp. Their research and development operations and policies parallel ARDEC's, so their approaches to innovation are of direct interest to us. We learned less from consumer product companies such as Google Inc., Apple Inc. or even 3M Co.
- All successful programs are fundamentally top-down. Although IDEA supports both top-down and bottom-up

innovation, even the bottom-up path depends heavily on top-level guidance. Inventors' ideas can be either random or targeted to a problem of interest; a well-run innovation program communicates clearly to all potential inventors where the problems are so that they can apply their talent to topics of interest to the enterprise.

## CONCLUSION

There are still people we need to reach and new resources we need to provide. The main goals for our next-generation IDEA 2.0 program, due to start deployment this fall, are to train a critical mass of ARDEC managers to become part-time innovation catalysts and to make available secure, open innovation resources and practices to all ARDEC employees.

The desired result is to enable more ARDEC innovators to effectively mitigate potential shortages of technologies critical to the Army. We are not at equilibrium yet!

*DR. ANDREI CERNASOV, associate director for innovation at ARDEC's Munitions Engineering and Technology Center, manages ARDEC's IDEA program. He holds a B.E.E. from the City College of New York and a Ph.D. in physics from the City University of New York. Cernasov holds 30 patents in high-technology areas.*

# REUSABLE
# METRICS

Standardized Measures of Performance Framework
enables consistent assessment of Army network capability

*by Mr. Michael Badger, Dr. Dennis Bushmitch, Mr. Rick Cozby and Mr. Brian Hobson*

The Army's adoption of the Agile Process to enable rapid technology insertion led the three agencies charged to execute this process—the U.S. Army Test and Evaluation Command (ATEC), the U.S. Army Training and Doctrine Command (TRADOC) Brigade Modernization Command (BMC) and the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT))—to organize as the TRIAD and develop the needed measurement framework.

The TRIAD intended that the measurement framework would establish consistent, reusable, traceable, standardized performance and effectiveness metrics across the Agile Process. More specifically, the TRIAD envisioned that this framework would preserve resources and reduce risk in planning and executing the culminating activity of the Agile Process, a Network Integration Evaluation (NIE).

The testing of complex networks and their capabilities can be time- and resource-intensive, with minimal potential to reuse the test event's capability. Testing without well-defined analytic objectives and repeatable measures of performance (MoPs) can waste time and money. Furthermore, without an Armywide objective standard for test and evaluation (T&E) metrics, the results will be less than compelling for senior decision-makers.

Different organizations supporting the Agile Process and NIE events often misinterpret, inappropriately apply or reinvent the current set of network-related MoPs for each application (e.g., a T&E event).

The complex system-of-systems (SoS) solutions that comprise the Army's network demand a measurement framework with traceable and credible measures, encompassing the interaction among various network layers; command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems; and the technical requirements that underpin them. Beginning with the FY12 NIE events, an enduring MoP Framework emerged as a potential solution standard, developed by ASA(ALT), ATEC, BMC, the federally funded research and development center MITRE Corp., and subject-matter experts (SMEs) from the Program Executive Office Command, Control and Communications – Tactical (PEO C3T).

## THE FRAMEWORK

The MoP Framework, which the TRIAD has used successfully and has matured during the planning and/or execution of five NIEs, achieves the following:

- Standardizes the terms of reference for each individual MoP and its application.

FIGURE 1

MISSION THREAD, IER, DATA TYPES
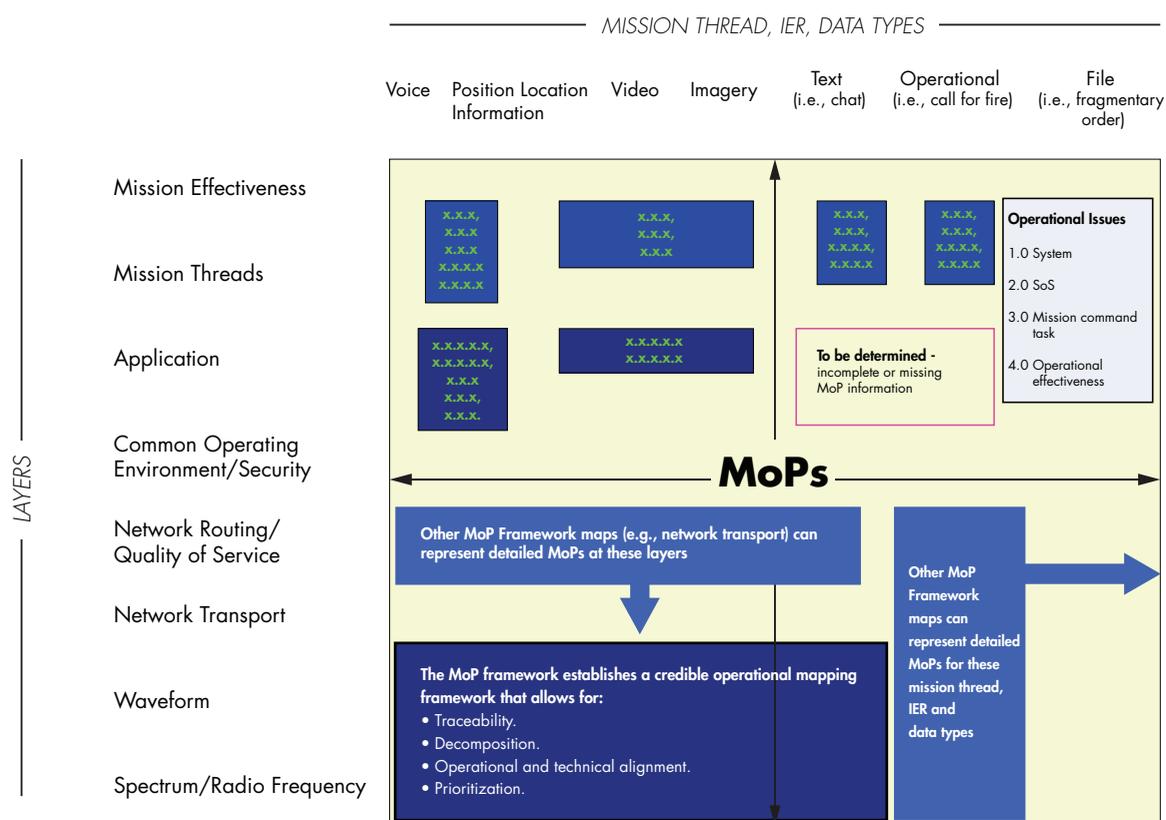
**FRAME OF REFERENCE**

This is a graphic representation of a map for an operational capability category and subcategory. The graphic also illustrates the inclusion and alignment of various reference attributes, such as layers, information exchange requirement (IER), data types and source MoPs. SMEs and organizations create and tailor different MoP maps for different operational capability subcategories, systems and/or SoSs within a subcategory. (See definitions in Figure 2 on Page 94) (SOURCE: Dr. Dennis Bushmitch, ASA(ALT) System of Systems Engineering and Integration Directorate (SoSE&I))

- Defines instrumentation considerations and practices in support of MoPs.
- Enables organizations using the MoPs to establish traceability to credible source documentation (operational and analytic requirements).
- Allows organizations to determine the gap(s) in MoP availability, application maturity and definition in a visual manner through the use of graphics.
- Allows organizations to re-prioritize the MoPs within each graphical representation according to analytic engineering or T&E requirements.
- Allows simple, graphical communication of T&E and analytic requirements among organizations from an operational perspective and at multiple levels (system, SoS, mission command tasks and operational effectiveness).
- Standardizes the units of measurement.
- Mitigates the errors in interpretation, instrumentation, and data collection, reduction and analysis approaches.

## METHODOLOGY

The key new concept introduced in the enduring MoP Framework is called a MoP map.

Figure 1 represents such a map for an operational capability category and subcategory. (See definitions in Figure 2 on Page 94) Figure 1 also illustrates the inclusion and alignment of various reference attributes, such as layers, data types and source MoPs. SMEs and organizations create and tailor different MoP

maps for different operational capability subcategories, systems and/or SoSs within a subcategory.

The vertical axis of the MoP map relates top-level mission effectiveness MoPs to lower-level waveform, spectrum and radio frequency (RF) MoPs. The horizontal axis relates operational mission threads, applications, information exchanges and data types within a given system or SoS operational capability category. The attributes along this horizontal axis allow for MoP alignment to a variety of mission threads (i.e., call for fire); applications and information exchanges (i.e., message type); and data types (i.e., voice and video).

The MoP Framework employs several reference attributes to support the standardization and traceability of requirements. These attributes, as Figure 2 shows, correlate to credible operational capability categories and subcategories, align to layers of user application, are traceable to data types, and feature a source reference set of credible and established metrics. The MoP map accomplishes the following functionality:

- Aligns MoPs to operational capability categories and subcategories, enabling credible application to operational systems.
- Maps MoPs to user application layers, allowing flexibility.
- Enables traceability of MoPs to application data types, enabling their reusability and completeness across operational capabilities.
- Aligns credible, applicable and reusable metrics, increasing efficiency across a user community from multiple organizations:
  - Establishes relationships among different MoP maps by cross-referencing graphical tools.
  - Provides a powerful graphical

## FIGURE 2



| CAPABILITY CATEGORY | SYSTEMS (Operational Subcategory) | NUMERIC TRACEABILITY SCHEMA |
|---|---|---|
| **ROBUST NETWORK TRANSPORT CAPABILITY** | Tactical radios | 1 |
| | Tactical routers | 2 |
| | JIIM cross-domain solutions | 3 |
| | Tactical CDS | 4 |
| | Line-of-sight (LOS) and beyond LOS communications | 5 |
| | Aerial/celestial network extension assets | 6 |
| | Radio networking crossbanding | 7 |
| | Co-site mitigation | 8 |
| | Enterprise network | 9 |
| **EXECUTE TACTICAL NETWORK OPERATIONS** | Network loading and Initialization tools | 10 |
| | Tactical Internet monitoring tool | |
| | Tactical radio planning application tools | |
| | Asset management tools | |
| | Common services and applications management | |
| **DISMOUNTED AND INTEGRATED PLATFORM COMMAND-AND-CONTROL AND SITUATIONAL AWARENESS** | Handheld (HH) end-user devices | 11 |
| | HH applications | 12 |
| | Global Positioning System technologies | 13 |
| | Integrated manned platforms | 14 |
| | Unmanned systems | 15 |
| | Unattended sensors | 16 |
| **MISSION COMMAND (MC)** | **MC systems (hardware)** | 17 |
| | MC display | 17a |
| | MC server | 17b |
| | MC tools | 17c |
| | **MC applications** | 18 |
| | MC applications: Command Post of the Future | 18a |
| | MC applications: Advanced Artillery Tactical Data System | 18b |
| | MC applications: Global Command and Control System-Army | 18c |
| | MC applications: Distributed Common Ground System-Army | 18d |
| | MC applications: telemedicine | 18e |
| | **Computing Environment (CE)** | 19 |
| | Command post CE | 19a |
| | Geospatial tools | 19a1 |
| | Collaboration tools | 19a2 |
| | Data center cloud CE | 19b |
| | Sensor CE | 19c |
| **TRAINING SUPPORT** | Platform-embedded training tools | 26 |
| | MC commander and staff training tools | 27 |
| | Mission rehearsal tools | 28 |

**LAYERS OF CAPABILITY**
The MoP Framework employs several reference attributes to support the standardization and traceability of requirements. These reference attributes correlate to credible operational capability categories and subcategories, align to layers of user application, are traceable to data types, and feature a source reference set of credible and established metrics. This graphic also depicts a unique numbering schema for each subcategory to preserve originality and allow for traceability. (SOURCE: Mr. Brian Hobson, ASA(ALT) SoSE&I)

representation tool for traceability to the parent operational requirement and MoP.

- Provides a simple reference scheme for easy identification and traceability of MoP types, the MoP system layer and the operational capability type.

• Establishes and standardizes definitions and units of measurement.

## CAPABILITY CATEGORIZATION

The MoP Framework developers identified, developed and defined a set of operational capability areas that encompass the potential system—Capability Set (CS), System Under Test, System Under Evaluation and network capabilities envisioned as part of the Agile Process. Figure 2 defines these operational capability areas and categorization, and depicts a unique numbering schema for each subcategory to preserve originality and allow for traceability.

The intent of these defined operational capability categories is to align operational gaps with projected needs and requirements into operational capability categories, and to establish, define and employ consistent, credible and reusable metrics. These metrics, in turn, inform and characterize the performance and effectiveness of operational capability to satisfy defined requirements. Because these metrics have different attributes that they must align to and support, the MoP maps were developed with three different attribute alignment considerations: network layers, data types and MoP sources, as follows:

**Network layers—**Layering is an accepted approach to focusing and constraining the complexity in technical network analysis. The complete set of MoP Framework layers include: mission effectiveness;
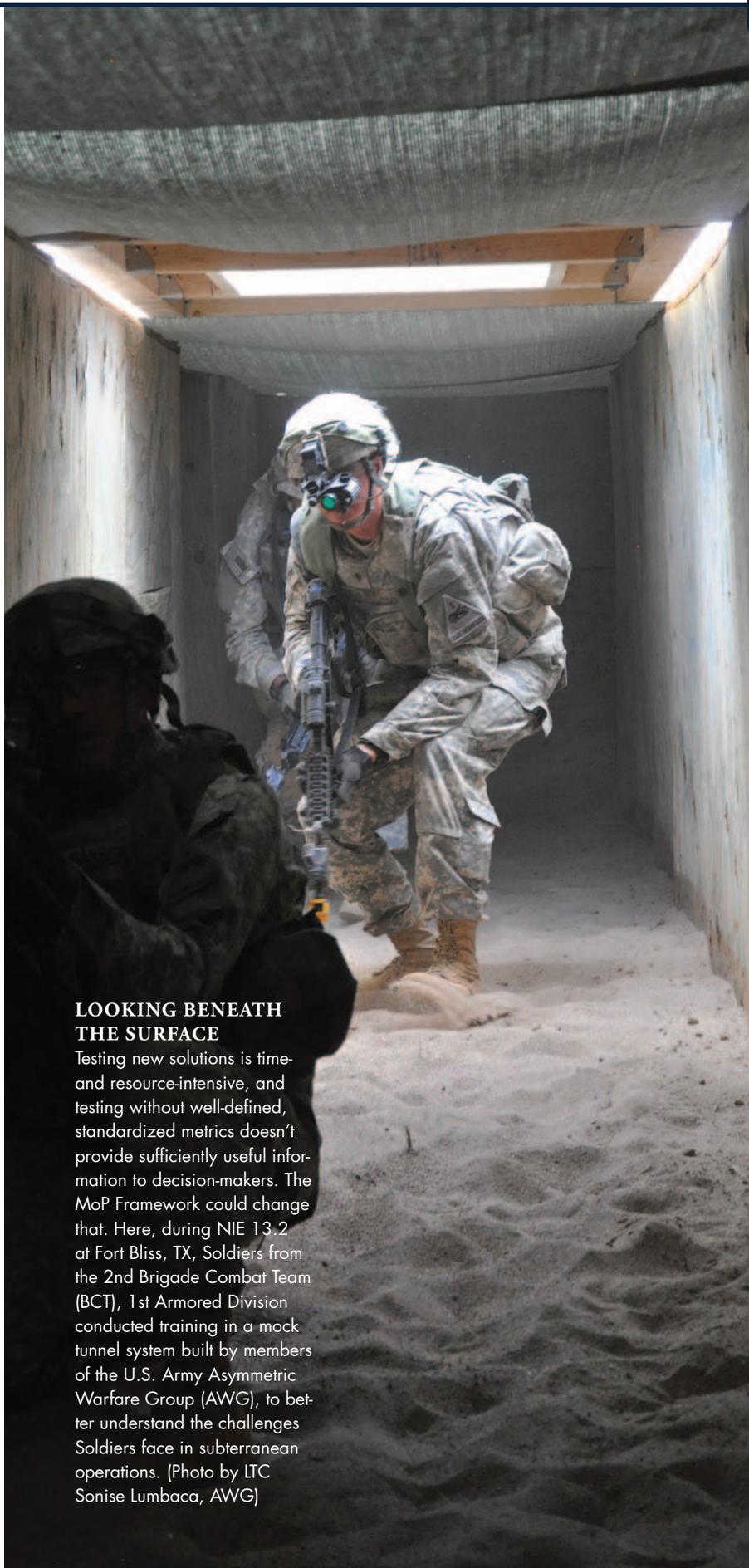
**LOOKING BENEATH THE SURFACE**
Testing new solutions is time- and resource-intensive, and testing without well-defined, standardized metrics doesn't provide sufficiently useful information to decision-makers. The MoP Framework could change that. Here, during NIE 13.2 at Fort Bliss, TX, Soldiers from the 2nd Brigade Combat Team (BCT), 1st Armored Division conducted training in a mock tunnel system built by members of the U.S. Army Asymmetric Warfare Group (AWG), to better understand the challenges Soldiers face in subterranean operations. (Photo by LTC Sonise Lumbaca, AWG)

**FIGURE 3**



**Operational Issues**

SYSTEM PERFORMANCE(S) | SYSTEM-OF-SYSTEMS OPERATION | MC TASK PERFORMANCE | OPERATIONAL EFFECTIVENESS

Categorical EEAs

| Functionality | Reach | Commander/leader tasks | Mission success |
| Component performance | Capacity | Staff tasks | Force effectiveness |
| SWAP-C | Agility | | Formation effectiveness |
| | Quality of information | | |

**MOP HIERARCHY**

In developing the MoP Framework and the individual MoP maps, the analytic community, led by TRADOC, developed a hierarchy to categorize essential elements of analysis (EEAs) against operational issues for analysis planning. The operational capability and systems categories and the MoPs defined in this standardized framework are aligned against this hierarchy. MoPs maintain mapping to this hierarchy to facilitate relevant and credible analysis planning. (SOURCE: Chris Morey, TRADOC Analysis Center)

> **THE TESTING OF COMPLEX NETWORKS AND THEIR CAPABILITIES CAN BE TIME- AND RESOURCE-INTENSIVE, WITH MINIMAL POTENTIAL TO REUSE THE TEST EVENT'S CAPABILITY.**

mission threads; application; Common Operating Environment (COE)/security; network routing/quality of service; network transport; waveform; and spectrum/RF. The vertical axis of "layering" in the MoP Framework in Figure 1 has evolved and matured through application to include high-fidelity measurement needs at the bottom of the axis (i.e., spectrum, RF and waveform), transitioning to lower-fidelity measurement needs at the top of the axis (i.e., mission effectiveness and mission threads).

**Data types**—As depicted in the generic MoP Framework, several data types within each operational capability subcategory could apply to different MoPs. The horizontal axis in Figure 1 relates the various operational mission threads, applications, information exchanges and data types toward one another within a given system or SoS category. The traceability of MoPs within data types between different operational capability subcategories allows analysts to cross-reference MoP maps.

**Measures of performance sources**—In developing the MoP Framework and the individual MoP maps, the TRIAD leveraged a body of work led by the TRADOC Analysis Center to identify a framework for Agile Process analytic requirements. (See Figure 3.) This analytic framework established a hierarchy of operational issues and essential elements of analysis, allowing for a credible and traceable source of MoPs.

**FRAMEWORK APPLICATION**

Figure 4 shows the application of the MoP Framework methodology to the Mission Command (MC) Display Hardware operational capability subcategory.

As depicted in Figure 5, the performance MoPs are predominantly in the area of
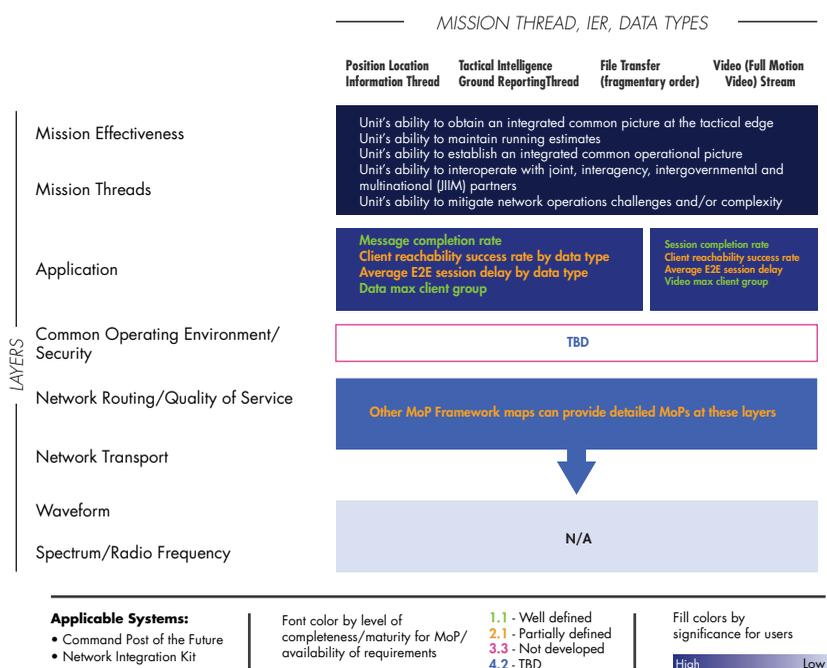
SoS operational issues. Figure 5 also depicts the evolving and maturing capability of the MoP Framework maps, as the MoPs for the COE/security layer have yet to be developed and coordinated.

Each MoP has a unique number. This numbering schema allows analysts and evaluators to leverage the MoP Framework for MC Display Hardware and import the information to event- or system-specific data source matrices, while still maintaining the traceability and origin of these MoPs.

## CONCLUSION

By identifying and aligning MoPs for each operational capability subcategory, the MoP Framework provides credible and traceable metrics for analysts that are reusable across Agile Process activities and between organizations in support of a particular application (i.e., event). This reusability is based on repeated application of operational capability and the repeated need to measure operational performance and utility.

The standardization of a MoP Framework Armywide will promote cost avoidance by reducing the re-creation of testing objectives and streamlining instrumentation planning. The implementation of a unified MoP Framework will also give greater validity to the operational relevance of testing. Analytic requirements exchanged between organizations using this standardized construct provide for clear cost-evaluation guidelines, prioritization and traceable evaluation.

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## FIGURE 4



**FRAMEWORK**
This graphic illustrates the application of the MoP Framework methodology to the MC Display Hardware operational capability subcategory, moving hierarchically through mission threads, IERs and data types. (SOURCE: MR. Brian Hobson, ASA(ALT) SoSE&I)

## FIGURE 5



**PERFORMANCE MOPS**
Performance MoPs are predominantly in the area of SoS operational issues. Each MoP has a unique number. This numbering schema allows analysts and evaluators to leverage the MoP Framework for MC Display Hardware and import the information to event- or system-specific data source matrices, while still maintaining the traceability and origin of these MoPs.
(SOURCE: Mr. Brian Hobson, ASA(ALT) SoSE&I)

**SUPPORTING THE AGILE PROCESS**
An NIE is the culminating activity of the Agile Process. Here, SPC Rockne Foster, right, a multichannel transmission systems operator-maintainer assigned to 1st Battalion, 77th Armored Regiment, 4th Brigade Combat Team (BCT), 1st Armored Division, inspects the outside of a billeting shelter of the expeditionary combat outpost (ExCOP) May 20 before disassembling it. Soldiers spent three weeks evaluating the durability and energy efficiencies of the ExCOP at White Sands Missile Range, NM, during NIE 13.2. (Photo by SGT Janelle Dean, 16th Mobile Public Affairs Detachment)

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# PD C4ISR AND NETWORK MODERNIZATION:
# CONNECTED GROUND TRUTH

**PD Command, Control, Communications, Computers, Surveillance and Reconnaissance (C4ISR) & Network Modernization**—a research and development (R&D) program—is a key component in U.S. Army Communications-Electronics Research, Development and Engineering Center's (CERDEC's) support to agile acquisition.

PD C4ISR & Network Modernization, Aberdeen Proving Ground (APG), MD, provides the field component for CERDEC's federated laboratories.

Designed for testing and solution proving in a realistic field environment, PD C4ISR & Network Modernization focuses on the future network, near-term and several years out, providing the Army with a relevant venue to assess next-generation technologies and to facilitate technology maturation and transition.

# EXTEND THE LAB TO THE FIELD

- Employ facilities at Joint Base McGuire-Dix-Lakehurst (JB MDL), NJ, that include instrumented field ranges in varied, complex terrain; few electromagnetic-spectrum-operating limitations; commercially restricted airspace; a fleet of instrumented, reconfigurable vehicular platforms; and a full-service maintenance facility.

- Collaborate in a non-attribution, problem-solving environment where government, industry and academia can integrate technologies without the distractions of proprietary positioning.

- Leverage subject-matter experts with extensive experience in network design and integration, program-of-record waveforms and software, and execution of large-scale, system-of-systems integrated capability events.

- Extract performance measurements in real time, using a state-of-the-art instrumentation, data collection and reduction tool suite in conjunction with the U.S. Army Test and Evaluation Command.

- Augment live systems with virtual and constructive modeling and simulation, while connecting to high-performance computing resource centers/labs across the Team C4ISR Center of Excellence and other Army, joint, industry and academic facilities, to demonstrate scalability and provide confidence in overall system performance.

- Assess second- and third-order effects of plugging a technology into the network prior to fielding. Find out what doesn't work and fix it—whether that's back at your lab or here with us.

**Articulating the operational "so what" of your technology early in the process will not only save time and money, but it will also result in a technology tailored to support Army requirements. Come to us for connected ground truth.**

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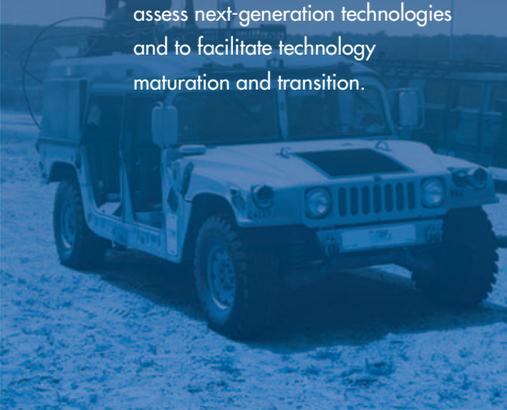
# *VITAL SIGNS,*
# VIRTUALLY

Conducting reviews electronically
saves operational dollars while providing
a clear picture of contracting risks

*by Mr. Randall Hamilton*

**W**hen sequestration hit earlier this year, Procurement Management Review (PMR) Program curtailments were common items on most heads of contracting activities' (HCAs') recommendations to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)).

BG Theodore C. "Ted" Harrison, commanding general, U.S. Army Expeditionary Contracting Command (ECC), was not willing to sacrifice his PMR Program. That left Daniel Gallagher, director of ECC Contracting Operations, with only a few options. With three contracting support brigades (CSBs) scheduled for PMRs in FY13, the command faced a choice. It could postpone one or two of the review trips and reduce the budget accordingly. Or it could reduce the length of the visit or size of the teams. Instead, Gallagher came up with a more innovative course of action, a virtual PMR that would rely on a newly implemented automation tool—the paperless contract file (PCF).

**CROSSING THE DISTANCE**
Members of the ECC's PMR contract review team gather in Huntsville, AL, July 30 for the virtual PMR of the 410th Contracting Support Brigade, Joint Base San Antonio – Fort Sam Houston, TX. Clockwise from left, MAJ Thomas Goerling, Gary Bliss, Connie Jones, Joy Lloyd, Mike Sutton and Shea Richardson review contracts and supporting documents gathered through the Virtual Contracting Enterprise Portal. The three virtual PMRs conducted in FY13 saved the command $270,000. (U.S. Army photo by Larry D. McCaskill, ACC)

**PREPPING FOR SHOWTIME**
Stan Evans, ACC video teleconference coordinator, and Kim Green, operations specialist, ACC Operations Group, prepare for the Commander's Update Brief video teleconference on March 5. (U.S. Army photo by Edward G. Worley, ACC)

Oversight is a responsibility shared at all levels, with HCAs conducting PMRs of each of their principal assistants responsible for contracting (PARCs). In turn, each of the PARCs conducts contracting management reviews on their subordinate contracting centers and offices. The ECC looks at each PARC once every two years. In the past, the command fielded teams that traveled to contracting office locations to perform extensive reviews and assessments of contract files and processes. Each visit took 10 business days.

PMRs are vital to inspecting and reporting the overall health, efficiency and effectiveness of Army contracting programs. Procurement authority rests with the secretary of the Army, and Appendix CC of the Army Federal Acquisition Regulations Supplement charges the ASA(ALT) with exercising that authority. The deputy assistant secretary of the Army for procurement (DASA(P)) is responsible for the PMR program, but the various HCAs execute the program.

In coming up with the virtual solution, Gallagher reasoned that electronic access to the complete contract files, coupled with real-time video teleconference interviews with key players, could give the team a clear enough picture of each CSB to assess the overall risk. He saw an opportunity for a virtual PMR environment and to grow the capability across the U.S. Army Contracting Command (ACC) workforce by forming his PMR teams with members from across the globe.

The virtual process is no match for an on-location PMR. It doesn't provide the immersive experience of being on-site, nor can it ever give team members an appreciation of their colleagues' environment and working conditions. Still, the command is confident that the virtual review can provide an accurate assessment of the risk factors that the PARC is managing.

## FOCUSING ON RISK

PMR teams consist of procurement experts with experience in every aspect of contracting. A complete PMR provides a detailed report that provides the CSB commander with a picture of every working segment of the organization.

To keep the program from becoming a check-the-box procedure, ASA(ALT) provides annual guidance on special areas of interest, and each HCA develops its own list from observations made throughout the year. As different as the specifics are, there are no surprises. Each memorandum notifying the parties of an upcoming PMR details the categories to be assessed and includes a specific list of contracting actions that need to be available for review.

Currently the ECC PMR teams are looking at:

- Management control process.
- Workforce capabilities and trends.
- Contract execution.
- Competition.
- Post-award phase.
- Government purchasing card.
- Contingency contracting.
- Private security.
- Contracting officer's representative/quality assurance program.
- PARC oversight and compliance.

ECC maintains a core team to coordinate and conduct reviews, with volunteer augmentees drawn from the Army contracting community.

## TEAM BUILDING

The teams pull together volunteers from ECC, ACC and DASA(P), each one vetted and approved by his or her command. Teams normally align their work hours to those of the PARC under review. In the case of the 411th CSB in Korea, that meant being available to work with the CSB's contracting personnel during their duty hours, with a 14-hour time difference.

At the end of each day during the PMR, the team conducts a hot wash with the CSB command group to discuss the findings. Each CSB has adapted operations over time to its own unique theater of operations, and these virtual discussions help the team keep its findings in perspective, as well as giving the commander some assurance that the final out-brief won't contain any surprises.

## FINDINGS AND OBSERVATIONS

When team members note something significant, they have to consider just how significant it is and how it ties to a statute or a regulation. The team discusses each of its potential recommendations until it reaches consensus. Serious issues become findings, in one of three categories:

- Critical—Any finding that results, or could result, in widespread impact.
- Major—Any finding that could have significant impact.
- Minor—Any finding of something that is procedurally incorrect but has only modest impact.

If the observation is not serious enough to be categorized as a finding but is still serious enough to merit command attention, the team calls it exactly what it is, an observation. The key difference is that findings require recommendations, whereas observations don't. The findings and accompanying recommendations go into a spreadsheet grouped by review category. The spreadsheet also includes observations, but again with a key difference: The CSB must address findings, but not observations, in its corrective action plan (CAP). It is this flow that inspired

**ELECTRONIC REVIEW**
Connie Jones of ACC's Office of Small Business Programs reviews contracting files and regulations at Redstone Arsenal, AL, July 30 during a virtual PMR of the 411th Contracting Support Brigade in Yongsan, Korea. Because Yongsan is 14 hours ahead of Huntsville, the review team aligned its work schedule to that of the 411th CSB's contracting personnel. (U.S. Army photo by Larry D. McCaskill, ACC)

IN THE PAST, THE COMMAND FIELDED TEAMS THAT TRAVELED TO CONTRACTING OFFICE LOCATIONS TO PERFORM EXTENSIVE REVIEWS AND ASSESSMENTS OF CONTRACT FILES AND PROCESSES. EACH VISIT TOOK 10 BUSINESS DAYS.

one of the ECC's several PMR innovations—an automated tracking CAP.

In the past, the CSB command reviewed findings for concurrence or nonconcurrence, and then considered the recommendations for applicability. Each of these was the subject of a narrative response staffed through the command, signed and submitted to the DASA(P) with a CAP. The DASA(P) then considered the command's response and accepted it with or without additional comments, whereupon the report became a matter of record and the starting point for the next PMR.

The entire process took months; by the time the cycle was complete in an environment outside the United States, most of the key players had rotated out. With the virtual PMR, ECC reduced the follow-up process to a few weeks by combining the findings, recommendations, comments and the PARC corrective actions into one document that incorporated both narrative and logical data points that could be tracked. It worked well for both PMR team members and the PARC staff, who could email the newly created PMR report and CAP back and forth, updating and querying easily.

Because the process is all about managing risk, it is only natural that the summary of findings would take the form of a risk assessment for each of the categories of the PMR, as follows:

- Low risk—In normal operations, the organization risks receiving only minor criticism or experiencing only slightly adverse impact to contracting operations or customer mission requirements.
- Medium risk—The organization risks moderate criticism or moderately adverse impact to contracting operations or customer mission requirements. Recommendations will be addressed and medium risks mitigated within six months of receiving the PMR report, unless the ECC commander has approved a waiver or extension.
- High risk—The organization risks severe criticism or may suffer serious adverse impact to contracting operations or customer mission requirements. Recommendations will be addressed and high risks mitigated immediately, unless the ECC commander has approved a waiver or extension.

The CAP tracking spreadsheet gives the HCA a snapshot at any given time of the progress the CSB is making in lowering the risk category assigned at the time of the PMR. ECC has taken the process a step further and made CAP progress one of the quarterly reported metrics.

## CONCLUSION

In the end, by using the virtual model, ECC was able to save the $270,000 budgeted for the three PMRs. This was possible because the ACC earlier developed and pushed for the implementation of PCF. Now ACC is building on this progress by refining the capabilities of the Virtual Contracting Enterprise.

If the fiscal picture improves next year, the command hopes to maximize the use of its automation tools and reduce the size of the on-site team. Another option would be to conduct the virtual process first, then use the results to focus a smaller team for a better look at specific gaps in high-risk processes.

The success of the virtual PMR is yet another example of how an overarching contracting command structure continues to pay dividends for the U.S. Army.

*For more information, contact Daniel Gallagher, director of ECC Contracting Operations, at* **daniel.j.gallagher.civ@ mail.mil**.

---

*MR. RANDALL HAMILTON is chief of the Management Assessment Division in Contracting Operations at ECC, Redstone Arsenal, AL. He holds a B.S. in general studies from the University of Kentucky, and a master's of international management and an MBA from Schiller International University. Hamilton is Level III certified in contracting and Level I certified in program management. He is a member of the U.S. Army Acquisition Corps.*

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## BILL OF GOODS

The government is not required to spend funds on any goods or services procured by unauthorized personnel. Someone obligating the government without the proper authority may end up picking up the tab. Here, SGT Michael Bauder, equipment movement and control noncommissioned officer for Task Force Central, checks recently arrived storage containers with his paperwork at the Cameroon Air Force Base, Feb. 16, 2013, in Douala, Cameroon, Africa. Bauder was among U.S. service members in Task Force Central preparing for the start of Central Accord 13, a combined-joint aerial resupply exercise and medical resupply and evacuation exercise with Cameroonian, American forces, and observers from neighboring African countries. (Photo by SSG Amy Wieser Willson, North Dakota Army National Guard)

# YOU COULD
# LOSE YOUR
# SHIRT

Understanding who has the authority to spend taxpayers' dollars, and when, is critical to your financial well-being

*by MAJ Kelli A. Hooke and Mr. Kevin Love*

Only a select few people have the authority to obligate money on behalf of the U.S. government. If, not understanding the rules, you obligate the U.S. government without that authority, you may instead be obligating yourself as a party to the contract.

The government is not required to spend funds on any goods or services procured by unauthorized personnel. Unfortunately, such purchases do occur. Thus there are procedures to handle those situations.

Nonetheless, to avoid serious financial liability, everyone needs to understand who has the authority to commit the government to purchases or contracts, and when.

Here are the rules regarding the obligation of taxpayer funds on behalf of the government.

## UNDERSTANDING THE BASICS

Federal laws and regulations are very clear: Only a contracting officer (KO) can purchase goods or services or contract for them on behalf of the government. Without a warrant as a contracting officer, issued by an authorized government official, you cannot commit the government. If you do, you are in effect establishing a personal commitment and possibly personal financial liability for the action.

Congress has given authority to specific individuals, referred to as heads of contracting activities (HCAs), to obligate taxpayer dollars in commercial transactions and all contracting matters. HCAs are usually general officers or Senior Executive Service (SES) employees.

The HCA delegates authority down to principal assistants responsible for contracting (PARCs) and,

**PROPER PROCEDURES**
MAJ Richard C. Garrison and Maria Finan, senior contracting officials with the 409th CSB, Kaiser-slautern, Germany, conduct oversight and assessment of simulated regional contracting centers as part of the Joint Contracting Readiness Exercise at Fort Bliss, TX, Jan. 14 to Feb. 1. (Photo by Larry D. McCaskill, U.S. Army Contracting Command)

through the use of warrants, to KOs. PARCs are generally in command or direct a brigade-size element, while KOs work at various levels procuring a host of goods and services for DOD. These individuals execute the procurement of most goods and services that DOD purchases.

Their specific authority strictly defines the ability of people in these positions to use taxpayer dollars. Each level of authority carries with it discretion to make procurement decisions based on the dollar value and type of contract.

To help manage the multitude of contracts across DOD, HCAs or their designees within units that receive the procured good or service appoint contracting officer's representatives (CORs). A COR has no authority to bind the government, but instead is the eyes and ears for the KO who is managing the contract. The COR performs specific technical or administrative functions relating to the contract. Importantly, typical COR designations do not authorize them to take any action, such as modification of the contract, that obligates the payment of money.

In addition to these acquisition personnel, a government purchase card (GPC) holder has the authority to make purchases for the government, but only within the confines of the card limit and the Army regulation outlining GPC operating procedures (online at **http://www.usamraa. army.mil/pages/pdf/Army_GPC.pdf**). A GPC holder uses the card to purchase a large variety of items in order to support his or her unit's mission—items that are not recurring expenses and cannot be procured efficiently using the normal supply system.

## WHEN THINGS GO WRONG

But purchase procedures sometimes go wrong. As noted above, the government is required to honor only contracts created by people acting within the scope of their authority to enter into them. A person who obligates the government but in fact did not have the authority to do so has only obligated himself or herself as a party to the contract.

The government is not required to spend funds on any goods or services procured by unauthorized personnel. For example, a member of a unit may order X widgets and receive delivery from a commercial source, along with an invoice or bill for the cost of the widgets. However, if the

**SPEAKING WITH AUTHORITY**
SFC Rachel Y. Harris, center, and SFC Charles T. Sykes, right, contracting specialists with the 413th CSB out of Wheeler Army Airfield, HI, and SFC Roberto Razon, a supply sergeant with the Hawaii National Guard's 298th Regiment, Multi-Functional Training Unit, Regional Training Institute, talk with dining facility staff at Pasir Laba Camp, Singapore, during Tiger Balm, a bilateral exercise. (Photo by SPC Tyler Meister, 117th Mobile Public Affairs Detachment (Hawaii))

individual was not a KO or a GPC holder and thus did not have authority to bind the government to pay for the widgets, such a transaction is considered an unauthorized commitment (UAC).

That said, there is a mechanism for making good on a UAC. Let's say that the KO's unit did in fact need those widgets and that, had the proper procedures been followed, the KO would have entered into a contract for X widgets. That KO then can ratify the UAC, in part or in whole, under particular circumstances. The following conditions must be met:

- The government has received and accepted supplies or services, or the government has obtained or will obtain a benefit from the UAC.

- At the time the UAC occurred, the ratifying official could have entered into, or could have granted authority to another person to enter into, a contractual commitment that the official has authority to exercise.
- The resulting contract would have been proper if made by an appropriate contracting officer.
- The price is fair and reasonable.
- The KO recommends payment and legal counsel concurs, unless agency procedures expressly do not require such concurrence.
- Funds are available and were available when the unauthorized commitment occurred.
- Ratification is within limitations prescribed by the agency.

The ratification process is long and drawn-out, requiring the unit to complete a multipage "Request for Ratification of Unauthorized Commitment." The local contracting authority provides the contents of this form and must thoroughly explain who made the UAC and why, what corrective action was taken such as disciplining the individual, and the signature of the first general officer or SES employee in the chain of command.

If the contents of the form or the facts of the situation do not comply with the above rules, the UAC cannot be ratified. Even if the contents of the form do comply, the KO is not required to ratify the UAC, and the individual who acted without authority could remain personally liable for the expense. In practice, the

**GETTING THE WORD OUT**
MAJ Kelli A. Hooke, then deputy chief counsel, 409th CSB, talks to U.S. Army chaplains in Kaiserslautern, Germany, about how to avoid unauthorized commitments in contracting. (Photo by Rachel Clark, 409th CSB)

KO usually does ratify the UAC if the form complies with the rules.

There are legal ramifications for someone who makes a UAC for the government. At worst, he or she has obligated himself or herself for the cost of the contract and may be forced to pay for the widgets. At best, the unauthorized buyer needs retraining and could be subject to administrative disciplinary action. In addition, the GO or SES in the command knows that that person overstepped his or her bounds of authority.

### CONCLUSION

If you do not hold the title of KO or trained GPC holder, you do not have authority to bind the government in contracts for goods or services. If you need a good or service, your local contracting activity will be happy to conduct procurements to support your mission.

*For more information, see the 409th Contracting Support Brigade's (CSB's) "Unauthorized Commitments and Ratification Process Guide" at* **http://www.409csb. army.mil/Library/PP-Checklists/ Enc1UCGuide.pdf***.*

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# parallel equations

The Army has a lot of stuff to move.
Amazon moves a lot of stuff.

*N*early everyone knows who Amazon founder Jeff Bezos is. Less well known is the other Jeff—Jeffrey A. Wilke, senior vice president of the consumer business at Amazon.com Inc. Having joined Amazon in 1999, Wilke has been in a leadership position at the company from the time it was a small startup to the present day, when it is the top U.S. company in e-commerce and one of the world's largest retailers, with more than $60 billion in sales per year. But Amazon also provides a host of online services, including Web hosting, cloud storage, and music and video streaming.

*Wilke's background in chemical engineering—with a bachelor's in the subject from Princeton University and a master's in chemical engineering as well as an MBA from the Massachusetts Institute of Technology—might not seem the most natural fit for consumer retail, but then Amazon is not your ordinary retailer. Indeed, Wilke started his career writing software at what is now Accenture PLC, but came to Amazon from AlliedSignal (now Honeywell International Inc.), where he was vice president and general manager for pharmaceutical fine chemicals. He had spent the previous five years in operations and management in the chemical, polymer and electronics industries.*

*The thing about Amazon that stands out the most, of course, is that it moves a lot of materials, from books, kitchen appliances, consumer electronics and (no kidding) a do-it-yourself casket kit, to the data it manages through Amazon Web Services (AWS). The U.S. Army is an AWS customer, along with some 300-plus government agencies. But that's not why Army AL&T magazine contacted Wilke for an interview. We wanted to tap his logistical mind on the subject of retrograde.*

**SHIPPING ORDERS**
"Everything we do, we start with a customer, and we work backward from there," says Wilke. That means that Amazon continually analyzes and fine-tunes every step of the process of fulfilling customer orders, particularly during high-volume periods such as the holiday season. (Photo courtesy of Amazon)

**BOTTLENECKED**

Backups are a logistical problem common to both the Army and Amazon. Here, traffic moves slowly through Torkham Gate, which lies on the border between Afghanistan and Pakistan, on Dec. 20, 2012. (U.S. Army photo by SGT Jon Heinrich, 1st Brigade Combat Team, 101st Airborne Division (Air Assault) Public Affairs)

*More than 750,000 major end items, worth more than $36 billion, are currently in Afghanistan, according to DOD estimates. Some two-thirds of those items are in Army hands. Dealing with these items is expected to cost close to $5.7 billion and will require intricate planning, teamwork, creativity and innovation.*

*Army AL&T wanted to know how one of the greatest movers of stuff in the world does it, and Wilke did not disappoint. In an Aug. 7 interview with Army AL&T, he offered insights on planning, modeling and management of logistics that reflect both his chemical engineering and his business training. As it turns out, sometimes the solution to a problem in one area of expertise is entirely applicable to another.*

**Q.** You're said to be a logistics whiz, and Amazon has an enormous logistics operation spanning the globe. The military in general, and the Army in particular, have a massive retrograde underway. If suddenly that were your job, how would you approach it, both logistically and organizationally, to make the task more manageable?

**A.** This seems from the outside to be a gargantuan task. As a citizen, I'm so proud and amazed that our military will complete this mission. If presented this challenge, I suspect my approach would go something like this. Step 1: Be humbled. Whatever my teams have achieved in the past does not secure our future. Only great planning and execution of this mission matters.

I'd start by ensuring we have the right leaders in place: Do we have great field leaders who know how to make adjustments to a good plan in the moments when local judgment counts? Do we

have the best analytical minds, utilizing the most current modeling techniques and machine intelligence to build a robust plan?

Do we have as my direct reports the very best leaders for each critical function? Once I'm confident we have the right leaders in place, I'd want our senior team to understand the situation as completely as possible. What is the definition of "mission complete"? What dates are immovable? Where do we have flexibility? What budget for talent and money is available?

There are many ways to build shared understanding of the situation among the senior team. I've found scenario analysis, including inspecting the inputs and outputs of a detailed model, to be among the most effective. My brain would first model the retrograde as a classic transportation problem, where we have source nodes (places where we have assets to move) and sink nodes (places where we want the assets to be, including destroyed.) Arcs connecting the nodes have characteristic flow times and

capacities. Built the incomplete way, this model would assume that all values characterizing the system were deterministic or without randomness. But such plans are almost always too brittle. One might say, "Let's build a plan that assumes every day, every moment will operate at the expected value of each of the inputs." Unfortunately, things don't operate at the expected value. They operate with a distribution of outcomes.

> *VERY SIMPLY, WE THINK THAT THINKING SMALL IS A SELF-FULFILLING PROPHECY. SO WE ASK PEOPLE TO ENVISION BOLDER DIRECTIONS BECAUSE THEY'LL LEAD TO BOLD RESULTS, AND IT ALSO INSPIRES THE TEAM TO THINK DIFFERENTLY.*

I'd like to see plans that assume we are operating a stochastic system—one with variation. The best way to think about this is that there are a number of scenarios that represent the possible actual outcomes of something that is as complicated as the retrograde that the military's planning.

There will, of course, be a range of inputs, the things that happen every day that are part of the plan. There will be a range of possible performance each day in those inputs. And that leads to a range of outputs that are almost guaranteed to not be the average values that you would predict upfront. Of course, we should audit the model outcomes for reasonableness, which helps us learn together. Planning for variation usually produces a deeper understanding of how the team should react if the actual mission goes awry.

Stochastic models help uncover potential bottlenecks. (Bottlenecks are choke points that determine the overall throughput of the system.) I believe you have a good operational plan when you decide where you want the bottlenecks to be. Surprise bottlenecks indicate poor planning. As my team examines the model inputs and outputs, I would direct us to decide where we will accept constraints (or capacity limits).

As planning progresses, I would pay particular attention to the resources and leadership assigned to each bottleneck. Our team would ask: Where do we have the most flexibility in the overall plan? Where do we have the least flexibility and the fewest options for recovery? We'd perform "what if" scenarios: What if we lose transportation capacity? What if a particular load area comes under bad weather? What if we have political interference in a particular country? And then what you do when you play those what-ifs is, you look at the outputs of the model

and ask, do they seem reasonable? I have no idea what the percentage is, but suppose that 20 percent of our assets are in a particular part of Afghanistan, and in that area it will be very difficult to get the permission that we need to move things out. Well, a scenario that we would run would be, what if we can't move 20 percent of the items for an additional month, two months? If the model predicts that this has no impact on the ultimate mission, I'm going to be very skeptical.

**Q.** Of course, in the case of Afghanistan, that's hugely complex, because shipment through Pakistan is such an on-again, off-again situation.

**A.** Right. So you just described a political impediment to achieving the expected value—what time we expect it would take

for an item to move from where it is to a location where we have a little bit more control over our ability to move it. This might be the item that ends up having the most impact on the variation in the plan, the place where we would need to have the most flexibility because we can't be sure of our underlying ability to meet the plan.

I would expect to find variation all over the place. We'll find it in the capacity associated with the natural "batches" that we use in moving items from one point to another. Those batches are usually constrained by the size of trucks, convoys, railcars or ships. Sometimes you lose capacity because of mechanical failure, or you have to substitute one mode for another mode. Goods can arrive early, exceeding the storage capacity at the loading point. And then you have humans



**WHEN NATURE INTERFERES**
Bad weather is one of the many less predictable variables in a logistics operation that thorough what-if planning can help manage. Here, an Army convoy stops on the Terra Pass in Logar province, Afghanistan, Dec. 15, 2012, to help Afghan truckers put snow chains on their tires. (U.S. Army photo by SPC Tayler Rovere)

involved all over the place. I would suspect that there's a standard time to load and unload each of the items that could be moved. Sometimes our human team members will perform according to those standards, and sometimes, for whatever reason (humans get sick or weather interferes), we'll see variation in the cycle time for the loading and unloading of items.

You put all of those sources of variation together, and you're likely to end up with an outcome that isn't the expected value of what you planned. And I think it's very helpful upfront to consider some scenarios for what you would do when the plan is not met.

**Q.** All of which underscores that this is a hugely complex and not entirely predictable operation. What you've described, the what-if planning, is something that goes on in the military all the time.

**A.** Yes. The what-if planning has been going on for a long time, but we now have modeling and computing power that allows you to build more sophisticated models. The advantage of those is that you can sit with people and they don't have to imagine it in the same way. You can do active simulations—imagine that we were in the heat of the moment and the following thing happens, what would we do? Well, you have the model in front of you, and you can, in near-real time, prepare answers with precision that in the past just wouldn't have been possible because we didn't have enough data in the models.

**Q.** What exactly did you mean by auditing the outcomes predicted for reasonableness?

**A.** I just mean that it's an intuition test. When you have these kinds of computer models, the most valuable thing that they do, I think, is to help humans, especially in a one-off project like this. If you can run models regularly over a long period of time, eventually the model gets good enough that you don't need that much human input.

An example is a control system in a complicated petrochemical plant. These plants run through significant transients, or periods of variation, without a lot of human input, because the control systems have been running for a long time. They've been tuned, and the computers know what to do. In this one-off project, any simulation that you build is not going to be such that the machine can run the project. It's going to be such that the humans are better prepared to lead the project.

**Q.** So they're all on the same sheet of music, so to speak.

**A.** Exactly. The best audits are performed by the humans who, during the execution phase, will actually be managing and leading. In advance, you can have those humans sit around with the computer models that you built and test them for reasonableness. You start with human intuition about how robust the system will be, or how long things will take, or how effective we can be. And you want

to look at the outputs of the model and use that great human intuition and ask, does it make sense? If a human looks at it and says, "I'm glad that analysts have predicted that this is what's going to happen, but I can tell you, I've been in the field, and I know that this particular step is going to take longer than the model's predicting," then we can make the plan better. In these audits of the output of the simulation, we're trying to catch things, assumptions, that are wrong in the models, applying human experience and intuition.

I've been talking about this from the perspective you asked me to think about, as if I were the leader of the whole thing. These models are incredibly useful at all levels of execution of such a mission. Since this precise military challenge has never been completed—just as no one had been through direct-to-consumer logistics challenges like we had in the early 2000s—I would not expect to have a computer model direct movement autonomously.

Thinking about this problem reminds me of our early holiday season at Amazon.com. During our peak four or five weeks of ordering, which is between Thanksgiving and Christmas, we have an increase in our logistics activity of about three to four times the average rate for the rest of the year. So the challenge, of course, is to have a team ready to perform to a playbook that is very different during those four to five weeks than for all of the other weeks of the year. That is the primary leadership challenge at Amazon.

*WE'VE FOUND THAT INDIVIDUALS WITH A MILITARY BACKGROUND DO INCREDIBLY WELL IN ROLES ALL OVER OUR OPERATIONS' ORGANIZATION. THEY HAVE THE RIGHT BIAS FOR ACTION AND COMFORT WITH RAPIDLY CHANGING ENVIRONMENTS.*

**A DIFFERENT KIND OF SHIPPING**
The retrograde from Afghanistan involves numerous modes of transportation working in sync with one another. Here, SPC Robert Ivey, left, and SPC Gusten Hammond, motor transport operators with 703rd Brigade Support Battalion, 4th Infantry Brigade Combat Team, 3rd Infantry Division (4/3 ID), prepare to sling-load transportation equipment on a CH-47 Chinook helicopter July 15 at Forward Operating Base Shank in Logar province, Afghanistan. (U.S. Army photo by SGT Sarah Bailey, 4/3 ID Public Affairs)

So, for example, in the Amazon world, these kinds of models aren't just used by the corporate staff; they're used by the staff running each of the individual warehouses in our network. They're used by departments inside of those warehouses in the network, again, to do simulation and prepare in advance of the holiday peak, which is sort of a mission for us. The great thing about these models is that you can share them very easily, or parts of them very easily, with a whole range of leaders across the organization, which makes them all better prepared.

I would expect to have leaders on my team check in regularly with the field leaders to evaluate how closely we were delivering to plan, with our analytical team and automatic systems adjusting the models regularly for mid-course correction. During the early Amazon.com holidays, I held daily conference calls every morning where fulfillment, supply chain and

transportation leaders provided key network status details. We would modify the allocation of resources in real time to balance the network, keeping our bottlenecks always front of mind.

It boils down to examining the actual performance versus the expected value for some of the elements that measure the networks. So, for example, are the queues that we have the size that we expect them to be? The consumer really wouldn't see it, but a queue would be orders that we've taken from customers that we haven't yet moved through a particular step in our logistics. It's an accepted but unfilled order. They might be on a truck someplace. They might be in a particular state in a warehouse. The order might occasionally be stuck in a software queue.

Were the bottlenecks that we experienced yesterday where we expected them to be? Was productivity in each step of the process as we expected it to be, or not? When

you have productivity that's low, if it goes low enough in a particular step, that step can become the bottleneck for the day. Then, all of the steps behind the bottleneck push work faster than the bottleneck can process it, and you build up a queue. I would ask for an expected value versus actual performance. In each of these steps, you begin to build a fairly complete picture of how the network is performing.

If we were running an operation at the same rate all year long, it would be more like the petrochemical plant scenario, where you would just tune your systems and your people to a certain way of doing things and do it forever. But we don't have that luxury, because our consumers order a lot more from us during the holiday peak.

When the mission was complete, I'd expect to spend quite a bit of time saying "thank you" to all the folks who made this incredible performance possible.

**Q.** Speaking of the holiday shopping season, how do you manage to keep people motivated during this season and, in addition to all your other logistical tasks, make sure that people understand that their work is appreciated and that they're doing a good job—or not doing a good job, as the case may be?

**A.** That's such a great point. Throughout the holiday, our leaders—and, in fact, many of the folks who would normally be working directly on customer orders—actually end up serving as ambassadors, or leaders for associates who have recently joined us. So we have a lot of presence on the shop floor. We're visible on the shop floor so that we can offer assistance and we can pat people on the back and thank them for a hard day's work. We try to make it fun. Break rooms get decorated, and some of the folks will occasionally

get quite Christmas-y with their attire. It's very motivating to see orders that you know are going to end up as wrapped presents under a tree. It's emotional and powerful for people.

All Amazonians are deeply passionate about delivering a great customer experience. At Christmas, that means that the right product goes to the right address on time in a great condition. As you watch these orders go by, you know you're basically serving as an elf in some way to help families all over the country. And that feels pretty good.

**Q.** In terms of product logistics, does the handling of books differ from what Amazon does with flat-screen TVs, or groceries or automotive supplies?

**A.** Yes, different product attributes require different logistics solutions. Some key attributes include: size and weight (can the item be handled by automated sorting equipment?), fragility (clothing items require different handling from most packaged automotive

supplies, and some items, like food, are very temperature-sensitive), sales velocity (lower-velocity items may be located in fewer fulfillment centers) and cost (we might not store $5,000 watches right next to $20 books.)

**Q.** A major area of study for the Army logistics community, as it prepares to draw down from Afghanistan, is core competencies. Does Amazon employ logisticians per se, besides you? If so, what skills is the company looking for?

**A.** I am certainly honored to be considered a "logistician," though that is not my formal background. I have an undergrad in chemical engineering from Princeton and graduate degrees, and an M.S. Chem E and MBA from MIT's Leaders for Global Operations program. I started my career writing software at Accenture. I suspect I think about logistics systems as networks of nodes and arcs, or pipes, valves and tanks, because of my chemical engineering background. What matters is the ability to think analytically about such problems, using the math

of optimization, process control and as much computer science and machine learning as possible.

Amazon does employ logisticians—lots of them. Some have backgrounds like mine, where they've made a switch from a different technical field to this one. Many employees in this area are computer scientists or software development engineers encoding our algorithms in software. We've found that individuals with a military background do incredibly well in roles all over our operations' organization. They have the right bias for action and comfort with rapidly changing environments.

**Q.** What kinds of data does Amazon collect on its supply chain, e.g., safety stats, and how do these data reflect how Amazon likes to operate?

**A.** We start every operations meeting with a safety tip. Every operations metrics deck starts with our safety performance. In fact, it is safer to work in an Amazon fulfillment center than in a

retail department store. Beyond safety, we measure everything you might expect us to worry about in a complicated logistics network: customer experience, cycle times (both mean and variance), defect rates, productivity, cost and capital investment. These metrics map to our leadership principles, which include customer obsession, ownership, frugality and delivering results.

**Q.** Amazon aims "to be Earth's most customer-centric company where people can find and discover anything they want to buy online." You personally are reportedly almost fanatically committed to customer satisfaction, especially during high-pressure times such as the holiday season. The Army acquisition community's customers are the Soldiers who use the items procured. What could the Army learn from Amazon about managing "customer" relationships?

**A.** We have two leadership principles that help define Amazon's approach to customer-centricity. First, we want leaders to display "customer obsession." We ask leaders to start with the customer and work backward. They work vigorously to earn and keep customer trust. If you ask, "How obsessed is enough?" we answer with our leadership principle "insist on the highest standards."

We think leaders have relentlessly high standards; many people may think these standards are unreasonably high. Leaders continually raise the bar and drive their teams to deliver high-quality products, services and processes. Leaders ensure that defects do not get sent down the line and that problems are fixed so they stay fixed. So you will find us correcting mistakes before customers get angry about them, sometimes before they even notice. We'll drive to stores on Dec. 24 to buy the few out of hundreds of millions of items

that we just can't find in the fulfillment center. When we build new products, we write press releases to help visualize what we would like to announce to customers about the product at a successful launch. I love that the words "processes" and "fixing defects" are in our highest-level leadership vocabulary. Great customer experience starts with superb attention to execution.

I had the honor of visiting the Army War College at Carlisle, PA, some years ago, and I was struck by just how much consideration the Soldier-customer received by the military's highest leaders. With respect to how we think about our employee customers, we borrowed some of our approach from the best practices of our military.

**Q.** You mentioned that you found that military people have a penchant for action and are comfortable with rapidly changing environments. Can you give me a little bit of background on how much Amazon has worked with military people?

**A.** For 13 years, we've been actively recruiting everyone from former enlisted folks and junior military officers to more senior officers because of these traits. And it's proven to be a highly successful hiring channel for us. There are hundreds and hundreds of folks who are veterans who are at Amazon. And we expect to hire 1,200 this year.

I mentioned my own experience with the Army War College. That experience was just prior to my joining Amazon in 1999, and so it was very fresh in my mind. The new leader for human resources for worldwide operations in 1999, Dave Niekerk, was a West Point alum.

**Q.** You talked about leaders having relentlessly high standards. That's

exactly the kind of thing that DOD is trying to get at these days with better buying power. Central to that is raising the standards of leadership and independent thinking in acquisition professionals. DOD is working very hard to have top-level acquisition professionals recognized and documented as the elite that they are. What you said about high standards gets right to that point. Does Amazon ever do anything like better buying power?

**A.** Not per se. We have 14 leadership principles (online at **http://www.amazon. com/Values-Careers-Homepage/b? ie=UTF8&node=239365011**), including the leadership principle "insist on the highest standards." This principle of independent thinking is close to one that we have called "disagree and commit." (See related article on Page 122.) What we want our bright people to do, when they're pretty sure they're right, is to disagree when they think that somebody else's approach is not correct or they think they can improve on an already good approach.

And it's interesting, because people asked for a long time, "Well, when do you stop disagreeing?" My answer is, when you're not sure you're right. So I tell people—I don't know how this would work in the military—but in our world, if you're sure you're right and your boss tells you, "No, you're wrong," you have the obligation, after telling your boss that you are going to do this, to go to his boss or her boss. And if that boss says, "You know, I don't think you're right" and gives reasons and you're sure you're right, you have the obligation to keep going up the chain until you get to our CEO. And if he tells you, "I hear you, but we're going to do this other thing," then we want you to disagree and commit to the choice that the company's made, and move forward.

I BELIEVE THAT THE FIELD OF OPERATIONS MATTERS. TOO OFTEN COMPANIES, GOVERNMENTS AND OTHER ENTITIES BUILD GREAT PROGRAMS AND PRODUCTS, ONLY TO HAVE THEM FALL SHORT OF THEIR POTENTIAL IMPACT BECAUSE THE UNDERLYING OPERATIONS JUST DON'T SCALE.

So I'll tell people, when you're not sure and your boss asks you to do something for us to move forward, the right thing to do is to say, "I don't agree with that, but I'm not exactly sure, so I will commit to the plan of record, and I won't complain about it. We'll just move forward."

**Q.** Obviously the chain of command in the military means so much in terms of order and discipline and just getting things done. Once a course of action's been decided on, you get less of that open dissent. But the principle you're talking about is definitely a value to the military. What about the other leadership principles you mentioned?

**A.** They start with customer obsession. Everything we do, we start with a customer, and we work backward from there. The second principle is ownership. We want leaders to behave like owners, and mostly that means that they think long-term, that they don't sacrifice long-term results or long-term value for short-term results. We want people who never say, "I'm not doing that 'cause that's not my job." We want people to do whatever the mission requires. The next one is "invent and simplify." We require our leaders to be innovative even when others don't understand what they're doing, and sometimes they won't understand for a long time. The next one is "are right a lot," and that basically means we want to hire smart people. We think leaders need to have a level of intelligence that makes them capable to do their work of leadership well.

We want to hire and develop the best first. That's completely consistent with the military. We talked about "insist on high standards." We want our leaders to think big. Very simply, we think that thinking small is a self-fulfilling prophecy. So we ask people to envision bolder directions because they'll lead to bold results, and it also inspires the team to think differently.

Frugality is the next one, and that's about not spending money on things that don't matter to customers. We want our leaders to be vocally self-critical, and actually this is my favorite line in all of our leadership text. We say leaders do not believe that their or their team's body odor smells of perfume. I love that one because we're all human, and if we can't say, "I was wrong, I don't know" and are just full of ourselves, our teams especially will see right through it. And I'm sure that it's that way in the military. When an officer has screwed up and doesn't admit it, I guarantee you that they lose some respect from the members of their team.

"Earn trust of others"—we want leaders to be able to show respect and to gain trust. We expect leaders to dive deep, really deep, because we think no task is beneath leaders, although they can't, of course, do everything all the time.

There are two more. The second-to-last is "have backbone." That's the idea of disagree and commit. And we want leaders to respectfully challenge decisions when they disagree. Finally, we expect leaders to "deliver results."

**Q.** Given that a lot of materiel that will be brought home from Afghanistan will be obsolete before long, what would your priorities be, in broad strokes, to position the

Army for the future when the retrograde effort is over?

**A.** First of all, sunk costs are sunk. If we've spent money on something that is now worthless, its value is $0, not whatever we paid for it. I would make sure we have programs to maintain the materiel that has ongoing value first. Some items provide "option value," in case we do need to spin up again. I would plan to hold on to additional materiel beyond peacetime minimum, especially where the lead times for replacement are very long. Finally, I would dispose of what we cannot expect to use, hopefully salvaging value by selling to the private sector or using the assets in other branches of the government.

Post-retrograde, I would make sure the Army's processes and logistics information systems are ready for the future. I'd use our recent experiences to build sophisticated simulations to help keep our people fresh while they wait for the next crunch.

**Q.** How would you characterize the corporate culture at Amazon? What are the top three defining characteristics that you want Amazon employees to appreciate fully, and why?

**A.** Our culture is customer-obsessed, fast-paced, and truth-seeking. We try to hire people who are smart, possess high standards and know how to get things done. Importantly, we find that we have the best match with people who would say they feel "fortunate." Such people are most likely to say "yes" instead of "no" and to foster an innovative,

**FULFILLMENT CENTER**
Logistical planning at Amazon permeates every level of management, down to individual departments at the company's warehouses. Here, Amazon employees take customer orders from warehouse shelves. (Photo courtesy of Amazon)

optimistic environment. We've found that individuals with a military background do incredibly well at Amazon in a variety of roles. Our company's leadership principles match up closely with our nation's military. As a result, for years, we've actively recruited members of the military into roles at Amazon, whether they are retired from the active military or reservists.

**Q.** Tell us about CRAP—or "can't realize any profit"—which seems almost as much about streamlining customer experience as it is about unprofitable items. What can the Army learn from the philosophy behind CRAP?

CRAP came from observations Jeff Bezos and I made while working on the shop floor in Kentucky one Christmas. We were spending too much time (to the great pleasure of the associates watching us!) building custom boxes to hold folding chairs offered as that day's big deal. There was no way, even with well-trained, productive employees (versus us), that we were making money on these items.

We committed ourselves right there to find other similar items and either make them profitable or stop selling them. Most of the time, our vendors have been able to work with us to make such items profitable, including by changing the packaging.

**Q.** You and Amazon.com founder Jeff Bezos used to go out and spend a week each year visiting Amazon distribution facilities, even fulfilling orders. What benefit, in your view, would it be to Army brass—both military and civilian—to spend time working at the ground level a week each year the way you did?

**A.** I think a significant portion of leadership is showing up, in person, to listen, say thanks, and "walk the talk." As our jobs get bigger, it can seem harder to find the time to visit. Certainly at many times in my career, I've fallen prey to this mistake. But I know that face time matters. Associates notice. I suspect our Soldiers and civilian employees notice when leadership takes the time to visit.

Recently, a longtime "Amazonian" software developer decided to leave our company. On his last day, he sent me a very personal note. He thanked me for some things, and then he offered a piece of incredibly valuable, sincere advice. He noted that in the early days, we were small enough that I communicated regularly and informally with the entire corporate staff. As we grew, they saw less and less of me, to the point where now some new engineers joked that I might not actually exist.

He had a simple suggestion: Pick some lunch areas randomly and occasionally, and just show up with little announcement. Engage in Q&A with whoever happens to come. Though I probably haven't done it frequently enough, I implemented his suggestion and have been pleasantly surprised with the attendance, questions and, most importantly, the opportunity to preserve our special culture by tying my answers to our leadership principles backed up by a few stories from our past.

**Q.** Jeff Bezos is fairly well-known for his vision and ability, and part of that vision was hiring someone like you to rationalize and make that vision work. What's the best part of your job in supporting that vision?

**A.** I believe that the field of operations matters. Too often companies, governments and other entities build great programs and products, only to have them fall short of their potential impact because the underlying operations just don't scale. At Amazon, we understand that process, technology and especially leadership make a huge difference in our success or failure. I love working at a company that's proud of its operations.

# LEADERSHIP in 14 Principles

*From the very beginning, anyone who works at Amazon.com Inc. knows what the company is looking for. "Whether you are an individual contributor or the manager of a large team, you are an Amazon leader," states the preface to its "Leadership Principles." Here they are.*

**Customer obsession**—Leaders start with the customer and work backward. They work vigorously to earn and keep customer trust. Although leaders pay attention to competitors, they obsess over customers.

**Ownership**—Leaders are owners. They think long-term and don't sacrifice long-term value for short-term results. They act on behalf of the entire company, beyond just their own team. They never say "that's not my job."

**Invent and simplify**—Leaders expect and require innovation and invention from their teams and always find ways to simplify. They are externally aware, look for new ideas from everywhere and are not limited by "not invented here." As we do new things, we accept that we may be misunderstood for long periods of time.

**Are right, a lot**—Leaders are right a lot. They have strong business judgment and good instincts.

**Hire and develop the best**—Leaders raise the performance bar with every hire and promotion. They recognize exceptional talent and willingly move them throughout the organization. Leaders develop leaders and take seriously their role in coaching others.

**Insist on the highest standards**—Leaders have relentlessly high standards; many people may think these standards are unreasonably high. Leaders are continually raising the bar and driving their teams to deliver high-quality products, services and processes. Leaders ensure that defects do not get sent down the line and that problems are fixed so they stay fixed.

**Think big**—Thinking small is a self-fulfilling prophecy. Leaders create and communicate a bold direction that inspires results.

They think differently and look around corners for ways to serve customers.

**Bias for action**—Speed matters in business. Many decisions and actions are reversible and do not need extensive study. We value calculated risk-taking.

**Frugality**—We try not to spend money on things that don't matter to customers. Frugality breeds resourcefulness, self-sufficiency and invention. There are no extra points for head count, budget size, or fixed expense.

**Vocally self-critical**—Leaders do not believe their or their team's body odor smells of perfume. Leaders come forward with problems or information, even when doing so is awkward or embarrassing. Leaders benchmark themselves and their teams against the best.

**Earn trust of others**—Leaders are sincerely open-minded, genuinely listen and are willing to examine their strongest convictions with humility.

**Dive deep**—Leaders operate at all levels, stay connected to the details and audit frequently. No task is beneath them.

**Have backbone; disagree and commit**—Leaders are obligated to respectfully challenge decisions when they disagree, even when doing so is uncomfortable or exhausting. Leaders have conviction and are tenacious. They do not compromise for the sake of social cohesion. Once a decision is determined, they commit wholly.

**Deliver results**—Leaders focus on the key inputs for their business and deliver them with the right quality and in a timely fashion. Despite setbacks, they rise to the occasion and never settle.  **?**

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# DOLLARS
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How the Army Acquisition Workforce is
making Better Buying Power 2.0 work

*by Mr. Joseph M. Jefferson*

**B**etter Buying Power (BBP) 2.0 is as much about people and processes as it is
about the bottom line. Bottom-line savings and cost avoidance are certainly
the ultimate goals, but at the heart of BBP 2.0 is a cultural change. Indeed,
the Hon. Frank Kendall, undersecretary of defense for acquisition, technology
and logistics, said at his official rollout of BBP 2.0 in April, "People, to me, are central to
this." Following are recent examples not only of accomplishments in cost avoidance and
savings, but also of changes that Acquisition Workforce members have made in how they
do business in order to achieve the goals of BBP 2.0. On Page 126 are the seven focus
areas of BBP 2.0.

### SPINNING UP SAVINGS

The Apache Development and Modernization Product Office, which primarily
manages execution of the AH-64E (previously the Apache Block III, research, devel-
opment, test and evaluation funding line) identified multiple testing efficiencies for
the upcoming Lot 4 and Lot 6 development contracts. Numerous Lot 4 develop-
ment activities were occurring simultaneously but were not completely synchronized
or prioritized. The office created a more cohesive, structured plan to develop and
deliver the AH-64E Lot 4 configuration.

This cohesive plan provides incentives to Apache's prime contractor to deliver critical
capabilities to the Soldier as soon as those capabilities are ready, and minimizes the
use of test resources. The incentive structure also clarifies the government's priorities
to the contractor, ultimately resulting in a revamped schedule that reduces risk to
the program by enabling the test community to assess a single Lot 4 configuration.

At the same time, the Joint Tactical Radio System (JTRS) Airborne Maritime/
Fixed (AMF) Station project office was tasked with providing Program Executive
Office (PEO) Aviation's Apache project manager with the Link 16 and Soldier
Radio Waveform (SRW) capabilities. Together, the two project offices developed

a coordinated strategy that combined operational test events for both programs, resulting in significant cost savings. With support from senior DA and Director, Operational Test and Evaluation leadership, the JTRS AMF program, now part of the Joint Tactical Networking Center, is postured to support Apache's integration of Link 16 and SRW, making Apache the Army's first rotary-wing platform to employ those communication capabilities on the battlefield.

By synchronizing schedules and interdependent programs with the JTRS AMF office, the Apache Project Management Office anticipates significant cost savings and/or avoidance.

## BLACK HAWK UP

The multiyear procurement of new H-60 Black Hawk utility helicopters by PEO Aviation's Utility Helicopters Project Office (UHPO) marked the eighth such contract in the program's 35-year history. Key objectives of this multiservice

contract were to create a construct of objective numbers of aircraft each year, yet retain a "guaranteed minimum" number of aircraft at an affordable cost while allowing the manufacturer, Sikorsky Aircraft Corp., an opportunity to realize a fair profit.

At the same time, the Improved Turbine Engine Program (ITEP) seeks to provide a turbine engine with greater shaft horsepower and lower specific fuel consumption while keeping the same



**NEW AND IMPROVED**
A cohesive, structured plan to develop and deliver the AH-64E Lot 4 configuration resulted in significant cost efficiencies. Here, LTC Geoff Crawford, left, commander of 1st Attack Reconnaissance Battalion, 229th Aviation Regiment, 16th Combat Aviation Brigade, and retired COL Mike Courts examine one of eight new AH-64-E Apache Guardians Feb. 21 during a ceremony presenting the Guardian to the public at Joint Base Lewis-McChord, WA. (Photo by Scott Hansen, Northwest Guardian)

footprint. ITEP, which will allow current Black Hawk utility and Apache attack helicopters to operate at higher altitudes and with greater loads, emphasizes reduced cost of ownership through fuel and maintenance savings.

As the engine relies on newer technologies, competition is an important factor in achieving not only technical objectives but also affordability. To promote this effectively, the strategy is full and open competition, awarding up to two cost-plus-incentive-fee contracts for the technology development effort that will result in a successful preliminary design review. For the engineering and manufacturing development phase, the goal is to continue competition depending on budgetary constraints.

The L-Digital Program will upgrade the cockpit architecture of the analog fleet of 760 H-60L aircraft to the H-60M configuration, to supplement 1,375 digital H-60M aircraft and meet emerging increased requirements for interoperability and situational awareness. To promote effective competition, the acquisition approach seeks to leverage mature technologies and reduce obsolescence by increasing commonality and interoperability to keep the H-60L helicopter relevant in its role for the next 25 or more years.

The Army worked closely with the Navy in developing the requirements for the eighth multiyear contract, to avoid "requirements creep" as well as to avoid delays in negotiating and awarding the contract. That strategy is also informing the development of the L-Digital contract.

By also enforcing open systems architectures, acquiring the necessary data rights, seeking avionics commonality with the



**A MULTIYEAR ACHIEVEMENT**
PEO Aviation's UHPO has executed the eighth multiyear procurement contract for new H-60 Black Hawk utility helicopters in the program's 35-year history. Here, UH-60 Black Hawk helicopters assigned to Task Force Falcon sit on the flight line at Bagram Airfield, Afghanistan, Aug. 31. (U.S. Army photo by CPT Peter Smedberg, 10th Combat Aviation Brigade)

H-60M and other Army aircraft, and establishing interface configuration controls, the UHPO intends to reduce reliance on a single vendor, drive down development and sustainment costs, and more rapidly find solutions to obsolescence.

_MR. JOSEPH M. "JOE" JEFFERSON, a retired Army lieutenant colonel (Field Artillery), is a senior acquisition policy specialist in the Acquisition and Industrial Base Policy Directorate, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. He holds a B.S. in commercial marketing from South Carolina State University. Jefferson is Level III Certified in program management and in information technology. He is also a Lean Six Sigma Black Belt and a member of the U.S. Army Acquisition Corps._

**BBP 2.0 BASICS**

1. Achieve affordable programs.
2. Control costs throughout the product life cycle.
3. Incentivize productivity and innovation in industry and government.
4. Eliminate unproductive processes and bureaucracy.
5. Promote effective competition.
6. Improve tradecraft in acquisition of services.
7. Improve the professionalism of the total acquisition workforce.

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# SOLVING *the* RETROGRADE RIDDLE

As operations wind down in Afghanistan, opportunity arises for agile acquisition of UAS technology

*by Mr. Luis Garcia*

Recent editions of Army AL&T magazine have cited the rapid evolution of combat systems to bolster the argument for a streamlined and dynamic acquisition process. The 18-month benchmark for technological obsolescence has been used, rightly, to justify the search for innovative business practices. However, one need only look to a current edition of any technology or science magazine to understand that perhaps the 18-month rule of thumb no longer applies, nor is it necessarily limited any longer to the world of computer hardware and software.

At the same time, the acceleration of innovation in unmanned aircraft system (UAS) technology is increasing across the spectrum of interested parties. From the amateur attempting to weaponize a commercial off–the-shelf (COTS) quadcopter drone to European researchers programming multiple, linked UASs to create an emergency local communications network, no one seems to be waiting for the U.S. Army to lead the way. The Army's current operational structure is influenced by a wide variety of potential adversaries employing adapted and readily available technology, often in an asymmetric fashion. By necessity, the Army must maintain technological superiority and do so within the highly regulated DOD acquisition system and restrictive fiscal environment.

Over the past decade, the Product Manager Small Unmanned Aircraft Systems (PdM SUAS), assigned to Project Manager (PM) UAS within Program Executive Office Aviation, has surfed the UAS technological wave using traditional acquisition tools. From COTS purchases during the initial stages of the war on terror (e.g., the Raven A) to a successful surge effort during the latter phases of Operation Enduring Freedom (e.g., the gimbaled Raven and Puma), PdM SUAS has been able to gauge well the "next, best thing" for the Soldier in the field. But that wave has crested, offering an opportunity for PdM SUAS to research new, innovative processes to retrofit returning equipment while compressing the traditional acquisition timeline.

## THE AGILE FRAMEWORK

Accountability, readiness and attrition are common problems facing the largest and smallest of military systems, including the Raven SUAS. Compounding these fleet management issues for the SUAS world is the additional problem of rapid technological obsolescence. Long recognized as a problem in the software and computer hardware fields, rapid obsolescence of the embedded technology common to military hardware must now be planned for and addressed.

As we prepare collectively for the influx of war-weary equipment from theater, the application of the Agile Process provides some clues to solving the riddle of retrograde while also providing a path forward to the next contingency. Emerging from the software industry in 2001, the Agile Process developed around the interactions of ad hoc, often multidisciplinary work groups and the initiatives of individuals. The agility of the efforts lies in the ability to adapt quickly to shifting requirements and the close coordination with customers or, in combat development parlance, stakeholders. The agile methods are very compatible with Lean Six Sigma concepts, with the two approaches often combined to amplify results.

Although the Agile Process has been discussed extensively in the context of communications (e.g., the Network Integration Evaluation (NIE)), this article looks at a theoretical framework that adopts the best practices gleaned from the Agile Process and synthesizes them into a well-defined retrograde effort. We believe this framework reflects the Better Buying Power (BBP) 2.0 approaches as articulated by the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics, and is in harmony with recent changes to Chapter 3 of the Defense Acquisition Guidebook (i.e., renewed emphasis on affordability and analysis of alternatives; see **https://dag.dau.mil/Pages/Default.aspx**).

In an effort to plug into the BBP acquisition techniques demonstrated in the software and communications sectors, PdM SUAS is investigating a "1/6 Dynamic Retrograde Strategy" (DRS), whereby the Army would replace approximately one-sixth of the fleet each year. (See Figure 1 on Page 130.) The strategy is essentially a compressed incremental acquisition process that takes advantage



**LOOKING AHEAD**
Two IDIQ contracts provide PdM SUAS flexibility to replace a portion of the Raven and Puma fleets, or subcomponents of them, as they are diminished by attrition or become technologically obsolete. Here, SPC Jordan Hensler, a cavalry scout assigned to 6th Squadron, 8th Cavalry Regiment, 4th Infantry Brigade Combat Team, 3rd Infantry Division (4/3 ID), launches a Puma UAS Aug. 14 in Logar province, Afghanistan. (Photo courtesy of 4/3 ID Public Affairs)

of the most current products that industry offers.

The SUAS concept approaches fleet attrition as an opportunity to inject current technology and provide enhanced capabilities to the warfighter. Rapid identification of potential upgrades, close interaction with stakeholders, frequent and fast assessment with test agency involvement, flexible contracting and rapid fielding are the characteristics of the SUAS agile materiel management technique.

By adapting the NIE process to the UAS world, PdM SUAS believes it can encourage competition, reduce per-item and research costs, and decrease the "blackboard to field" timeline. Retrograde and the associated reduction in operational tempo provide the first real opportunity to test the viability of such an approach.

Essential to this framework is the evolution from a sole-source approach to seeking the best technology, to the adoption of a firm, fixed-price (FFP) indefinite-delivery, indefinite-quantity (IDIQ) contractual vehicle with multiple vendors participating. PdM SUAS implemented two distinct IDIQ contracts capable of handling the majority of the hardware and services requirements.

In addition to the IDIQ products contract, awarded in early 2013, PdM SUAS recently awarded an FFP services IDIQ contractual vehicle. The latter is essential to depot-level sustainment tasks, including warehousing, shipping and maintenance. The services contract also provides a robust and agile approach for engineering development and training, both of which will be central to the DRS concept.

## FIGURE 1
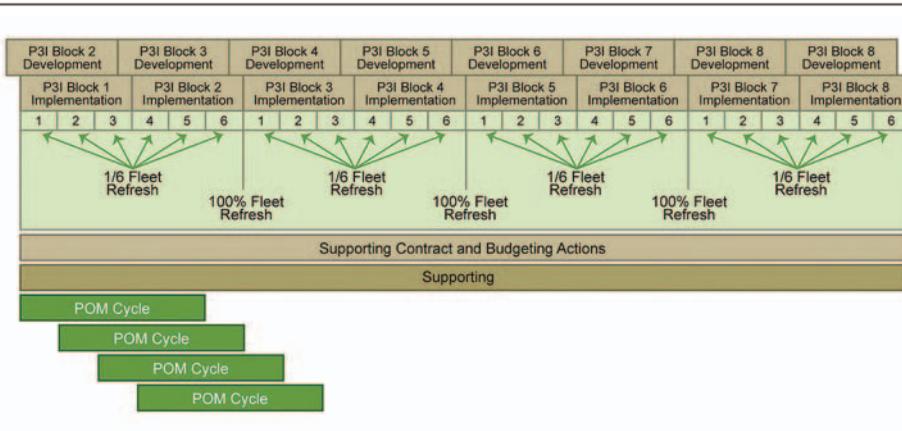


**A MEASURED APPROACH**
In an effort that reflects BBP acquisition techniques applied to the software and communications sectors, PdM SUAS is investigating a strategy whereby the Army would replace approximately one-sixth of the SUAS fleet each year. This strategy is essentially a compressed incremental acquisition process that takes advantage of the most current products that industry offers. (SOURCE: Bill Stem, Wyle CAS Group, for PM UAS)



**FLEXIBLE CAPABILITY**
The modular nature of the Raven, Puma and future SUAS demands an innovative, modular approach to retrograde operations and, ultimately, acquisition methods. Here, an RQ-11B Raven UAS flies over Castles Drop Zone, Fort Pickett, VA, Aug. 16. The Raven can be remotely controlled from a ground station or fly programmed missions using GPS waypoint navigation. (U.S. Air National Guard photo by TSgt Matt Hecht)

The two IDIQ contracts provide PdM SUAS flexibility to replace a portion of the Raven and Puma fleets, or sub-components of these fleets, as they are diminished by attrition or become technologically obsolete. In the same way a typical modern office supply of laptops undergoes partial disposal (i.e., 30 percent of laptops replaced each year with faster versions), SUAS hopes eventually to apply a similar approach to fleet management.

**FINDING ECONOMIES**
The IDIQ services contract provides the muscle at the SUAS inventory control point to identify depot-level repairs upon retrograde. Having gathered the appropriate attrition data, PdM SUAS can use the IDIQ products contract to solicit sources sought to solve a specific problem or need.

In this scenario, we would expect one or two hardware components to bubble to the top of the priority list. In the Raven and Puma realm, the highest attrition rates are typically in payloads (i.e., UAS cameras) and batteries, but the concept is flexible enough to apply to potentially any component, including software and technical architecture. Taking advantage of economies of scale combined with increased competition, we can anticipate the programmed replacement of a portion (i.e., 20 percent) of the SUAS fleet, providing cutting-edge equipment to the warfighter much earlier than with traditional acquisition models and at a reduced cost. Experience early in the implementation of the IDIQ contracts supports this prediction.

In recent months, limited developmental testing by the product office has demonstrated that this concept works. For the typical camera payload, with its sophisticated gimbal mechanism and sharp imagery, we have observed a relatively

high level of attrition after exposure to the harsh Afghanistan terrain. At a price of more than $25,000 per payload, we anticipate that a replacement payload can be procured that is better, more resilient and more affordable. The acquisition of the second-generation gimbal payload would replace payloads on approximately 20 percent of the Raven fleet.

Several IDIQ participants responded to this needs request, and one was selected to conduct operational testing at Dugway Proving Ground, UT. In a matter of months, we should see approximately 700 of these payloads supplementing 300 first-generation gimbal payloads and replacing non-repairable retrograde payloads. Again, similar to replacing some of an office's laptops, PdM SUAS will phase in the newer payload technology to the existing fleet. This effort alone is expected to save the government $20 million to $40 million by reducing the procurement cost for replacement payloads.

## ISSUES AND ANSWERS

With reasonable caution, the PdM SUAS has also identified several potential issues that may hinder the full application of this strategy. First, some in the business community may balk at the suggestion that the industrial base will be made stronger by limiting competition to a handful of companies under an IDIQ umbrella. They may see this approach as ultimately detrimental to both smaller innovators and the industrial base as a whole. Second, some may argue that the current proposal does not sufficiently address the traditional danger of "requirements creep."

As we comply with BBP 2.0, we think many of these concerns will be addressed. For example, a five-company base, established through full and open competition with the flexibility for the



**PREPARED FOR SERVICE**
The Puma played a key role in the successful surge effort during the latter part of Operation Enduring Freedom, providing an eye in the sky on possible threats to Soldiers. Here, an SUAS inventory control point worker conducts final inventory on a Puma SUAS bound for U.S. troops in Afghanistan. Puma is fielded to both conventional and special operation forces in support of route clearance and other combat operations. (Photo by Stephanie Johnson, PM UAS)

companies to partner with their choice of hardware providers, is certainly better than a single source. Furthermore, this approach encourages small innovators to team up with the IDIQ core product suppliers, resulting in an exceptionally wide pool of potential sources to meet our needs.

The requirements community has also become more agile as it looks to multiple materiel developers to address capability needs. Looking beyond its historic association with the U.S. Army Aviation Center of Excellence, PdM SUAS is forming relationships with other requirements developers for whom our products offer a viable solution. This approach is bearing fruit as PdM SUAS seeks to support the U.S. Army Signal Center of Excellence in its Aerial Layer Network Transport (ALNT) program. In this particular case,

the SUAS Capability Production Document (CPD) contains language that nests perfectly with ALNT's lower-level communication requirements.

## CONCLUSION

Approval of the SUAS CPD is expected this fall. With this in hand, PdM SUAS will complete its assessment of 1/6 DRS. Based on data gathered during this phase (e.g., per-unit cost, increased reliability and increased capability), the product office will seek approval to expand the concept to other pressing requirements, allowing us to take full advantage of technology not yet matured.

This would include efforts to develop a Soldier Radio Waveform payload that supports the ALNT squad lower-tier communications architecture; a solar-powered UAS; a Universal Ground

**GIMBALED RAVEN**
The new RQ-11B Raven gimbaled payload upgrade allows for greater ease of flying the aircraft while allowing for 180-degree panning of the infrared/electro-optical camera and laser illuminator. Acquisition of the second-generation gimbal payload would replace payloads on approximately 20 percent of the Raven fleet. (Photo by Stephanie Johnson, PM UAS)

Control Station for UAS; and/or an improved chemical detection payload.

The modular nature of the Raven, Puma and future SUAS demands an innovative, modular approach to retrograde operations and, ultimately, acquisition methods. Our experience thus far suggests that DRS may supply the solution.

*For more information, contact the author at* **luis.d.garcia3.ctr@mail.mil** *or 256-313-5422.*

*MR. LUIS GARCIA, an Army Aviation officer for nine years, has served as a PdM SUAS logistician since 2006. He holds a B.A. in government, with a concentration in international relations, from Cornell University and an M.S. in management, with a specialization in integrated logistics, from Embry-Riddle Aeronautical University. Following his Army service, Garcia went to work at MCR LLC, supporting PM UAS as a materiel fielding lead contractor.*

# ONE SYSTEM REMOTE VIDEO TERMINAL (OSRVT)

**Congratulations to the Army's OSRVT Team and their exceptional efforts**. Using the OSRVT and Project Manager Unmanned Aerial Systems' (UAS') Shadow aircraft, the team successfully demonstrated remote payload control using a new Office of the Secretary of Defense (OSD) modular software architecture. The OSRVT enables ground Soldiers to command Army UAS payloads, select and track targets, perform sophisticated surveillance routes, and view specific points of interest.

Also recently validated is the interoperability with Army Shadow and Gray Eagle UAS platforms, the OSD open standards effort and the Army's interoperability profiles guidance documents.

The Army's OSRVT program of record system payload control capabilities provide Soldiers with:
• Stare at, stare from and follow-me modes.
• Automated optical tracking of fixed and moving targets.
• Real-time awareness of UAS location and what it is observing.
• The ability to plan complex missions quickly while reducing operator workload.
• The ability to control the UAS and its payload (NATO Standardization Agreement 4586 Level 3).

For more information, contact:
UAS Project Office (SFAE-AV-UAS)
Redstone Arsenal, Alabama 35898
uasoc@peoavn.army.mil
Phone 256-313-6452
DSN 897-6452

The OSRVT system consists of a receiver, modem, antennas, cables, software and an optional extended-range antenna. Software supports decoding telemetry and metadata from multiple UAS links data to FalconView maps; and … supports off-target calculations.

KU Band Antennna

Multi-Band Receiver

Toughbook

C/L/S Band Antennna

MDAS Antenna

UHF Modem & Antenna
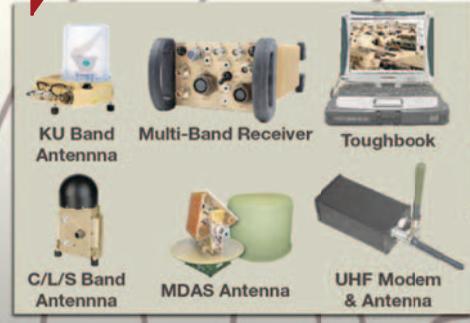
# RIGHT **PLACE,** RIGHT **TIME,** RIGHT **PRICE**

PEO Soldier leverages arsenals to provide Soldiers the equipment they need, when and where they need it, at less cost

*by COL Michael E. Sloane*

Project managers (PMs) must maintain a proper balance between capability and affordability of equipment. Affordability involves far more than purchase price. The life-cycle cost of equipment involves replacement of end items, maintenance and repair, all of which are affected by the logistics involved in shipping and sustaining the item.

These factors have far-reaching budgetary repercussions for the nation and played a key role in the move by Program Executive Office (PEO) Soldier's Project Manager Soldier Sensors and Lasers (PM SSL) from a contractor-owned, contractor-operated (COCO) facility to the government-owned,

government-operated (GOGO) Rock Island Arsenal (RIA) staging facility in Illinois last year.

Writing in a May 2, 2013, memorandum titled "Using Army Arsenals," the Hon. Heidi Shyu, assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), encouraged PEOs and PMs to take advantage of Army arsenals. She stated that arsenals "can provide capabilities important to the materiel acquisition process." Arsenals, she added, "are an important part of our organic industrial base, and it is essential that we maintain their critical capabilities for response to future contingencies."

In her memorandum, Shyu cited Title 10 of U.S. Code, Section 4532 ("Factories and arsenals: manufacture at; abolition of") as providing the framework for employing the arsenals." She also cited Army Regulation 700-90 ("Army Industrial Base Process," online at **http://www.apd.army. mil/pdffiles/r700_90.pdf**), which, she wrote, "states a preference for the Army to rely on the private sector for defense production. The guidance recognizes the need for exceptions. Maintaining critical capabilities at Army arsenals is within the realm of those exceptions."

Shyu's memo also cited the types of capabilities that exist at Pine Bluff Arsenal, AR; RIA Joint Manufacturing Technology Center, IL; and Watervliet

**VITAL CAPABILITIES**
PM SSL provides Soldiers with improved lethality, mobility, situational awareness and survivability in all operational conditions. Equipment such as night vision goggles and portable laser targeting devices enable Soldiers to "own their environment" day or night. (Photos courtesy of PEO Soldier)

Arsenal, NY. Arsenals, she wrote, "may also partner in the public and private sector to enhance their capabilities to provide goods and services. Examples of partnership opportunities include direct sales, public-private teaming, work share arrangements, and leases of facilities or equipment."

She recommended that decisions relating to the use of contractors, arsenals or some combination of arsenal and contractor capabilities should come early in the acquisition process when possible, such as during market research, when performing risk and cost-benefit analyses of alternative sources, when conducting "make or buy" analyses or as part of pre-solicitation business case analyses, among other opportunities.

Joe Pearson, PM SSL logistics director, was already a convert. He understood the inherent value of Army arsenals and their benefits to an organization. Pearson recognized that using the RIA government shipping office would be more efficient than using a private shipping company when government property book items, because of the additional administrative requirements of using a private company. "Transitioning to Rock Island will save the government close to $3 million in cost avoidance over the next six years," Pearson noted.

When Shyu released her memorandum, the PM SSL team was on its way to implementing and fine-tuning its staging operation strategy and partnership with RIA.

PM SSL has a technically complex portfolio of 18 programs of record. Leading these programs are two product managers

**SMART MOVE**
In 2012, PEO Soldier transitioned PM SSL's new-equipment staging facility operations from a GOCO facility in Middle River, MD, to a GOGO facility at RIA. Here, COL Michael E. Sloane, center, PEO Soldier's PM SSL, tours the Sensors and Lasers Distribution Center March 13 with personnel from the RIA Joint Manufacturing and Technology Center (RIA JMTC).

(PdMs): PdM Soldier Maneuver Sensors and PdM Soldier Precision Targeting Devices. PM SSL equips Soldiers with the best sensors, lasers and precision targeting devices through the collective efforts of these PMs, whose work allows Soldiers to dominate the battlefield through improved lethality, mobility, situational awareness and survivability in all operational environments.

That work requires detailed planning and program execution. Add to this the challenge of ensuring that industry produces and delivers thousands of highly technical pieces of equipment to a staging facility every month, a challenge that becomes more complicated when moving to another staging facility several states away. The processes, procedures and techniques PM SSL employs may not be

the same for every PM seeking to maximize critical organic capabilities, but other PMs can certainly use them when seeking similar efficiencies.

## THE NEED FOR STAGING FACILITIES

Why are staging facilities necessary, and how can staging decisions improve operations?

The primary reason for using a staging facility is to repackage equipment to issue to the gaining commands. This assembly process follows the PM SSL policy of total-package fielding. The RIA staging facility maintains accountability of equipment, including end items and associated items, in addition to receiving deliveries from vendors. Upon receipt, facility personnel inventory all items

by serial number and/or national stock number, and put each item in a specific location identifiable by program. The system date-tracks all items to maintain flow and first-in, first-out protocol. This information is critical when tracking and managing original equipment manufacturer warranties.

RIA personnel use radio frequency identification (RFID) tags to track equipment from the initial staging through palletizing, to maintain accountability throughout the transportation process.

## LEAN SIX SIGMA ANALYSIS

PM SSL faced the challenge of reducing the staging facility's operating budget and costs while maintaining first-class support to Soldiers. To address the challenge, it initiated a Lean Six Sigma (LSS) project titled "Staging Facility," which examined current operating processes and determined what location would be best-suited to accommodate all aspects of the PM's staging activities. (This project is available through the PowerSteering database as Project LD #NG5081.)

The LSS analysis yielded four distinct courses of action. PM SSL analyzed each against established criteria for cost savings, labor, setup and operational costs. The four possible courses of action were:

**1.** Direct vendor delivery, with items stored and shipped direct from the manufacturer's facility.
**2.** Life-cycle management command/organic, operating a government staging facility with government personnel to leverage personnel and infrastructure already in place.
**3.** General Services Administration (GSA) facility, using contractor personnel.
**4.** Depot/organic facility, using government personnel.

During the LSS project, PM SSL found deficiencies in the areas of staging and shipping operations. After a lengthy analysis and scoring process, PM SSL determined that life-cycle management command/organic was the preferred course of action, providing PM SSL with a more efficient way of doing business in a timely manner and for the best value. Based on this decision, PM SSL expects to save, on average, 26 percent of the total cost to run the staging facility per year.

## TRANSITION PLAN

PM SSL developed a schedule and timeline to transfer more than 622,000 pieces of equipment, worth more than $1.2 billion, 920 miles from the COCO staging facility in Middle River, MD, to the Joint Manufacturing and Technology Center at RIA. In transitioning from a COCO to a GOGO facility, PM SSL would use 11 full-time, skilled government civilian employees versus the 13 contractors at Middle River. PM SSL synchronized the transition schedule against current fielding requirements to ensure that the transition would not compromise the fielding process. Weekly meetings maintained open dialogue between the two facilities.

An automated inventory management database system ensured accurate accountability and total visibility of PM SSL equipment at all times. Personnel used this database for receiving, inventorying, staging, tracking and shipping operations. The database also worked in conjunction with the Property Book Unit Supply Enhanced (PBUSE) system.

The PM SSL property accountability team works closely with the staging facility to ensure compliance with all ASA(ALT) guidelines during the lateral transfer to the Soldier. The team uses the PBUSE Web-based accountability system for all lateral transfers in conjunction with PM SSL's automated inventory management database system. An important part of this process is verifying and updating the item's unique identification, giving PM SSL visibility on lateral transfers within the Army.

Another key consideration for the RIA facility is on-site security, which is a three-part system. Closed-circuit cameras throughout record all activities, an intrusion detection system provides after-hours protection, and security personnel patrol the area. These three elements work together to ensure the integrity of the locked facility, which thus meets the criteria for staging all PM SSL commodities.

Leveraging the existing relationship among the arsenal organizations and GSA's transportation management office gave the PM an important advantage, allowing it to use established processes and procedures in transporting equipment to the Soldier. This saves time and reduces shipping costs that a commercial facility would incur. All shipments go through this office and consistently meet PM SSL delivery requirements.



**SOLDIER-CENTERED**
During the ribbon-cutting ceremony March 13 at the Sensors and Lasers Distribution Center at RIA, Joe Pearson, right, director of logistics for PM SSL, remarked on the significance of the cooperative mission. The staging facility "is such an important part of the pieces pulled together to support our Soldiers. It is not about us, it is about the Soldiers, and you all have a key part to play," he said. Here, Pearson meets with the RIA JMTC team during a site visit.

## CONCLUSION

The LSS analysis, which recommended an existing government facility with

**HIGH VOLUME, HIGH VALUE**
The RIA staging facility, which became operational in September 2012, moves thousands of end items every month and maintains accountability of each product and associated item. By transitioning to the facility at RIA, the Army, PEO Soldier and PM SSL benefit from improved performance at a lower cost, while ensuring that new equipment is issued to warfighters at the right time at the best value to taxpayers. "It has met and exceeded my expectations to date," said COL Michael E. Sloane, PM SSL.

government personnel, is paying off repeatedly. Shipments are on the ground in time for the fielding team to inventory and prepare for handoff. More important than any of these hand-offs, RIA personnel continue to issue equipment on time and with minimal disruption to a unit's daily mission.

This process enables PM SSL to save on fielding costs and to provide better inventory visibility and accountability. Maintaining flexibility enables PM SSL to run more efficiently and in a timely manner while continuing to reduce overall operating costs.

Using RIA benefits the Army, PEO Soldier and PM SSL with improved performance at a lower cost, while staying true to Shyu's guidance to maintain critical capabilities at Army arsenals.

*For more information scan the QR code below or go to **http://www.youtube.com/user/USArmyPEOSoldier** to view the PM Soldier Sensors and Lasers Overview video.*

*COL MICHAEL E. SLOANE is the PM SSL. He holds a B.S. in business administration from Columbus State University, an MBA from Webster University, and an M.S. in national resource strategy from the Industrial College of the Armed Forces. Sloane is Level III certified in program management and has completed the Defense Acquisition University's Senior Acquisition Course. He is a member of the U.S. Army Acquisition Corps.*

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# SHARPER EYES
## *IN THE SKY*

Achieving greater capabilities in
Manned/Unmanned Teaming
while finding greater efficiencies

*by LTC James Kennedy*

Two prominent goals within DOD—to reduce spending and simultaneously provide the best support to the Soldier—are often considered contradictory, but both are essential to advance Army capabilities. Manned/Unmanned Teaming (MUM-T) is one example of how Program Executive Office (PEO) Aviation and its Project Manager Unmanned Aircraft Systems (PM UAS) have worked to achieve just that, gaining efficiencies while changing the way the Army fights—and doing it all with existing assets.

Imagine you're flying an Apache Longbow helicopter on a mission to engage an enemy position. You've completed mission planning, rehearsal and preflight, and now you must navigate safely to the engagement area. Once within weapons range, you engage the weapons to remove the threat, then safely return to base. This mission, which sounds simple, is very risky to the Apache pilot. But it will soon be less so, and executed as never before using the concept of MUM-T.

The objective of MUM-T is to increase the fighting capability of manned aviation by teaming it with any unmanned aircraft in the battlespace, ensuring that commanders and Soldiers have the most current information available to make timely operational decisions. The MUM-T capability gives the Apache helicopter another set of "eyes," leveraging unmanned aircraft system (UAS) assets to identify the safest way in and out of the weapons engagement zone and to assist in engaging the target. The Apache can do this by receiving video and target data directly from Army UAS assets such as Gray Eagle, Shadow or Hunter, as well as by using the advanced capability to control the UAS camera and flight path.

**WORKING IN SYNC**
Interoperability among all Army UAS assets is a key element of MUM-T. Here, Interoperability Engineer David Campbell, a contractor with Dynetics, works on AIC testing of the Gray Eagle and Apache Block III at JSIL, Redstone Arsenal, AL. (U.S. Army photo courtesy of PM UAS)

MUM-T capabilities have continued to evolve, based on lessons learned over more than 10 years of combat in Iraq and Afghanistan. Now the Army is realizing efficiencies in life-cycle cost from MUM-T through the use of common data standards. PM UAS' Common Systems Integration Product Office (PdM CSI), as the executive agent for MUM-T technologies, makes these common standards possible.

## THE INTEROPERABILITY SOLUTION

The primary challenge associated with MUM-T is developing, testing and certifying the capability while establishing interoperability among all Army UAS assets. Development costs involve the procurement of radios, terminals and software, along with testing, fixing and

retesting to ensure that the capability works as expected.

The guiding documentation for the implementation of MUM-T stems from interoperability profiles (IOPs) developed by the PdM CSI. While the scope of the IOPs is much broader than MUM-T, they are common to all UAS and manned assets, and serve well as a basis for MUM-T development, testing and deployment.

As the development of UAS has progressed and the Army has identified and overcome technical hurdles, the concept of "design, fly, fix and repeat" has sometimes been costly and caused integration delays. To reduce cost, increase quality and accelerate schedule, the Joint Technology Center/System Integration

Lab (JSIL) at Redstone Arsenal, AL, has become the centerpiece for all UAS interoperability testing.

After interoperability compliance testing and certification, UAS assets generally transfer to the Central Technical Support Facility (CTSF) at Fort Hood, TX, for Army interoperability certification (AIC). Recently, the JSIL and PdM CSI conducted a review of additional testing sites involved with UAS, manned aircraft interoperability testing and MUM-T, and determined that linking the labs virtually through the Defense Research and Engineering Network (DREN) could leverage capabilities at the two facilities to gain efficiencies in both process and spending. This virtual connection eliminated not only the need to maintain personnel at both facilities
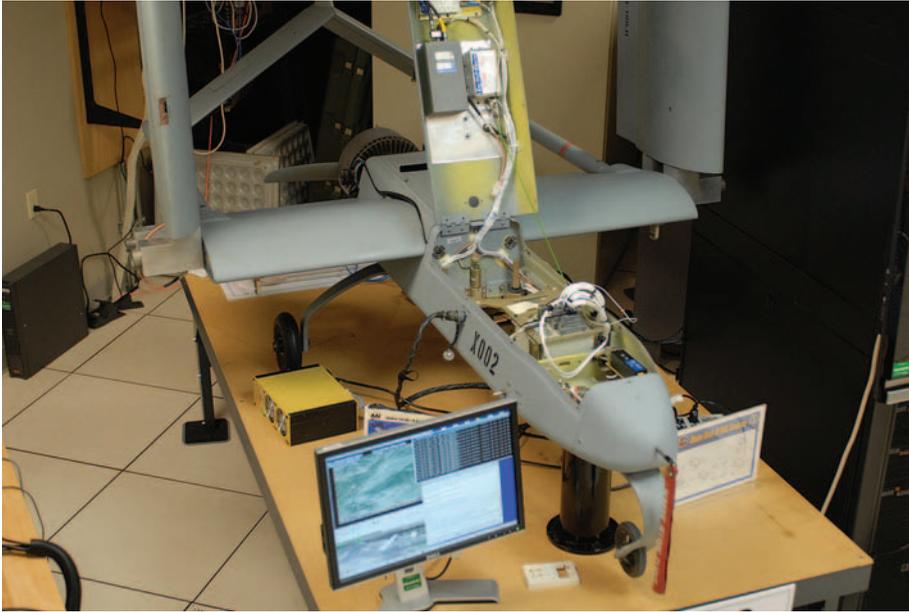
but also the need to move assets between the two sites for every AIC event. The resulting cost avoidance is approximately $50,000 per year in terms of movement of assets and travel-related costs.

## COMBINE AND CONQUER
With the CTSF and the JSIL laboratories linked, other opportunities for efficiency arose. One was to provide a direct link between the Apache Longbow and Kiowa Warrior laboratories at the U.S. Army Research, Development and Engineering Command's Software Engineering Directorate on Redstone Arsenal and related manned and unmanned aircraft facilities at Redstone Test Center on the installation's airfield.

This linkage centralizes interoperability expertise with both manned and unmanned assets, and makes it possible to test IOPs, Family of Systems and AIC events simultaneously. This allows for more efficient use of assets and funding in the rollout of new product versions and implementation of new capabilities, while still maintaining the full AIC test capability to achieve the authority necessary for fielding the systems.

With the successful integration of the manned aircraft laboratories, the JSIL and AIC testing, PEO Aviation and PM UAS wanted to expand the capability beyond the virtual laboratory environment and integrate real and virtual environments for even greater efficiency of testing. Linking those systems together along with MUM-T assets via a radio frequency (RF) network called J-Net (JSIL RF network) made that possible. The result is that the JSIL now has the capability to test interoperability without the expense of coordinating and flying the assets.

With the elements of all systems available to test simultaneously, it is easier to



**IN THE LOOP**
An RQ-7B Shadow UAS undergoes software-in-the-loop testing at the UAS JSIL, Redstone Arsenal, AL. (Photo by Marty Shelton, PM UAS)



**LINKED IN**
Gray Eagle Engineer Donnie Maritt, a contractor with General Atomics, works on AIC testing of the Gray Eagle and Apache Block III at the JSIL. (U.S. Army photo courtesy of PM UAS)
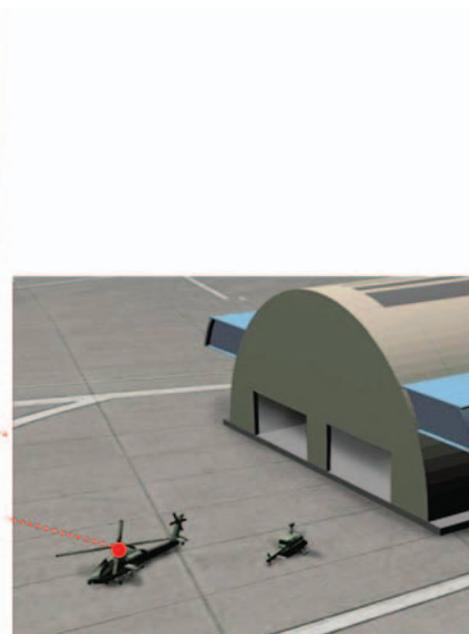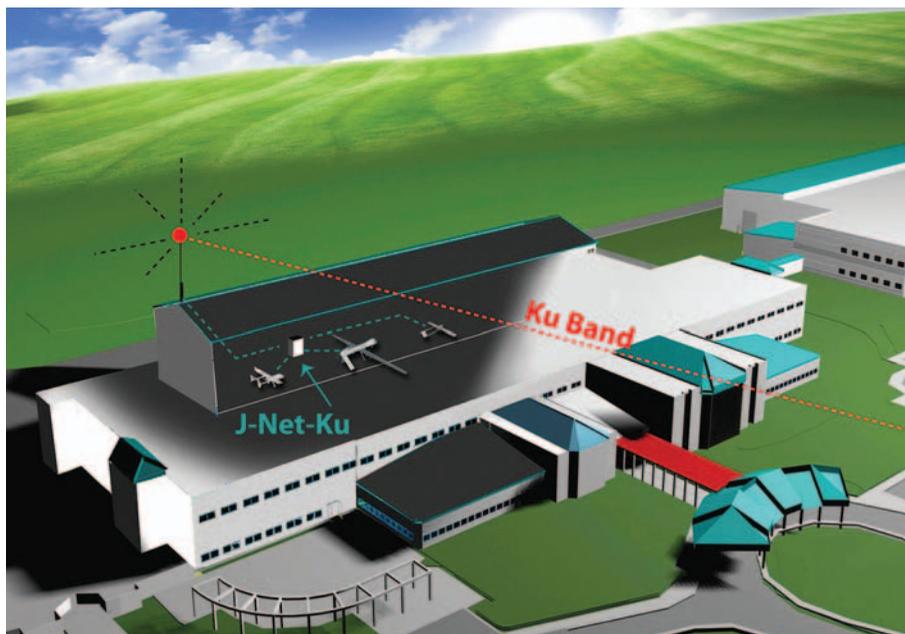
**ZAP TO NET**
J-MUM-T (J-Net to Manned/Unmanned Teaming) operates over Ku band radio frequencies to allow end-to-end interoperability testing with tactical assets. (SOURCE: PM UAS)

integrate new versions of software and hardware and test them for IOP compliance. The cost avoidance of linking these systems has the potential to save PEO Aviation as much as $20 million per year in terms of reduced flight hours, test preparation, schedule and more efficient contracting.

As an example, in April, the JSIL performed a successful AIC test event with the Apache Block III and Gray Eagle to verify that the Apache could receive Gray Eagle payload products, take control of the Gray Eagle's Common Sensor Payload and control the vehicle's flight path. These test activities used real assets in a tactical configuration without the extensive planning, coordination and expense previously required for this level of testing in a flight-line setting.

The cost avoidance achieved for Apache alone was more than $300,000 in terms of flight hours required to move the asset to El Mirage, CA, where the testing is normally done.

**CONCLUSION**

Although MUM-T is a relatively new approach, it has demonstrated significant operational advantages. Taking these a step further, PM UAS and the JSIL have succeeded in establishing the appropriate facilities and associated capabilities to develop, evaluate, test and integrate the technology required to execute MUM-T operations. This meets the primary better buying power (BBP) goal of delivering better value to the taxpayer and warfighter by improving the way DOD does business.

Specifically, establishing and standardizing the necessary IOPs and strategically linking the UAS assets at the JSIL with Army rotary-wing and joint service assets via the DREN has provided the technical foundation to meet the BBP principles of achieving affordable programs, controlling costs throughout the product life cycle, and eliminating unproductive processes and bureaucracy by using existing infrastructure to thoroughly explore the operational and programmatic benefits of MUM-T.

*For more information, contact Mr. Marty Shelton at* **Lawrence.m.shelton4.ctr@ mail.mil** *or 256-313-6452.*

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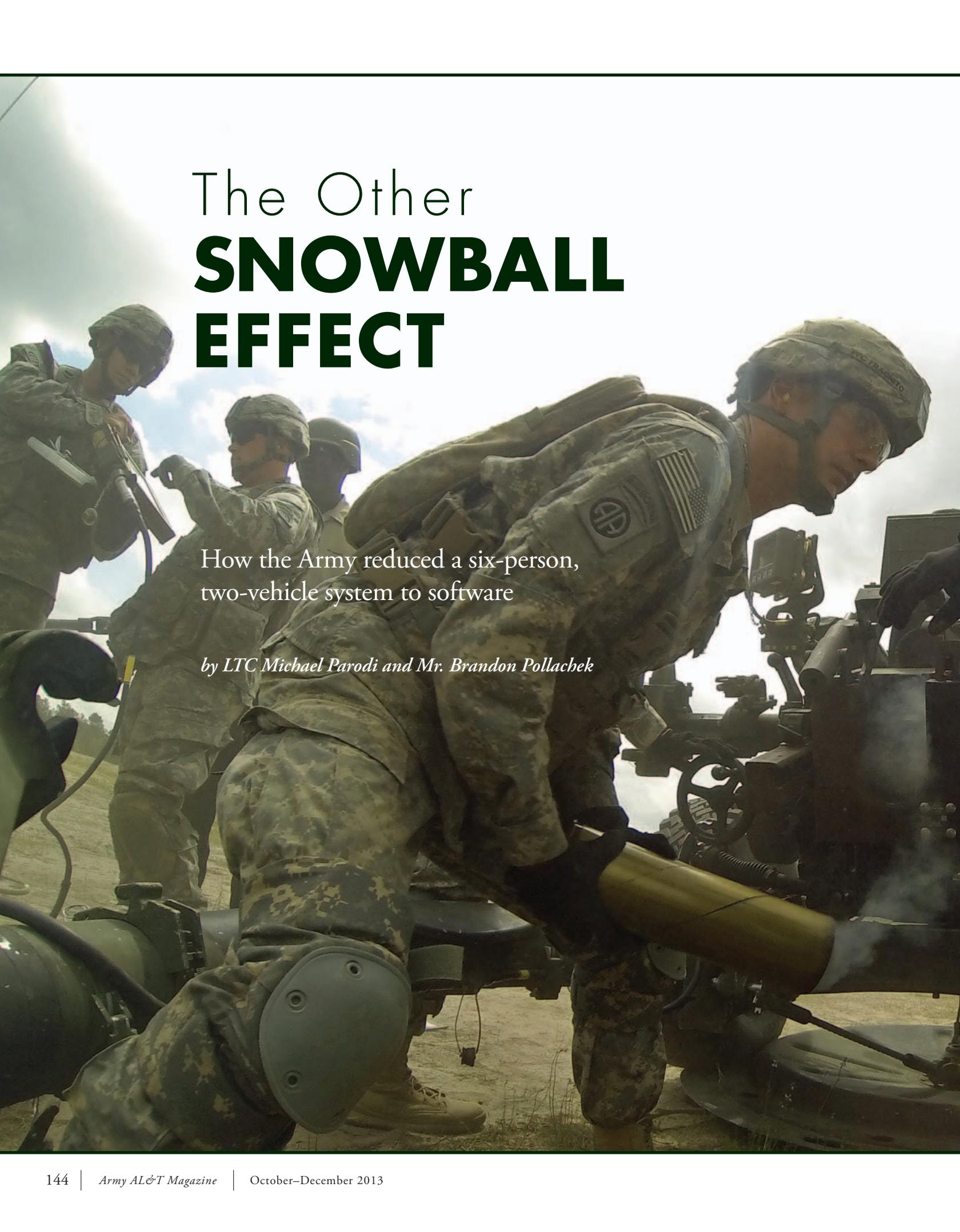
# The Other
# SNOWBALL
# EFFECT

How the Army reduced a six-person,
two-vehicle system to software

*by LTC Michael Parodi and Mr. Brandon Pollachek*

**CORRECTING FOR CONDITIONS**

Profiler models the atmosphere that the artillery round will pass through and tailors a meteorological message to the trajectory. That message is digitally transmitted to a firing unit and is ingested into the firing solution, making corrections to the path of the round. Here, artillerymen with 3rd Battalion, 319th Airborne Field Artillery Regiment, 1st Brigade Combat Team, 82nd Airborne Division (1/82) clear the new all-digital M119A3 105 mm lightweight howitzer April 19 at Fort Bragg, NC. (U.S. Army photo by SSG Mary Katzenberger, 1/82 Public Affairs)

The "snowball effect" is something that military programs generally try to avoid; snowballs usually end up costing the government a great deal of money as they get bigger and bigger. But sometimes the effect can work in reverse.

When members of the Product Manager Meteorological and Target Identification Capabilities (PdM MaTIC) office reached out to their partners associated with the Profiler system, the collaboration resulted in the creation of a snowball that went right.

The Profiler system provides the field artillery with modernized and enhanced data collection and automated analysis of current weather conditions, as well as prediction of conditions likely to occur in the near future along the trajectory and at a point or area where the weapon munitions are expected to engage a target. The current configuration of Profiler consists of a laptop and requires a dedicated Soldier only on a part-time basis.

"Profiler models the atmosphere that the artillery round will pass through and tailors a meteorological [MET] message to the trajectory," explained Gordon Wehri, deputy director, U.S. Army Training and Doctrine (TRADOC) Command Project Office – Sensors. "That MET message is digitally transmitted to a firing unit and is ingested into the firing solution, making corrections to the path of the round. This improvement/correction to the trajectory allows the artillery to engage the target with fewer rounds and with greater accuracy, which equates to greater lethality."

That's a major change from Profiler's original configuration. The system began fielding in 2008, replacing the AN/TMQ-41 Meteorological Measuring Set
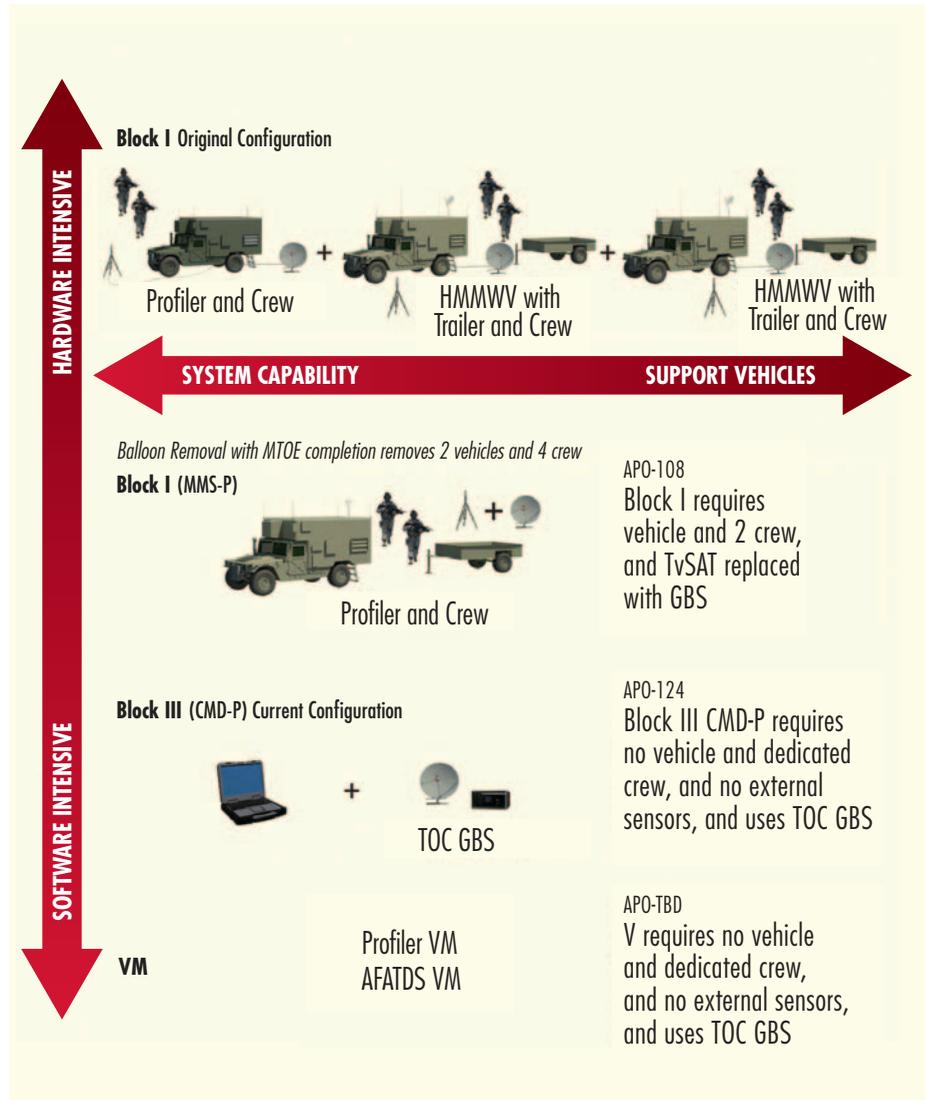


**ACCELERATED EVOLUTION**
The Profiler system has evolved, essentially skipping Block II, to allow for the removal of three vehicles, six Soldiers and a weather balloon. The next step, expected by 2015, is a program called Profiler Virtual Module that in many cases will remove the need for the standard Block III laptop. (SOURCE: PdM MaTIC)

weather system, which relied completely on meteorological data collected from balloon sensors. At that time, the Profiler system consisted of three vehicles and a weather balloon, and required six Soldiers to operate, maintain and secure the system.

## SKIPPING A BLOCK
What started out as a look at the overall benefits of the weather balloon sensor

ended up quite differently. The weather balloon became obsolete once similar weather information became available via a satellite feed. Profiler began using Navy Operational Global Atmospheric Prediction System data fed by Naval Sea Systems Command via the Global Broadcast System satellite. Recently, Profiler migrated to Global Forecast System data provided by the Air Force Weather Agency.

engineering for its efforts. PdM MaTIC is assigned to PEO IEW&S' Project Manager (PM) Navigation Capabilities and Special Programs.

## THINKING SMALL

Removing the balloon from Profiler allowed the Army to get rid of two of the three vehicles and one of the trailers. Most importantly, it allowed the Army to reassign four members of the six-person crew. Those cost savings came mostly from the O&S cost avoidance associated with a two-thirds reduction in crew size.

After PdM MaTIC saw the benefits of removing the balloon operations, the next steps were for PdM MaTIC and the TRADOC capability manager to update requirements over time and harness advancements in technology.

Miniaturizing is one of the biggest challenges the Army has faced for some time. Soldiers want equipment that weighs less, is smaller and operates closely with the smart technology to which they are accustomed. Trying to meet that demand while also adhering to stringent acquisition requirements can be a daunting challenge for the Army, TRADOC and the materiel developer. However, when that community works together, operating within the acquisition process is a manageable undertaking.

The Profiler capability continues to evolve with the fielding of the Block III version, which completely removed the need for vehicles and dedicated manning. The Profiler Block III is basically a software application hosted on a laptop computer directly connected to the TOC local area network (LAN), with the ability to autonomously provide meteorological data messages to the Advanced Field Artillery Tactical Data System (AFATDS) upon request.

**CLEAR SHOT**

The Profiler system provides the field artillery with modernized and enhanced data collection and automated analysis of current weather conditions, as well as prediction of conditions likely to occur in the near future along the trajectory and at a point or area where the weapon munitions are expected to engage a target. Here, Soldiers with 3rd Battalion, 6th Field Artillery Regiment conduct live-fire exercises March 7 with the M777 towed 155 mm howitzer at Forward Operating Base Arian in Ghazni province, Afghanistan. (U.S. Army photo by SFC Kenneth Foss, 1st Brigade Combat Team, 10th Mountain Division Public Affairs)

In the end, the balloon was set free, so to speak, as were most of the Soldiers, vehicles and supporting materials. Those "losses" have accounted for a significant operations and support (O&S) cost avoidance for the Army. In fact, in transitioning directly from Block I to the Block III variant of Profiler, the Army has achieved a cost avoidance of $71 million since FY10 by not having to develop and field Block II. The Army is projected to save $32 million per year beginning in FY13.

In the original fielding strategy, Profiler was slated to move to a Block II variant, which would have provided the capability within a separate shelter that still

required the assignment of two Soldiers. The PdM MaTIC office determined that it would be a waste of time and money to place the system in a shelter, as emerging technology indicated that the application could fit easily onto a laptop that, in turn, could fit easily inside the tactical operations center (TOC). This new strategy eliminated the requirement for the planned Block II system and accelerated the movement to Block III.

The balloon removal was deemed so successful that the Program Executive Office Intelligence, Electronic Warfare and Sensors (PEO IEW&S) received a Value Engineering Achievement Award in 2010 from the director of defense research and

**IN SYNC WITH AFATDS**
The Profiler Block III, basically a software application hosted on a laptop computer, can autonomously provide meteorological data messages to the AFATDS system upon request. Here, PFC Sedric Lakey, a fire support specialist assigned to 1st Brigade Combat Team, 1st Cavalry Division (1/1 CAV), performs tasks on AFATDS during a Mission Command Systems Integration training exercise March 5 at Fort Hood, TX. (Photo by SGT John Couffer, 1/1 CAV Public Affairs)

## CONCLUSION

Continuing the philosophies that were applied to the Profiler system over the past few years, the PdM MaTIC office, in conjunction with its teammates, is taking the next step in the system's evolution. The goal is to provide the artillery community the vital weather data it needs using platform-agnostic software.

PdM MaTIC and its teammates anticipate that by 2015, a program called Profiler Virtual Module (PVM) will, in many cases, remove the need for the standard Block III laptop. PVM will be a platform-agnostic system that the Army can use in whatever future Common Operating Environment it develops. Once again, early communication among the PM, user and testing communities is enabling the swift transition of Profiler capability from a logistic and financial burden to a flexible, cost-effective, easy-to-use solution—a snowball in reverse.

Now, when AFATDS has a fire mission and needs a fire solution, it sends a MET data request message addressed to the Profiler laptop over the TOC LAN. Based on the request, Profiler autonomously generates and sends the required MET data back to the AFATDS terminal. The reduced logistics footprint of the Block III configuration, along with the elimination of dedicated system manpower requirements, will further increase the O&S cost avoidance.

Ultimately, PM MaTIC and its partners from TRADOC, U.S. Army Test and Evaluation Command, HQDA G-8 and industry have allowed the Army to transition from a system that was very labor-intensive and demanded a large footprint to a solution residing on a laptop, a thin client or a blade server, which offers increased flexibility to support the field artillery mission and benefit the warfighter.

In addition to the collaboration among Army partners, PdM MaTIC worked hand in hand with the U.S. Marine Corps, which also uses Profiler as an integral part of its AFATDS firing solution. The Marine Corps provided invaluable input and support that made these changes possible. By taking part in early discussions on the future of the Profiler system, the Marines will also benefit from various improvements to the system as well as the cost savings made possible by Profiler's smaller footprint.

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*MR. BRANDON POLLACHEK, of AASKI Technology, is the public affairs officer for PEO IEW&S. He holds a B.S. in liberal and professional studies from Cazenovia College and has been writing about military systems for 14 years.*

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FROM THE DIRECTOR,
ACQUISITION CAREER MANAGEMENT
LTG WILLIAM N. PHILLIPS

# In **Step** *with the* **Warfighter**

## In pivotal R4D mission, Army Acquisition continues to support the Soldier

Following the attacks of 9/11, America's efforts to dismantle al-Qaida, the Islamic terrorist organization then led by Osama bin Laden, took us into Afghanistan with the objective of overthrowing the Taliban. Thus began Operation Enduring Freedom (OEF) on Oct. 7, 2001, marking the start of the war in Afghanistan. For the past 12-plus years, our warfighters and Army Acquisition Logistics and Technology (AL&T) Workforce members have been in contact with the enemy.

From the Battle of Tora Bora to the current Retrograde, Reset, Redeployment, Redistribution and Disposal (R4D) mission, Army AL&T professionals have been there every step of the way with the warfighter to provide the systems that make our Soldiers the most lethal weapon on the battlefield.

As we turn our attention to R4D in the final stages of more than a decade of combat, Army Acquisition still has a major role to play in the culmination of this mission, ensuring that the Army makes the best possible use of the very systems we fielded and maintained throughout the war. We also continue to support our Soldiers' decisive edge while remaining good stewards of taxpayer dollars.

DOD estimates that more than 750,000 major end items are currently in Afghanistan—$36 billion worth of equipment. In the next 12 months, the U.S. military expects to remove as many as 28,000 vehicles and 40,000 shipping containers from Afghanistan. That's in addition to the approximately 1,000 pieces of rolling stock and more than 2,000 cargo containers that are coming back to the States per month, by air or on ground routes across Pakistan and Eastern and Western Europe. This R4D effort is expected to cost some $5.7 billion and requires intricate planning, teamwork, creativity and innovation.

R4D is also an opportunity to take a close look at where Army Acquisition goes from here: Knowing the state of our equipment, from tracked vehicles to robotic systems, where do we need to invest our limited resources in the near-, mid- and long-term? What can we do to preserve the vital skills and capabilities of our organic industrial base?

### TEAM EFFORT
R4D in Afghanistan is not new. For more than 20 months, ASA(ALT), in conjunction with the HQDA Reset Task Force and other key Army organizations (including the G-3, G-4 and G-8; the Army Budget Office; Office of the Chief of Army Reserve; the Army National Guard; the Army Materiel Command (AMC); Army Forces Command; Army Sustainment Command; Army Medical Command; U.S. Army Europe; U.S. Army Pacific; and U.S. Army Special Operations Command), have been retrograding, resetting and redistributing to our coalition partners,

**SLING LOAD**
Bringing new capabilities into the Afghanistan theater even as a massive amount of materiel moves out can be like working on an airplane, or helicopter, while it's in flight—difficult, but doable. Here, a U.S. Army Task Force Falcon CH-47 Chinook helicopter, assigned to Bravo Company, 2nd Battalion, 149th Aviation Regiment, 36th Combat Aviation Brigade, transports a container via sling load over eastern Afghanistan, Aug. 24. (U.S. Army photo by CPT Peter Smedberg)

including the Afghans, or simply cutting up and disposing of equipment.

Deciding which option is best for each individual piece of equipment involves every level of Army AL&T, from the product and project managers to the logisticians to the field service representatives to the Office of the ASA(ALT), and an unprecedented attention to detail at each of those levels.

**ACCORDING TO PLAN**
To execute this mission, ASA(ALT) is following a detailed plan in support of R4D. Developed by our in-theater personnel at ASA(ALT) Forward, it brings together strategies from every PEO and PM with equipment in Afghanistan.

The mission of the HQDA Reset Task Force is to coordinate and oversee the execution of reset, including repair, replacement and recapitalization. This supports the intent of the larger reset strategy: to establish a balanced six-month process—12 months for the reserve component—that systematically restores deployed units to a level of personnel and equipment readiness that permits the resumption of training for future missions.

ASA(ALT) forces are not exempt from R4D. In the past year alone ASA(ALT) has reduced its personnel in theater needed for retrograde operations from 6,400 to 4,000.

Moving more than 750,000 major end items is a daunting task. The job is unprecedented in complexity; the region's terrain and politics make it a logistical ordeal, compared with the retrograde from Iraq.

**TWOFOLD MISSION**
Adding to the complexity, we are still supporting the warfighters in theater with equipment at this point of R4D. It's sort of like working on an airplane in flight—difficult, but doable with the right skills and ingenuity. An example of this is our deployment of a small, skilled "surge" team to OEF this year to execute the final phases of fielding Capability Set (CS) 13.

Composed of technologies that include satellite-based systems, advanced data radios, smartphone-like devices and the latest mission command software, CS 13 provides the Army's first integrated network connectivity across the entire brigade combat team (BCT) formation, from the fixed command post to the commander on-the-move to the dismounted Soldier. (See related article on Page 14.)

The Army targeted CS 13 capabilities to arrive in the OEF theater at a critical time. As U.S. forces continue to retrograde, they are closing many of their forward operating bases and removing communications infrastructure such as hard lines, towers and other equipment. With CS 13, the BCTs tasked with removing this infrastructure still have the ability to communicate at the tactical level and to exchange voice and data across their entire area of operations. CS 13 has been fielded to two security force assistance brigades (SFABs) and one Combined Joint Task Force (CJTF) Headquarters for use by select units across that CJTF's area of responsibility.

CS 13 is expected to be an enduring capability for the next two SFAB rotations, until the U.S. mission in Afghanistan concludes.

**CLEAN UP TIME**

A part of R4D is disposal, and that includes cleaning up and disposing of massive amounts of trash. Here, U.S. Army Soldiers with Bravo Battery, 5th Battalion, 25th Field Artillery Regiment, 4th Brigade, 10th Mountain Division, clean up old supplies in the retrograde yard on Forward Operating Base Mehtar Lam, Aug. 16. U.S. Soldiers with Bravo Battery have been cleaning up all the leftover garbage and organizing for the past month. (U.S. Army photo by SPC Edward Bates)

**CONTAINERIZATION**

A good deal of what is coming out of Afghanistan in R4D has no wheels, and so must be packed into containers and shipped out. U.S. Army SPC Casey E. Sleeman, a cargo specialist with the 203rd Inland Cargo Transfer Company, 157th Combat Sustainment Support Battalion, supporting Task Force Lifeliner, ground-guides SPC Kevin E. Berry, a materials handler equipment operator, as Berry prepares to pick up a container at Bagram Airfield, Aug. 29. (U.S. Army photo by SGT Sinthia Rosario)

> DECIDING WHICH OPTION IS BEST FOR EACH INDIVIDUAL PIECE OF EQUIPMENT INVOLVES EVERY LEVEL OF ARMY AL&T, FROM THE PRODUCT AND PROJECT MANAGERS TO THE LOGISTICIANS TO THE FIELD SERVICE REPRESENTATIVES TO THE OFFICE OF THE ASA(ALT).



**IT TAKES A VILLAGE, AND TRUCKS**
R4D requires partnerships among all of the elements of the military to make the process go as smoothly as possible. It also requires a lot of heavy trucks. Here, Soldiers assigned to the 3rd Platoon, 1245th Transportation Company, 1034th Combat Sustainment Support Battalion, move military vehicles as they prepare to leave on their convoy escort team mission at Mazar-e-Sharif, Balkh province, Afghanistan, June 18. (U.S. Army photo by SGT Sinthia Rosario)

Much like R4D overall, fielding CS 13 in OEF would be impossible without a strong partnership of the 401st Army Field Support Brigade, Task Force Signal, CJTF-101 headquarters, the receiving BCTs and ASA(ALT) organizations. Changing operational conditions and numerous funding challenges require timely coordination with HQDA G-3/5/7, G-8 and others.

At the same time, we are taking great care to apply lessons from Operations Desert Storm, Iraqi Freedom and New Dawn, as well as operations in the Balkans, to refine and improve our fielding and R4D efforts.

**CONCLUSION**

At the end of the day, while our acquisition challenges are many, we must always remember our primary role and responsibility is to support the warfighter. As acquisition professionals, we are a key part of the profession of arms. Staying connected with our warfighting partners is a critical task for each and every one of us. In partnership with our PEOs, PMs and AMC materiel enterprise partners, we must ensure that both current fielding operations and the R4D mission continue seamlessly. Our warfighters deserve nothing less.



**ON POINT**
Throughout R4D, Army AL&T professionals have been there every step of the way with the warfighter to provide the systems that make our Soldiers the most lethal weapon on the battlefield. Here, U.S. Army 1LT James Gaffney, left, and CPT Maxwell Pappas, both assigned to Troop C, 1st Squadron, 89th Cavalry Regiment, 2nd Security Forces Assistance Brigade, 10th Mountain Division, use their weapons sighting systems to view an Afghan National Security Forces route clearance convoy during the final phase of Operation Omna in Paktika province, Afghanistan, July 8. (U.S. Army photo by SGT Mark A. Moore II)

**CONTRACT CAPABILITIES**
Contractors play an integral role in the retrograde of equipment from Afghanistan. Here, contractors from the Bagram Airfield Retrosort Yard load a water tank onto a contracted transportation truck Nov. 2, 2012. (U.S. Army photo by 1LT Henry Chan, 18th Combat Sustainment Support Battalion Public Affairs)

# GETTING CONTRACTING
# **RIGHT**

After 33 years in the field, new DASA(P) takes the
long view of where the Army needs to be

Although I am newly appointed as the deputy assistant secretary of the Army for procurement (DASA(P)), a lot of folks in the Army contracting community have probably seen me over the years, as I've been around for a while. In fact, I recently celebrated 33 years of federal service, all of it spent in Army contracting.

I started as an intern at the Army Materiel Development and Readiness Command (DARCOM), the precursor to Army Materiel Command (AMC), at what was then known as the Tank-Automotive Readiness Command (TARCOM), now the TACOM Life Cycle Management Command. I moved up to a contracting officer position in six years and from there into numerous supervisory and leadership positions before becoming the principal assistant responsible for contracting (PARC) at TACOM.

Before I realized it, I had a career. Unlike some, I did not move back and forth between federal agencies or tread into the private sector and return. I fell in love with Army contracting from the very beginning and never looked back. It's what keeps me going, because it continues to be as exciting and challenging as it was when I entered the field back in 1980, right out of college.

## CHALLENGES
## AND ADVENTURES

Army contracting has always had its challenges. In many respects, that's just the nature of the business. In this regard, every position I've held has been a great adventure and, dare I say, even fun! I honestly love the contracting business. One of the most important jobs early in my career, which also happened to be one of my favorite positions, was when I was a first-line supervisor and procuring contracting officer (PCO) at TACOM from

**IDENTIFYING LEADERS**
One of the greatest responsibilities of Army contracting leadership is to identify and encourage the next generation of managers, watchdogs, contracting officers and leaders. Here, ACC CSM John Murray, center left, and CSM Angel C. Clark-Davis, U.S. Army Expeditionary Contracting Command, conduct the NCO of the Year board by video teleconference. (Photo by Edward G. Worley, ACC)

1986 to 1995. In what other position can one have such a critical influence on the purchasing decision and, more important, an impact on the environment and relationship among the government, its contractors and the people you work with on a daily basis?

We've all had vendors tell us they offer the only solution for the U.S. Army; their services are unique; they are the only one that can complete the project on time and on budget. In these situations, it's the PCO who ensures that every contract is executed in accordance with Federal Acquisition Regulations and that every buy follows the law. Having worked with so many over the years, I am proud to serve with my fellow members of the Army Acquisition Workforce.

This is a great career field for civilians and military personnel. Contracting provides direct support to our warfighters; whether it's ensuring that they have the right equipment and tools, or providing meal and support services, our job is to ease the stress and contribute to their success anywhere and at any time, but especially in contingency environments.

**CHANGE OF STATION**
For the past six years, I served as the executive director of the U.S. Army Contracting Command (ACC) – Warren, MI. What a great place to live and work. (Go, Lions!) In July of this year, when I accepted the DASA(P) position, I did something I really never thought I'd do: I left Michigan. I sold my house, downsized and moved to the National Capital Region (NCR).

Although this marked my first permanent change of station move, it wasn't my first time working in the NCR. Back in 2005, I did a four-month developmental assignment at Headquarters, U.S. Army Corps of Engineers in downtown Washington as the deputy to the contracting director and acting PARC. It was right after Hurricane Katrina hit New Orleans, so I got an unexpected lesson in contingency contracting. This large-scale, natural domestic contingency was far different than the usual developmental assignment, and I learned a lot.

Some may also remember that, about 18 months ago, at the beginning of FY12, I served as ACC's deputy to the executive director, working in Huntsville, AL. It was there that I saw firsthand how the Army contracting enterprise operates and the importance of developing personal and professional relationships between headquarters and field offices. During my assignment, it occurred to me that it would be a great idea to rotate each of the directors in the field through the headquarters in some form or fashion. And here I am, back in the NCR at HQDA. Now it's my turn to spread the word about Army contracting's most important asset— its people.

I've always believed that our success relates directly to our workforce. We're 7,700 people strong and growing, yet we're a tight community. Many of us have years of training and the highest levels of certification. Others are relatively new members of that community, and those are the people who have my interest at the moment and inspire me every day. They are the next generation of managers, watchdogs, contracting officers and leaders who will continue Army contracting's legacy of being good stewards of American taxpayer dollars. Our continued success rests on their backs, so it's vitally important that we train and develop them to the best of our ability and give them the tools in their rucksack that they'll need to succeed.

**'A TOUCH OF OPTIMISM'**
As DASA(P), I am truly honored and humbled to serve as your voice within the Army and with DOD senior leaders.

**REAL-WORLD TRAINING**
Hallock received an unexpected lesson in contingency contracting in 2005, right after Hurricane Katrina hit New Orleans, LA, during his four-month developmental assignment at Headquarters, U.S. Army Corps of Engineers as the deputy to the contracting director and acting PARC. Here, a National Guard High-Mobility Multipurpose Wheeled Vehicle leaves the Superdome Sept. 5, 2005, to patrol the streets after Katrina devastated the city and left thousands stranded. (U.S. Navy photo by Photographer's Mate 1st Class (AW) Brien Aho)

It's my responsibility to ensure that every member of the Army contracting workforce has the training, education and resources they need at every phase of their government service. That organizational dedication and commitment is what helped me advance in my career—that, and a touch of optimism, especially when facing unexpected challenges, which happens on a regular basis in our world.

Speaking of challenges, my "honeymoon" in this new position was cut short by the reality of sequestration and furloughs, which have hit all of us across DOD during the 3rd and 4th quarters of FY13. But this reality has never shaken my resolve to continue to portray the many successes of the Army contracting enterprise.

I've been in this business long enough to realize that many folks on the Hill and in the media and those charged with investigating our business don't always have the full picture of Army contracting. They tend to focus on resourcing, oversight, fraud, waste and abuse, which is

necessary. What they don't always understand is that if left unchecked, reductions and hiring freezes will increase the Army's exposure to risk, which leads directly to opportunities for fraud, waste and abuse of the contracting process.

How do we change that perception? If we are truly going to influence change, the entire Army contracting enterprise must sing from the same sheet of music so that our collective voices can be heard. There's no doubt that we have an uphill battle, but it's a battle worth our time and energy to pursue. Rectifying and correcting many long-standing deficiencies that have been overshadowed by urgent requirements and the needs of those fighting multiple wars on various fronts will not be easy, but nothing worthwhile comes without effort.

**GUIDING PRINCIPLES**
Let me share the principles that will steer my leadership of the Office of the DASA(P):

• A continued dedication to improving the size and quality of the workforce. As we all know, the contracting officer has the most critical job in contracting, and all policy and guidance issued from headquarters must consider the contracting officer.

• An ongoing dedication to contracting as a vital mission-enabler, a team player in the acquisition process. Our contracting cadre at all levels must accept this role and become involved early in the acquisition process. Each buying command must be allowed to continue to staff and recruit high-quality individuals with the skill sets needed to further the initiatives and strategies that posture the acquisition and contracting community for the future, especially as it relates to hard-to-fill 1102 series and 51C positions. Given the hiring freeze, our work is cut out for us in this area.

• A continued commitment to properly positioning Army contracting so that it is free from undue influence and routinely advises and influences leadership

**LENDING SUPPORT**
Providing contract management skills and expertise to support operations both stateside and overseas is central to the mission of Army contracting. This support encompasses combat operations, training exercises, natural disasters and other Army contracting priorities. Here, Beverly Johnson, left, and Sandra Merritt, ACC Deployable Cadre Program coordinators, review personnel information. (Photo by Larry D. McCaskill, ACC)

improvement actions for more than 270 Army contracting offices worldwide, which execute contracts for major weapons systems, base logistics support, construction and wartime operational contracting in Iraq and Afghanistan; and ensures the execution of federal, DOD and Army regulations for acquisition, procurement and related business practices. As the functional career representative for contracting, the DASA(P) oversees the recruitment, training, certification and professional development of the Army's contracting workforce. Also, as designated by the Deputy Secretary of Defense and delegated to the Secretary of the Army, the DASA(P) provides staff supervision and support to the multinational forces through U.S. Army Central Command to support joint force combat operations, humanitarian relief, reconstruction, and the security of Iraq and Afghanistan.

Hallock began his career in Army contracting as a 22-year-old intern at the Detroit Arsenal, MI. A member of the Senior Executive Service since 2007, Hallock holds a B.S. in business administration from the University of Delaware and an M.S. in program management from the Naval Postgraduate School. He also completed the LOGTECH Executive Course and the Federal Executive Institute's Army Senior Leadership Development Program. Hallock is Level III certified in life-cycle logistics, program management and contracting, and Level II certified in test and evaluation engineering. He is a member of the U.S. Army Acquisition Corps. Hallock has received the Department of the Army Achievement Medal for Civilian Service, the Department of the Army Commander's Award for Public Service, the Superior Civilian Service Award and the Civilian Service Award. Most recently, President Obama appointed Hallock to serve on the White House Committee for Purchase from People Who Are Blind or Severely Disabled.

decisions. There is no question that oversight and administration of contracts and the contracting process are necessary, and that "getting contracting right" is fundamental to the success of our Army and the warfighter.

Let me close by saying I am excited about the opportunity to have a positive impact on Army contracting for the future. I look forward to working with the many acquisition experts across the Army and DOD in shaping our ability to continue improving the quality and capability of

our workforce and the resulting quality of our contracting efforts. I think we'd all like to be recognized as the generation that paved the way by making Army contracting just a bit better for those who follow in our footsteps.

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MR. HARRY P. HALLOCK was appointed the DASA(P) on July 14. In that capacity, he manages the development and dissemination of policies, processes and contracting business systems; directs the evaluation, measurement and continuous

# SPEAKING OF SAVINGS

## Language for tracking efficiencies calls for greater precision, consistency

*by Mr. Thom Hawkins and Mr. Vince Dahmen*

**KEEPING YOUR GUARD UP**

The time has come for the acquisition community to examine the terms of reporting efficiencies and making recommendations for how we might present a clearer, more credible picture of financial benefits. Here SGT Zach Smola, rear-door gunner on a CH-47, keeps watch on the mountains in Uruzgan province, Afghanistan, May 12. The Chinooks, operated by members of 2nd Battalion, 104th Aviation Regiment from the Connecticut and Pennsylvania Army National Guard, have played a vital part in the mission in Afghanistan since their arrival in Dec. 2012 by performing resupply, retrograde, and planned missions. (U.S. Army photo by SGT Jessi Ann McCormick)

The current fiscal environment is driving many conversations about efficiency and cost reductions, but some of the statements made have been around for years.

We've all heard the dire warnings about how best to define a cost reduction, such as: "Call it 'cost avoidance' because 'cost savings' is an invitation for someone to take your money away." Certainly that has happened, and such anecdotes abound. One can readily imagine a cartoon featuring a pair of vultures circling a cost reduction, arguing about whether it's an avoidance or a savings before swooping down to devour the carcass.

Another common statement is some version of: "I don't mean *that* kind of cost savings. I mean *real* cost savings."

The idea that we must preface a term like "cost savings" with a qualifier, as if some savings are a mirage (imagine disappointed vultures), reflects the imprecision of our terminology and the inability of some of these commonly made statements to withstand careful scrutiny. With the high visibility and high stakes now associated with reporting efficiencies, the time is ripe to examine the terms at our disposal and to offer a few recommendations for how the acquisition community might present a clearer, more credible picture of financial benefits.

## BASIC DEFINITIONS

In light of the history of confusion surrounding the terminology of cost reductions, it is prudent to begin by reviewing the basic definitions and the authority of their source.

Army Regulation 11-18, governing the Army's Cost and Economic Analysis Program (online at **http://www.apd.army.mil/pdffiles/r11_18.pdf**), the assistant secretary of the Army (financial management and comptroller) (ASA(FM&C) has overall responsibility for the program. ASA(FM&C) is charged with leading all economic analysis activities and policymaking for the Army and provides definitions of the key terms in both the "Department of the Army Economic Analysis Manual" (February 2001; online at **http://asafm.army.mil/Documents/OfficeDocuments/CostEconomics/Guidances//eam.pdf**) and the more recent "U.S. Army Cost Benefit Analysis Guide," 3rd edition (updated April 24, 2013; online at **http://asafm.army.mil/Documents/OfficeDocuments/CostEconomics/guidances/cba-gd.pdf**).

The following definitions are from the "Cost Benefit Analysis Guide," and are also used in the Army Lean Six Sigma Financial Handbook (Version 7, 15 October 2011):

- **Cost reduction.** A reduction in the number of dollars needed to meet a customer-established requirement by improving a process or function.
- **Savings.** A cost reduction that enables a manager to reallocate funds within the budget or program period.
- **Cost avoidance.** Any cost reduction that is not savings.

Although the definitions are formulated somewhat differently by various sources within ASA(FM&C), the basic meaning is fairly clear. A cost reduction is based on requirements: If the reduced requirements were funded, that is a savings, because



**BLACK BELT**
A cost reduction is based on requirements. If the reduced requirements were funded, that is a savings. If they were not, it's an avoidance. Here, student CW2 Kirkland Bell, standing, moves customer orders and other processing documents during training practical exercise at an LSS Black Belt certification course, Mar. 4, at Fort Bragg, NC. The course is sponsored and taught by the U.S. Army Forces Command (FORSCOM), G-8, Business Readiness Improvement Division and the U.S. Army Reserve Command G-8, Continuous Process Improvement Office. (U.S. Army photo by Bob Harrison, FORSCOM PAO)

there is money left over for the manager to reallocate; if they were not, it's an avoidance, because there is nothing to reallocate. The distinction seems simple enough, yet experience has shown that even among individuals familiar with the definitions, there is wide variation in applying the terms.

## THE PROBLEM OF 'REAL' SAVINGS

Terminology can be used for good or bad—to clarify, or to obfuscate. Despite the guidance provided, ad hoc definitions are continuously created and destroyed in the service of efficiencies, taskers and funding drills. Some Eskimo languages have more than 50 different terms for snow, illustrating the variety of their experience. The root of our problem is that we only have a handful of terms—cost reduction, cost savings and cost avoidance —to describe a delicately nuanced scale of efficiencies, hindering our ability to communicate on the subject.

Here, for example, are a few distinctions in the spectrum of financial benefits:

1. A reduction in unfunded requirements.
2. Taking an action that avoids increasing the cost of requirements (i.e., the requirement is funded, but an increase is not).
3. A cost reduction in an out-year subject to future program objective memorandum (POM) planning (funding requirements will be reduced in the next POM cycle).
4. A cost reduction in the year of execution after funds are received, whereby the dollars can be reallocated for another approved purpose.

We can easily agree that the last example can be called a cost savings, and there is general consensus, backed by the "Cost Benefit Analysis Guide," that the first is



**TEAMWORK**
The definition of cost reduction is reducing the cost to meet a customer-established requirement by improving a process or function. Here, a TACOM logistics assistance representative (LAR) works with Soldiers from 96th Aviation Support Battalion, 101st Combat Aviation Brigade, in trouble-shooting problems with a vehicle. The LARs provide training to Soldiers which directly results in cost savings or avoidance by extending the life of equipment, keeping equipment mission ready and ensuring equipment is safe to operate. (U.S. Army photo by Summer Barkley, 401st Army Field Support Brigade (AFSB) Public Affairs Office (PAO))



**BACK INTO SERVICE**
"Real" cost savings is money in the bank that can be used to buy something else, whereas a funded future requirement is only as good as the promise to fund it. Here, Common Remotely Operated Weapon Station field service representatives and instructors Anthony Palmer, Bagram Airfield, Bryan Idalski, Forward Operating Base (FOB) Sharana, Seamus C. Murphy, seated, FOB Shank, and Floid Krajcovic, FOB Salerno, clean, wrap, bag and tag components for weapons adaption kits from components turned in at retrosort yards. Recovery of serviceable components has resulted in a cost avoidance of $8,650,107 from Feb. 21 to Mar. 23, 2013. (U.S. Army photo by Summer Barkley, AFSB PAO)

**TARGET PRECISION**
Terminology can be good, bad or confusing. Despite the guidance provided, ad hoc definitions are continuously created and destroyed in the service of efficiencies, taskers and funding drills. The root of our problem is that we only have a few terms to describe a delicately nuanced scale of efficiencies. Here, CW2 David Franco (left), a 101st Airborne Division (Air Assault) targeting officer, assists SGT Chad Beyer, a student in the precision fires operator course, with a practical exercise to mensurate targets during training at the Kinnard Military Training Complex at Fort Campbell, KY, Jan. 30. Franco, along with two other targeting officers from the 101st, were the first in the Army to achieve precision fires instructor certification at a division level. This certification can contribute to as much as $1.5 million savings for the division in its training budget. (U.S. Army photo by SFC Stephanie Carl)

not. In between the terra firma of cost savings and avoidance, however, lies a heavily mined no man's land of variation in how we report efficiencies across Better Buying Power 2.0, will cost/ should cost, services acquisition optimization, Lean Six Sigma (LSS) and value engineering.

The question is, at what point does the distinction between cost savings and avoidance become useful? The answer may depend on your perspective.

The term "savings" does not automatically distinguish between the current year and the future, and there is reluctance among managers to group current-year savings with future savings. Given the fiscal environment, one could be forgiven for only counting money that is in hand. "Real" cost savings is money in the bank that can be used to buy something else, whereas a funded future requirement is only as good as the promise to fund it.

One might argue that to a program manager (PM), there is no tangible difference between a reduction in unfunded requirements and a cost reduction in an out-year subject to future POM planning.

However, for a Program Evaluation Group (PEG) chair responsible for the long-term funding strategy of a functional area such as equipping, sustaining, or training, a reduction in a future funded requirement means that someone else's unfunded requirement may now be funded. To the PEG chair, that's a cost savings, because those dollars can be reallocated.

Consider another scenario: A PM takes an action that reduces costs for another organization. Does the PM who took the action record this efficiency as avoiding cost for the receiving organization, or does the receiving organization record

this as a cost savings, despite having taken no action itself to reduce cost?

## THE PROBLEM OF 'GRANULARITY'

Finally, there is the issue of the granularity, or the level of detail in the measurement. In his seminal 1984 business novel, "The Goal: A Process of Ongoing Improvement," Eliyahu M. Goldratt describes a manufacturing plant that bases its success on the sum of the "efficiencies" created by its individual departments, blinding itself to the plant's overall decline.

Costs are hierarchical: The cost of a single activity is subsumed into a project, which in turn is subsumed into a higher level, and so on. The acquisition community may claim financial benefits at the activity level, even though there is no reduction at the project level, because other activities may have increased in cost.

In his 1967 paper, "How Long Is the Coast of Britain? Statistical Self-Similarity and Fractional Dimension" (online at **http://classes.soe.ucsc.edu/ams214/Winter09/foundingpapers/Mandelbrot1967.pdf**), mathematician Benoit Mandelbrot showed the coastline to approach an infinite length based on increasing the granularity of measurement. A coastline measured in miles is shorter than the same coastline measured in inches, because the shorter unit allows for the measurement of smaller variations. The logical conclusion here for the acquisition community is that if we measure and calculate our efficiencies at lower levels of the work structure, we'll have a greater result than at the higher levels.

Consider the following scenario: A program manager successfully optimizes part of the program's fielding plan and frees up money in the current year. The PM can then procure additional end-item

*THE IDEA THAT WE MUST PREFACE A TERM LIKE "COST SAVINGS" WITH A QUALIFIER, AS IF SOME SAVINGS ARE A MIRAGE … REFLECTS THE IMPRECISION OF OUR TERMINOLOGY AND THE INABILITY OF SOME OF THESE COMMONLY MADE STATEMENTS TO WITHSTAND CAREFUL SCRUTINY.*

quantities against the program's acquisition objective, which is only partially funded in the out-years of the budget.

The successful reduction in fielding costs is a cost savings at the activity level because it made dollars available for reallocation to another approved purpose. However, the end result at the program level was to reduce a future unfunded requirement, which is a cost avoidance. One might be tempted to issue a blanket policy that all savings will be reported at the program level, but that would leave open the possibility of a PM claiming a savings even if the result is not an overall savings for the Army. The granularity or reporting by level of hierarchy can not only change savings to avoidance, but also determine whether a cost reduction even occurred.

## CONCLUSION

The adoption of a common financial benefits model and language for all reported efficiencies is essential to reducing variation and bolstering the credibility of any claim of financial benefit, as well as reducing the risk of double-reporting.

The Army must identify granularity standards to at least acknowledge and begin mitigating the problem of granularity in financial benefit claims. To some degree, there will always be an element of professional judgment in such claims, but without acknowledging the problem, there is no possibility of ever coming to a consensus.

Finally, organizations reporting savings should include a description of the usage

of funds saved; for example, by citing an unfunded requirement that was reduced. Without such a description, it is not clear whether the savings are available and could be claimed to pay a bill, or if the reporting organization has already used the funds for an approved purpose internally.

While these steps would not put an end to every debate over cost reductions, they would bring clarity to the conversation. As for the vultures, they can just keep circling.

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# NEW TRICKS
## FOR AN
# OLD WATER
## CAN

Researchers create cool, collapsible water containers for Soldiers in the field

*by Mr. Bob Reinert*



**SPLOOSH!**
Taken with a high-speed video camera, these images show the HSCWB filled with five gallons of water hitting a concrete pad from 37 feet. This test was performed three times to ensure that an HSCWB full of water can be dropped from a low-flying helicopter, even onto concrete. The same test, if performed using a conventional water can, would have less positive results. (Photos by John Doucette, NSRDEC Aerial Delivery Engineering Support Team)
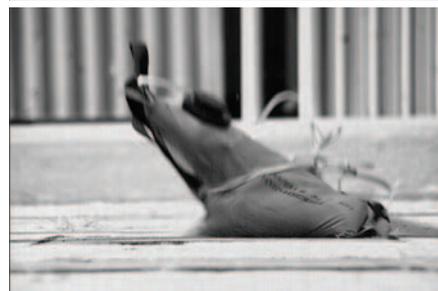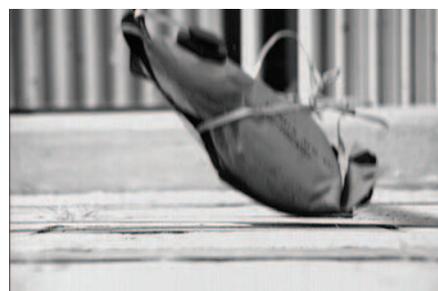
Asystem developed by researchers with the DOD Combat Feeding Directorate at the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC) would help bring water to Soldiers in the field, either cool or heat it, and then keep it that way for days at a time.

The system revolves around a high-stress collapsible water bag (HSCWB), a beverage cooling unit (BCU) and an insulated bag that holds the standard five-gallon water can or the collapsible bag. "Everything works together," said Ben Williams, a mechanical and systems engineer with Combat Feeding's Systems Equipment and Engineering Team (SEET). "You don't need to use everything together, but you can," said Williams.

The system resulted from an effort to improve the currently fielded standard five-gallon water can by giving it more capability. That can, which has been around in essentially the same form for decades, will burst when dropped from a height of more than a few feet. With a handle on the top, it still takes up the same amount of space when empty.

The HSCWB, by contrast, is two pounds lighter and has shoulder straps. As its name suggests, it is collapsible and can be air-dropped. It also has grommets so that a Soldier can hang it up, and a spigot so that no water is wasted. The cost of the HSCWB is about $130, with a $20 repair kit recommended for patching holes; the kit is sufficient for 10 HSCWBs.

As Williams pointed out, getting Soldiers to hydrate sufficiently in extreme temperatures, such as those in Afghanistan, has always been a challenge. "People aren't drinking enough because their



**BROTHERS OF INVENTION**
Shubham Chandra, left, and Ben Williams of the DOD Combat Feeding Directorate SEET at Natick have developed a system to provide cold and hot water to Soldiers in the field and keep it that way for days. (Photo by David Kamm, NSRDEC)

water is 100 degrees," Williams said. "It's not pleasurable. But if it was 40-degree water, of course you'd drink more. Your stamina also increases."

The water bag was developed in response to a request from theater to replace the standard water can. "They said, 'Hey, we want bags that can be air-dropped from at least 35 feet,' " said Shubham Chandra, a senior mechanical engineer who works with Williams at SEET. "We knew the cans had a problem. The cans can't be dropped more than six feet."

In seeking a solution, "We didn't have a lot of money," Chandra added. "We started working with what was out there."

The bag, made of nylon fabric and coated with silicone rubber, can be air-dropped from up to 55 feet, allowing resupply without requiring helicopters to land on remote outposts. "It won't explode," said Williams. "If you drop a jerry can 10 feet, the cap will blow off and you'll lose your water. We saw an opportunity here for improvement. The standard five-gallon water can basically hasn't changed since it was created."

**SPACE SAVER**
Storage of the collapsible water bag is also much easier. "When it's empty, it rolls up, reducing its volume substantially," said Williams, "as opposed to the jerry can, which retains the same volume after it's been emptied. [The new HSCWB] is also substantially lighter than the water can. These features are especially important when used in a vehicle, where storage space is extremely limited."

**KEEPING COOL**
Heat exhaustion, heatstroke and dehydration become formidable foes in temperatures above 100 degrees Fahrenheit, as troops move around in tactical vehicles or on dismounted patrols. The system developed at Natick makes it easier to keep water cool and ready to drink. Here, SPC Cory Braley, an infantryman with 1st Battalion, 6th Field Artillery Regiment conducts a dismounted reconnaissance patrol July 19 near Forward Operating Base Spin Boldak in Kandahar province, Afghanistan. (U.S. Army National Guard photo by SPC Jovi Prevot, 102nd Mobile Public Affairs Detachment)

Combat Feeding has sent approximately 1,500 bags to service members in Afghanistan.

"They loved them," Williams said. "They wanted more, so we kept sending them. It's one of those little things that didn't require millions of dollars. It was developed on a minimal budget [and had] a big impact."

There was even an unforeseen use for the bags. Soldiers "can put a cap on it and use it as a shower," Chandra said.

The bags can be connected to the BCU, which can cool a standard five-gallon container of water to at least 40 degrees Fahrenheit in 25 minutes. The stand-alone, 40-pound unit can plug into any

tactical vehicle or a standard wall outlet.

"It's super fast, super efficient," Williams said. "Now you have flexibility. You can cool water on demand in a standard water can or the new collapsible bags, and then transfer that water to a personal hydration system via the BCU without spilling a drop. Obviously, there was a need in Iraq and Afghanistan for cold water, because they're buying ice. Instead, you could just cool the water you have back down."

**THIRST QUENCHER**
Keeping water cool can be difficult in temperatures above 100 degrees Fahrenheit as troops move around in

*"PEOPLE AREN'T DRINKING ENOUGH BECAUSE THEIR WATER IS 100 DEGREES. IT'S NOT PLEASURABLE. BUT IF IT WAS 40-DEGREE WATER, OF COURSE YOU'D DRINK MORE. YOUR STAMINA ALSO INCREASES."*

**BULK ORDER**
In the difficult terrain of Afghanistan, cooler water in lighter containers makes hydration easier and more appealing. Here, Soldiers from 3rd Battalion,187th Infantry Regiment (3/187), 3rd Brigade Combat Team "Rakkasans," 101st Airborne Division (Air Assault) sprint to the top of an observation point, some carrying 45-pound water jugs, at Combat Outpost Chergotah in Khost province, Afghanistan, Nov. 1, 2012. The Soldiers were taking part in of the Angel Rak Competition to identify the strongest and most physically fit squads. (U.S. Army photo by CPT Erik Alfsen, 3/187)

tactical vehicles or on dismounted patrols. Heat exhaustion, heatstroke and dehydration become formidable foes in these environments.

Williams' solution was a new insulated bag for the collapsible can, which is 50 percent (four pounds) lighter than the currently fielded insulated bag and provides twice the performance. The new insulated container (IC5), which is almost ready for fielding, can keep a can of water that starts out frozen below 70 degrees Fahrenheit for more than four days. A can of water that starts out at 180 degrees Fahrenheit will remain liquid for five days in the most extreme ambient conditions. That's double the performance of the current version at a cost of about $115—about the same as the current unit.

The IC5 "is basically a backpack that you can put the standard five-gallon water can, the water bag or a case of bottled water into, and you can carry it on your back," Williams said. "So, once you've cooled your water with the BCU, you can take that water away [from the BCU] and it will remain cold until you need it."

Together, the air-droppable HSCWB, the BCU and the insulated bag provide a low-cost, effective system for delivering water to the most remote areas and keeping that water cold or hot.

"People don't know about this," Williams said. "If people in the field saw how it all works together, I think they would want it."

Williams and Chandra did it all with one person in mind. "The bottom line is, it really helps the warfighter," Chandra said. "That's what we're here for."

*For more information, contact Ben Williams at benjamin.s.williams20.civ@mail.mil.*

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*MR. BOB REINERT serves as the command information chief in the Public Affairs Office at U.S. Army Garrison Natick. Reinert was named the Army's 2011 Moss-Holland Civilian Print Journalist of the Year. Reinert attended Saint Anselm College. Before entering government service, he spent 17 years writing for The Boston Globe.*

# 'LEAN' IN

## How optimizing Lean Six Sigma instruction can increase efficiency, save money

*by Mr. Thom Hawkins, MAJ Michael J. Williams, Mr. Kevin Joyce and MAJ Charles F. Faison*

The introduction most federal employees get to Lean Six Sigma (LSS) is a single sentence: "Lean Six Sigma makes sense for industry, but not for the government." Twenty-one months and $312 million in cost reductions later, I'm not convinced.

In FY12 and the first three quarters of FY13, the Army certified 29 green belts and six black belts at the Program Executive Office Command, Control and Communications – Tactical (PEO C3T), including 17 majors and one captain. The PEO's 37 gated projects and 18 non-gated projects resulted in more than $24 million in cost savings and $287.8 million in cost avoidance from FY12 through FY19.

All of the financial benefits enumerated in this article represent the difference between the cost of the effort or process before, and the cost after executing the efficiency. The numbers are calculated, with inflation, through the end of the Program Objective Memorandum. Values were independently validated by verifying the assumptions, inflation indices and calculations.

PEO C3T's LSS program does not stand alone, however. We've consolidated it with value engineering and better buying power, all managed by one office. In addition to the financial benefits that resulted from LSS, the PEO has documented $65.7 million in cost savings and $1.7 billion in cost avoidance through value engineering and better buying power.

Leadership sets the tone for PEO C3T's successful LSS program, and for efficiency-seeking behavior in general. Efficiencies are reinforced at town halls, encouraging the workforce at all levels to find better ways of accomplishing the mission—to get more and better equipment to the Soldier faster while being a responsible steward of the taxpayer's dollar. That twin focus—the Soldier and the taxpayer—helps guide decision-making throughout the organization. Majors are required by policy to complete certification at the green belt level, ensuring that our future leaders are prepared to deal with a resource-constrained environment over the long term.

Meeting the training needs of an expanding group of interested employees at first proved expensive. With local classes few and far between, we often had to fund weeks of temporary duty to send our employees to Washington, DC, or even farther, depending on schedules. As one organization, we had neither the resources nor the need to justify holding our own classes.

To solve this problem, we reached out to local commands, teamed with PEO Intelligence, Electronic Warfare and Sensors, began pooling resources and developed consolidated instruction that consisted of two green belt classes in FY12, and three green belt and two black belt classes in FY13, training students from the Aberdeen Proving Ground (APG), MD, area.

There was a time when employees were warned away from seeking LSS certification, with the fear that the required
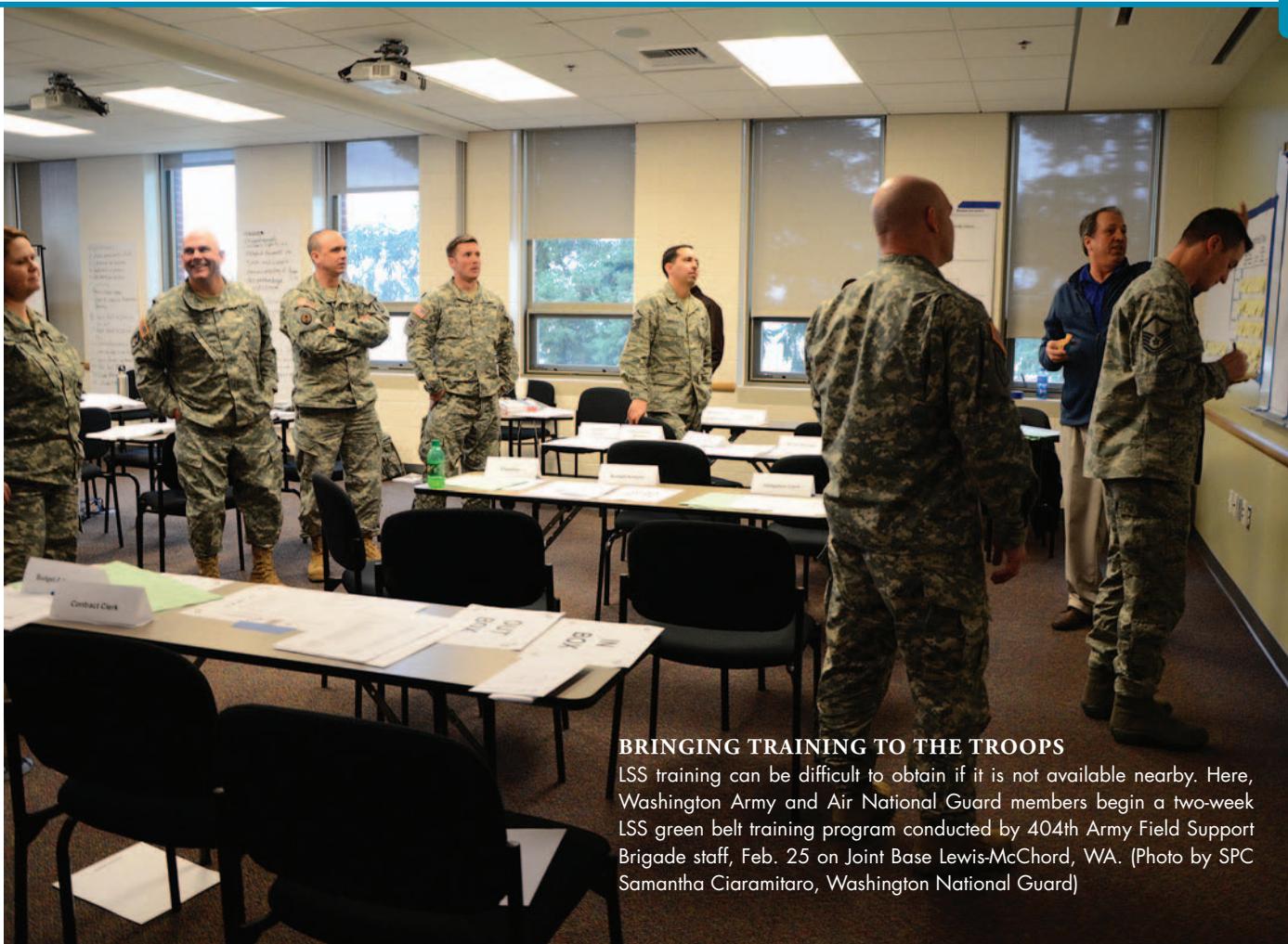
**BRINGING TRAINING TO THE TROOPS**
LSS training can be difficult to obtain if it is not available nearby. Here, Washington Army and Air National Guard members begin a two-week LSS green belt training program conducted by 404th Army Field Support Brigade staff, Feb. 25 on Joint Base Lewis-McChord, WA. (Photo by SPC Samantha Ciaramitaro, Washington National Guard)

> *ALTHOUGH THE LSS PROJECT BEGAN WITH AN ACCOUNTABILITY PROBLEM, I REALIZED THERE WERE ALSO POTENTIALLY SIGNIFICANT COST SAVINGS. THROUGH LSS, IT WAS JUST A MATTER OF DEVELOPING A PROCESS THAT IS TESTED AND PROVEN, USING METRICS.*

bureaucracy slowed the pace of progress. We set out to change that perception. Without increasing resources, we cross-trained our core deployment team to eliminate bottlenecks in training, mentoring and certification. No one would be delayed by LSS itself, only by the competing demands of their own schedules. Although green- and black-belt candidates still occasionally exceed the 90- and 120-day targets for completing their respective projects, we showed that motivated candidates could finish a project in as few as 29 days.

Once an employee has been through training and completed a project, we invoke another key stakeholder, our certification authority at the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, who reviews the tollgates to ensure that each candidate has demonstrated proficiency with the LSS tool set. The fact that this review rarely takes more than a day or two provides the nearly instant gratification of a completed project resulting in certification.

As in business, the best measure of the success of this program is repeat customers. Certified green belts are now returning to expand their LSS skill sets through black belt certification. Here are a few stories of how LSS makes sense for the government.

*—MR. THOM HAWKINS*

## BRINGING ORDER TO DEPLOYMENT

After traveling from APG to Fort Bragg, NC, for my green belt training, I was very glad to learn that training classes would be available at my home station in Maryland.

Because deploying to Afghanistan was a chaotic process, I decided to develop methods of improvement around my green belt project. During my pre-deployment preparation, I became aware that there was no definitive source from APG outlining the pre-deployment steps to follow, or visibility at the PEO level of when those steps were completed.

My LSS team created standard operating procedures for deployment by combining the APG garrison's policies and the PEO's policies, so that the PEO could track progress. The local classes have allowed me to continue my LSS training, and I am working on my LSS black belt through classes at APG.

One of the things I'll carry with me from my LSS training is a structured method for process improvement. Whether I wrestle with fielding issues or supply chain management, LSS taught me a new way to think about and solve root problems, instead of peripheral issues.

—MAJ MICHAEL J. WILLIAMS

## ELIMINATING THE MIDDLEMAN

Laptops come back from Iraq and Afghanistan in rough shape. To ensure that they're in proper working order, they need to be reset, which includes cleaning, software installation, and a thorough check of cables, batteries and any damaged or missing parts.

**DEPLOYMENT IN PROGRESS**
Creating standard operating procedures for deployment by leveraging the PEO C3T suspense tracking system led to an easier deployment process, which tracks when Soldiers complete forms. Here, MAJ Michael J. Williams reviews the process with Supervisory Human Resources Specialist (Military) Hector M. Torres. (U.S. Army photo by Meg Carpenter)

AS IN BUSINESS, THE BEST MEASURE OF THE SUCCESS OF THIS PROGRAM IS REPEAT CUSTOMERS. CERTIFIED GREEN BELTS ARE NOW RETURNING TO EXPAND THEIR LSS SKILL SETS THROUGH BLACK BELT CERTIFICATION.

For PEO C3T's Project Manager Warfighter Information Network – Tactical (PM WIN-T), the process for resetting laptops was excessively lengthy. They went out to contractors for reset, and although the contractors mostly met their obligations, sometimes the computers did not return on time.

Even when they did, the process was simply too long. Through LSS, I found that if Soldiers could do the reset work themselves, that saved not only turnaround time, but also money—almost $10 million over the next five years.

After testing the new process with two units at their home stations in the United States, Soldiers overwhelmingly reported improved results. They reduced turnaround times from 30 days to only a few hours of work, eliminating shipping costs and increasing accountability—since the laptops remained in the Soldiers' possession—with no loss in quality of service.

Although the LSS project began with an accountability problem, I realized there were also potentially significant cost savings. Through LSS, it was just a matter of developing a process that is tested and proven, using metrics. Now I'm hoping to implement this procedural change for other commercial off-the-shelf systems.

*—MR. KEVIN JOYCE*

## REVAMPING SLOW DISTRIBUTION

Before my LSS project, it took an average of 51 days for PEO C3T's Project Manager Joint Battle Command – Platform (PM JBC-P) to send software to various vendors and customers. Using a database and automated process adopted as a result of my team's LSS project, the



**DIY RESET**
Through his LSS project, Kevin Joyce of the WIN-T Project Management Office found that if Soldiers could do the reset work on laptops themselves, the Army could save turnaround time and money—almost $10 million over the next five years. (U.S. Army photo by Meg Carpenter)



**DELIVERING RESULTS**
PM JBC-P reduced the time required to obtain and send software to various vendors and customers from an average of 51 days to three by using a database and automated process adopted as a result of an LSS project. Here, CPT Samuel Greulich of 1st Battalion, 35th Armored Regiment, 2nd Brigade, 1st Armored Division monitors the JBC-P in his vehicle to track the progress of his Soldiers May 7 during a training exercise at McGregor Range, NM. (U.S. Army photo by SGT Robert Golden, 16th Mobile Public Affairs Detachment)

for everyone involved. The new process allows for a quick turnaround from request to software distribution; the real benefit was efficiency and reliable customer service.

Because of my LSS training, I'm able to identify the root cause of a problem and develop targeted solutions to mitigate recurrence or its effects.

*—MAJ CHARLES F. FAISON*

*MR. THOM HAWKINS is the Continuous Performance Improvement program director and chief of program analysis for PEO C3T. He holds a B.A. in English from Washington College and an M.L.I.S. from Drexel University. Hawkins is Level III certified in program management and is an Army-certified LSS black belt. He is a member of the U.S. Army Acquisition Corps.*

*MAJ MICHAEL J. WILLIAMS is assistant product manager for PM WIN-T Increment 1. He earned a B.S. in chemical engineering from Michigan Technological University and an MBA in acquisitions and contract management from the Naval Postgraduate School. He is Level III certified in program management and is an Army-certified LSS green belt.*

*MR. KEVIN JOYCE is the integrated logistics support manager for PM WIN-T. He earned a B.A. in criminal justice from Monmouth University. Joyce is Level III certified in life-cycle logistics, Level I certified in project management and an Army-certified LSS black belt.*

*MAJ CHARLES F. FAISON is JBC-P's product director for Tactical Ground Reporting. He holds a B.S. in environmental science at the University at Buffalo, State University of New York. He is an Army-certified LSS green belt.*

**PURSUING SOLUTIONS**
MAJ Charles F. Faison credits LSS training for teaching him to look deeper into challenges to find the root causes instead of going for a quick solution. Faison's LSS team shortened a 51-day software distribution process to three days, and realized significant benefits in efficiency and reliable customer service. (U.S. Army photo by Meg Carpenter)

delivery time has decreased to three days between request and delivery of software.

The Continuous Performance Improvement team at PEO C3T helped me see that my initial thoughts for a solution would not have realized as much efficiency as attacking the root causes of the problem.

As part of our analysis, my team created a process map of the software distribution process as it existed and then identified steps having limited or no value. We also found that a comprehensive information database did not exist; the database was a manila folder containing customers' past requests for software. Supporting our customers with new software upgrades by leafing through papers was highly inefficient.

Because the new process is more efficient, JBC-P did not need to hire an additional person to manage this effort. Instead, this is one employee's additional duty. The cost avoidance for the project was more than $11,000 per year for JBC-P.

Although this is not a high monetary return, we did save on manpower, and the whole process is much smoother

# *SPOTLIGHT*

## MR. TOM REYNOLDS

*by Ms. Heather R. Smith*



**MAKING A POINT**
Tom Reynolds, AMRDEC's VE and life-cycle cost reduction manager, looks at products and systems in terms of their function. The question for him is not, "How do I make this work?" but rather, "How can I get the desired function?" so that Soldiers don't have to do that analysis but can focus on the mission. (Photo by Ryan Keith, AMRDEC)

Tom Reynolds is known for two things at Redstone Arsenal—his career and his car. Both demonstrate his passion for value engineering (VE). "Up until three years ago, I was driving a 1977 Monte Carlo," Reynolds explained. "It was in bad need of a paint job. I bought it brand-new, and it never once left me on the side of the road. Not once."

By the time he donated his car to charity in 2010, Reynolds had driven 460,000 miles in it. He covered many of those miles traveling to and from his job at the U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC), where he began work in 1986.

"I use that car as an example of how to do a function analysis, and how a function analysis can be different for different people," said Reynolds.

He explained that his primary function for a car was to get him from point A to point B safely and efficiently. By contrast, when his son turned 16 and began driving, the young man had a different function in mind—to impress his friends.
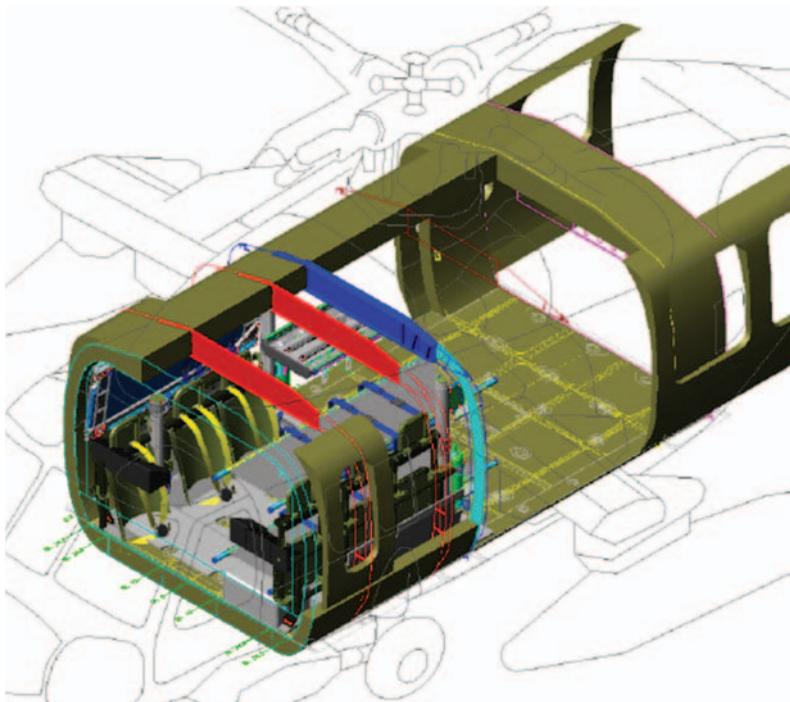
**A LIFESAVING DIFFERENCE**
The IMSS kit for the Black Hawk converts the helicopter into a medevac aircraft for more efficient onboard patient care. IMSS includes rescue litters along cabin walls, a repositioned litter platform to facilitate patient loading and redesigned medical attendant seats. (SOURCE: U.S. Army)



**IMPROVING FILTER FUNCTION**
In addition to VE, Reynolds manages the OSCR program for AMC, with the objective to manage engineering design efforts that reduce secondary costs, extend the life of an item, and improve its reliability, maintainability and supportability. One such effort was to redesign hydraulic fluid filters for the Black Hawk and Apache helicopters using stainless steel screens, which are more resistant to high pressures and vibrations that affected the fiberglass filters used previously. (SOURCE: U.S. Army)

As AMRDEC's VE and life-cycle cost reduction manager, Reynolds applies his penchant for functional analysis to the Army and supporting Soldiers.

## PUTTING THE VALUE IN ARMY ENGINEERING

AMRDEC is part of the U.S. Army Research, Development and Engineering Command (RDECOM), which in turn is a major subordinate command of the U.S. Army Materiel Command (AMC). AMC is the Army's premier provider of materiel readiness—technology, acquisition support, materiel development, logistics power projection and sustainment—to the total force, across the spectrum of joint military operations. VE is an organized effort to analyze systems, equipment, facilities, services and supplies for achieving the essential functions at the lowest life-cycle costs consistent with required performance, reliability, quality and safety.

Reynolds put VE in laymen's terms.

"Instead of thinking in terms of hardware and, 'How do I make this work?' value engineer thinks in terms of function: 'How can I get the desired function?' "

The measure of VE's success is often dollars saved, and each year VE programs save the Army millions. But VE is about more than money, Reynolds said.

"Just because you get something cheaper, if it doesn't do as much or as well or as easily, then you haven't helped the Soldier," Reynolds said. "People think it's a mind-set about money. It's not about money. It's how do you get that function for all the resources you have to put into it. Everybody thinks about money first, and that's not a bad thing, but it's all resources, not just money. It's time, effort and maintenance turnaround across the life cycle."

**A SHARED COMMITMENT**
Tom Reynolds and the members of his VE team received multiple VE Achievement Awards, presented by USD(AT&L) Frank Kendall, for their $167 million in savings and cost avoidances in FY12. From left are Nancy Sims, Reynolds, Toni Hamilton-Datcher, Vicki Loewen, Karen Caudle and Mike Price. (Photo by Ryan Keith, AMRDEC)

> "WHAT THIS TEAM HAS DONE IS ABSOLUTELY PHENOMENAL. THEY'VE THOUGHT OUTSIDE THE BOX. IT'S GOING TO DELIVER A VERY LOW-COST CAPABILITY THAT'S GOING TO MEET THE NEEDS OF THE ARMY."

With a B.S. in industrial engineering from the University of Tennessee and an M.S. in program management from the Naval Postgraduate School, Reynolds is no layman. He said it is his responsibility to do the VE analysis so Soldiers don't have to. "Soldiers have an awful lot to think about, whether flying a helicopter or shooting a missile," he said. "You want it to work without them having to think about it. You want as much [to be] as automatic as possible. So what we do is make those things simpler, as well as save money, as well as save time, just to try to simplify life for the Soldiers so they get their mission done."

"Hopefully we do things for the Soldiers so that they don't even know the issue ever existed. The issue is taken care of before it ever becomes an issue. That's really what I take pride in doing."

**REACHING ACROSS THE ENTERPRISE**

Reynolds manages up to 100 projects at any given time. This involves working closely many of the organizations at Redstone, as well as other commands.

One such project, the Tactical Terminal Control System (TTCS), involved the U.S. Army Aviation and Missile Life Cycle Management Command (AMCOM

**DESIGNED TO SAVE**
The TTCS, a mobile, self-contained modular air traffic control communication system designed for rapid deployment, grew out of a VE project involving multiple organizations. The TTCS consists of an M998 High-Mobility Multipurpose Wheeled Vehicle containing a radio rack and M1101 High Mobility Trailer. The VE analysis led to reduced weight and space constraints and obsolescence for a savings of $2.4 million. (SOURCE: U.S. Army)

LCMC) and U.S. Army Communications-Electronics Command. The TTCS provides mobile, self-contained modular air traffic control communications, with rapid-deployment capability. VE program officials analyzed the system's weight, obsolescence and future platform transition issues, and recommended a configuration redesign that reduced weight and space constraints and obsolescence for a savings of $2.4 million.

COL Anthony Potts, former Project Manager Aviation Systems in Program Executive Office (PEO) Aviation, said,

"What this team has done is absolutely phenomenal. They've thought outside the box. It's going to deliver a very low-cost capability that's going to meet the needs of the Army."

## REDUCING OPERATIONS AND SUPPORT COSTS

In addition to VE, Reynolds manages AMC's Operations and Support Cost Reduction (OSCR) program, which has the objective to manage engineering design efforts that reduce secondary costs, extend the life of an item, and improve its

*"THE FILTER THAT WAS SUPPOSED TO BE CLEANING [HYDRAULIC FLUID] WAS ACTUALLY MAKING IT DIRTY. WE REDESIGNED THE FILTER USING STAINLESS STEEL. NOW THE FLUID IS ACTUALLY CLEANER THAN WHEN IT COMES OUT OF THE CAN."*

reliability, maintainability and supportability. OSCR facilitates the improvement or replacement of individual components, assemblies or modules for presently fielded systems to reduce operations and support costs.

Through OSCR and VE, Reynolds' team investigated contaminated hydraulic fluid on the Black Hawk and Apache helicopters.

"We found out that the filament, the screen inside these filters, is made of fiberglass. With the high pressures and vibrations, the fiberglass would start to crack and break down. The contaminant in the fluid was fiberglass. So the filter that was supposed to be cleaning it was actually making it dirty. We redesigned the filter using stainless steel. Now the fluid is actually cleaner than when it comes out of the can."

## SAVING LIVES THROUGH ENGINEERING

Another VE success is the Black Hawk medevac Interim Mission Support System (IMSS), a kit that converts a Black Hawk into a medical evacuation aircraft for onboard medical care. Reynolds and his team, applying VE principles, provided analysis and design that resulted in more efficient placement of rescue litters against cabin walls, positioned along the helicopter's longitudinal axis, and a plan to rotate the litter platform toward the door to facilitate loading. They also redesigned the medical attendant seats for efficient patient care.

The initial investment of $1.8 million for the IMSS yielded a projected 10-year net savings of $8.4 million, reflected in an increase in patient capacity per flight and a reduction in the cost of obsolete parts. More important than the money saved, the IMSS resulted in an improved

capability to save Soldiers' lives, including one of Reynolds' friends.

"When somebody gets wounded, it's somebody's mother, father, sister, brother, aunt, uncle, cousin, friend. A guy I know was wounded in a firefight. One of these converted medevacs came and picked up him and his two buddies. Had we not had that, he could've died. It probably saved his life," said Reynolds.

## RECOGNITION FOR A TEAM EFFORT

Reynolds and the members of his VE team have earned numerous team and individual awards. The most recent were the Value Engineering Achievement Awards presented by the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics (USD(AT&L)), to recognize their $167 million in savings and cost avoidances in FY12.

Noting that more than 100 VE initiatives were implemented in FY12, Reynolds said the results attained were the achievement of many dedicated professionals who improve lives and capability for Soldiers while reducing costs.

"It takes literally hundreds of people to do all this," Reynolds said.

Member organizations of the Team Redstone VE Program include the AMCOM Logistics Center, Corpus Christi and Letterkenny Army Depots, Redstone Garrison, AMCOM Acquisition Center, PEO Aviation, PEO Missiles and Space, and the Terminal High Altitude Area Defense, sensors and X-band radar programs of the Missile Defense Agency (MDA).

Together, Team Redstone won nine awards in the following categories. U.S.

Army: Organization, Team, Individual and Special; and MDA: Program, Organization, Team, Individual and Special.

The VE principles that Reynolds applied to his Monte Carlo, he continues to apply today—although he has been driving his wife's 1994 van. He does this not because he likes old cars, but because of his mission to put his four children through college. Reynolds is the first to admit, however, that he would love a new car.

"What do I really want? What I really want is to win the lottery so that I can go out and buy a new one," he said.

Despite the many awards and recognitions that Reynolds and his team have earned, what is most important to him is their dedication to Soldiers and their missions.

"Awards and savings are important, but more important is the impact these projects have on our Soldiers' lives," Reynolds said. "Many of the projects mitigated obsolescence, improved reliability, inserted new technology, enhanced capability and reduced Soldier burdens. As we all know, these are not luxury items, but equipment that our Soldiers rely on to complete their missions and literally bet their lives on every day, even in peacetime."

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*MS. HEATHER R. SMITH, DCS Corp., is a writer supporting AMRDEC at Redstone Arsenal in Huntsville, AL. She holds a B.S. in journalism from Indiana State University and a graduate certificate in technical communication from the University of Alabama in Huntsville. She is co-author of the book "Bold They Rise" about the early years of the space shuttle program, due to be published in 2014.*

FROM THE DIRECTOR,
U.S. ARMY ACQUISITION SUPPORT CENTER

# ACHIEVING CERTIFICATION REQUIREMENTS
## *is* SERIOUS BUSINESS

My two top priorities as the Deputy Director, Acquisition Career Management (DDACM) are monitoring the certification rates of the Army Acquisition Workforce to ensure that statutory requirements are met, and seeing that we have the best-prepared professionals working in the acquisition system to deliver the best weapons, information systems and services to our men and women in uniform.

I'm proud to say that our certification rate within the grace period came from a low of 78.4 percent in FY08 to our current rate (in September) of more than 94 percent. (See Figure 1.) This uptick in the rate comes from our committed acquisition professionals and their supervisors, who are meeting the Defense Acquisition Workforce Improvement Act (DAWIA) certification standards.

But there's still work to be done. We have a delinquency rate of 5.5 percent; that is the percentage of the workforce who are overdue in their statutorily required certification. Though this rate is down from 8.1 percent in December 2012, my ultimate goal is to maintain an Army Acquisition Workforce that is 100 percent certified or within the grace period.

*Craig A. Spisak*
*Director, U.S. Army*
*Acquisition Support Center*

## THE PURPOSE OF WAIVERS
Each individual assigned to an acquisition-coded position must meet the position certification requirements for his or her acquisition career field (ACF) within an allotted grace period; for most, it's a 24-month window. Before applying for DAWIA certification, he or she must meet the acquisition training, education and experience standards for the position, including keeping the individual development plan current, staying on track with continuous learning points (CLPs) (80 every two years) and taking the required Defense Acquisition University (DAU) certification classes for the ACF.

If certification is not accomplished within the grace period, the employee's command or organization must submit a position requirement waiver request, signed by the most senior leader, through the Career Acquisition Management Portal at **https://rda.altess.army.mil/camp/**. The application must include the following, in detail:

- Why the organization is requesting the waiver (what is lacking in the individual's education, training or experience for certification).
- A target date to meet requirements (normally not to exceed 12 months).
- Who will monitor the individual to ensure that standards are met in the requested time frame, with any supporting documents including DAU transcripts, Army DAU registration system screen shot of preregistered classes (**https://atrrs.army.mil/CHANNELS/AITAS/**), individual development plan and résumé.

The waiver then comes to me for consideration, and approval is not automatic. From Oct. 1, 2012, to July 31, 2013, we processed 177 waivers, with 95 approved, 29 denied and 53 returned when documentation was incorrect or the individual's command or organization changed its decision and withdrew the request. The approved waiver extends the grace period, but it does not waive the certification

requirements. Those who fail to achieve their required certifications within their extended grace period—barring exigent and exceptional circumstances as approved by a waiver—are subject to personnel actions. These could include reassignment, reduction in pay grade or pay band, loss of consideration for promotion or future acquisition assignments, and separation from federal service.

Why all the fuss? First, certification is a requirement you signed up for when you took the position. Second, not being certified quite frankly means you are not up on the latest tactics and techniques required to be the best-prepared professional working in the acquisition system we are striving for in order to deliver the best products.

## ATTAINABLE REQUIREMENTS

The consensus at the quarterly general officer-Senior Executive Service acquisition update meetings is that certification is unquestionably achievable within 24 months. It takes smart planning. For example, let's say you start in an ACF program management position for which the requirement is to be Level II certified within 24 months. A formal (college) degree is not required for this position, so your education requirement (high school) is met automatically on the first day.

While taking the required DAU courses toward certification, you are simultaneously contributing to your yearly 40-CLP requirement and gaining the two-year acquisition experience requirement by doing your job. This not only helps with achieving certification, but ensures that you remain relevant and proficient in your ACF.

But while most of the workforce plans their career training requirements well

**FIGURE 1**
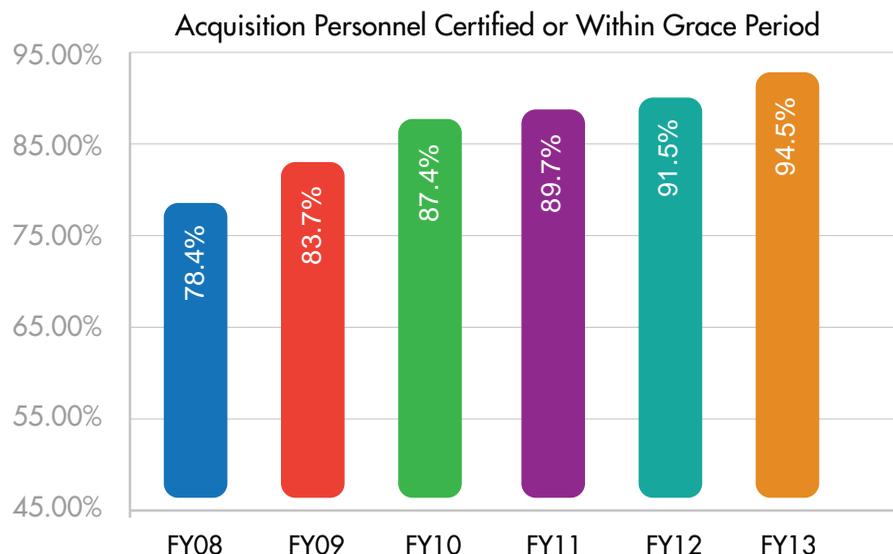


### A STEADY UPTICK
While there has been steady improvement in the percentage of Acquisition Workforce members certified or within the grace period for certification, there is still a delinquency rate of 5.5 percent; that is the percentage of the workforce who are overdue in their statutorily required certification. (SOURCE: Career Acquisition Management Portal/Career Acquisition Personnel and Position Management Information System)

in advance, there are still some who wait until the last minute and claim, "I couldn't get into the class because it was full." If they followed protocol and applied early, they would have a better likelihood of getting a seat in the class. You can't apply on Thursday for a class that starts Monday; 99.9 percent of the time, you won't get in because the class is full.

Sometimes this is simply a false excuse. There have been times when we've checked the records and found that someone claiming this excuse had not applied at all. This is not only unethical, but can reflect negatively on someone's future consideration for promotion or a position with a higher level of responsibility.

## CULTURE OF IMPROVEMENT
The onus is on the individual to complete certification within the allotted grace

period, but it is also incumbent upon supervisors and organizational leaders to make training a priority by creating a culture that allows their subordinates to achieve certification requirements. I agree with LTG William N. Phillips, the DACM, when he says that it is "commanders' business" to ensure that statutory requirements for the Acquisition Workforce are met.

It takes a combination of teamwork, communication and leadership involvement to ensure that Acquisition Workforce professionals meet standards and achieve certifications within the time allotted. Supervisors and employees must work together so that we can continue to grow, develop future acquisition leaders, and improve core competencies and Acquisition Workforce outcomes.

UNITED STATES ARMY

**DACM**

DIRECTOR, ACQUISITION CAREER MANAGEMENT OFFICE

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For anything acquisition career-related.



PREPARING FOR THE FUTURE

## Keeping Up With the Latest Army AL&T News

**Access AL&T** is your one-stop shop for news that's important to the Army Acquisition Workforce. We do the work of finding that news and presenting it so that can find what you need to keep up-to-date and do your job better. But you don't have to come to us—Access AL&T will come to you when you subscribe.

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Let us know and we can help share it.

Please submit all articles to Tara Clements, USAASC public affairs specialist, at **tara.a.clements.civ@mail.mil**.

*EDUCATION and TRAINING UPDATE*

## ALCP FY14 SCHEDULE

### EDUCATION AND TRAINING OPPORTUNITIES

The FY14 schedule for acquisition education and training (AET) opportunities is final. All AET opportunities, except for the Acquisition Leadership Challenge Program (ALCP), will be announced through the Army Acquisition Professional Development System (AAPDS). To access AAPDS, log in at the Career Acquisition Management Portal (CAMP) at **https://rda.altess.army.mil/camp/** and click on "Career Acquisition Personnel and Position Management Information System" (CAPPMIS). Once in CAPPMIS, select the "AAPDS" tab, and then "Application Module." Click on "Apply" and view all available Army Director of Acquisition Career Management (DACM) opportunities.

*For information on any program, go to the U.S. Army Acquisition Support Center (USAASC) website at* **http://asc.army.mil/** *and click on "Career."*

**ALCP will not be announced using AAPDS.** Please contact your command or organization acquisition career management advocate or organizational acquisition point of contact. At right is the FY14 schedule for ALCP.

| OFFERING DATE | COURSE LEVEL | LOCATION | WHO MAY ATTEND |
|---|---|---|---|
| Oct. 28–30 | ALCP I | Atlanta, GA | All Workforce (WF) GS–12/13 |
| Oct. 30 – Nov. 1 | ALCP II | Atlanta | All WF GS–14/15 |
| Nov. 4–6 | ALCP I | Atlanta | All WF GS–12/13 |
| Nov. 6–8 | ALCP I | Atlanta | All WF GS–14/15 |
| Dec. 2–4 | ALCP I | Huntsville, AL | Local WF GS–12/13 |
| Dec. 4–6 | ALCP I | Huntsville | Local WF GS–14/15 |
| Jan. 13–15, 2014 | ALCP I | Atlanta | All WF GS–12/13 |
| Jan. 15–17 | ALCP II | Atlanta | All WF GS–14/15 |
| Feb. 24–26 | ALCP I | Alexandria, VA | Local WF GS–12/13 |
| Feb. 26–28 | ALCP I | Alexandria | Local WF GS–14/15 |
| March 2–4 | ALCP B | Aberdeen, MD | Local WF GS–7–11 |
| March 17–19 | ALCP I | Orlando, FL | Local WF GS–12/13 |
| March 19–21 | ALCP I | Orlando | Local WF GS–12/13 |
| April 28–30 | ALCP I | Aberdeen | Local WF GS–12/13 |
| April 30 – May 2 | ALCP I | Aberdeen | Local WF GS–12/13 |
| May 19–21 | ALCP I | Atlanta | All WF GS–12/13 |
| May 21–23 | ALCP II | Atlanta | All WF GS–14/15 |
| June 9–11 | ALCP I | Warren, MI | Local WF GS–12/13 |
| June 11–13 | ALCP II | Warren | Local WF GS–14/15 |
| June 23–24 | ALCP B | Huntsville | Local WF GS 7–11 |
| July 28–30 | ALCP I | Huntsville | Local WF GS–12/13 |
| July 20 – Aug. 1 | ALCP I | Huntsville | Local WF GS–14/15 |
| Aug. 18–20 | ALCP I | Atlanta | All WF GS–12/13 |
| Aug. 20–22 | ALCP II | Atlanta | All WF GS–14/15 |
| Aug. 25–26 | ALCP B | Atlanta | All WF GS 7–11 |
| Aug. 27–28 | ALCP B | Atlanta | All WF GS 7–11 |

## FIGURE 1
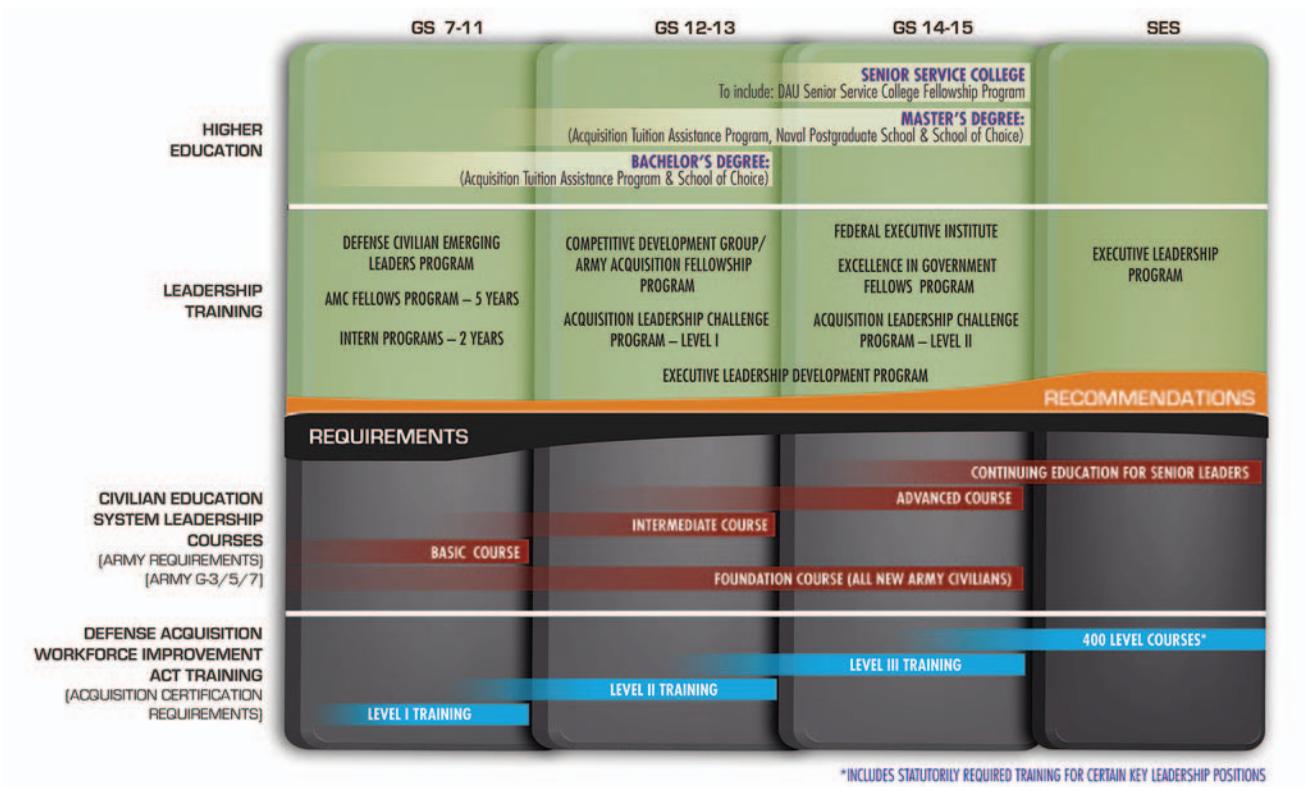


**ACQUISITION CIVILIAN LEADERSHIP PLAN**
Unlike the military, civilians can take hundreds of different routes in their quest for upward mobility. This plan is meant as a guide for members of the acquisition workforce to see the training requirements at each level and to identify desired training opportunities available at upper levels. (SOURCE: USAASC)

The **Acquisition Tuition Assistance Program** FY14 announcement will open April 28, 2014, and close May 26. Anyone approved for funding during this announcement may start courses no earlier than Oct. 1, 2014.

The **Competitive Development Group/ Army Acquisition Fellows** announcement is on hold for FY14. Because of the current hiring freeze, we have been unable to bring new fellows on board from the FY13 announcement. If and when the hiring freeze is lifted, we will first work toward finalizing the FY13 board results before conducting another announcement.

The **Defense Acquisition University – Senior Service College Fellowship** (DAU-SSCF) announcement will open Jan. 29, 2014, and close April 2. Applicants need to complete the Civilian Education System (CES) Advanced Course before starting the fellowship.

The **Defense Civilian Emerging Leaders Program** announcement will open May 5, 2014, and close June 13. These dates are tentative; this is a DOD-scheduled program, and DOD has not provided specific dates.

The **Excellence in Government Fellows** announcement will open June 12, 2014, and close July 15.

The **Naval Postgraduate School – Master of Science in Program Management** announcement will open Feb. 3, 2014, and close March 18.

**School of Choice (SOC)**: Because of the current fiscal environment, there will not be a SOC announcement in FY14. Should a command have an urgent need to send a high-performing workforce member to obtain a bachelor's or master's degree during duty time, please contact AET Branch Chief Scott Greene at **scott.m.greene14. civ@mail.mil** to discuss options.

## CIVILIAN EDUCATION SYSTEM

The DACM-sponsored programs such as the Defense Civilian Emerging Leaders Program (DCELP) and DAU-SSCF are coordinated through

the Army G-3/5/7 Office. The Army DACM office is now required to enforce completion of the applicable CES course (Basic, Intermediate, or Advanced) as a prerequisite to apply to these programs. That said, there have been issues this year with quota availability, and the Army DACM office was able to lobby the Army G-3/5/7 to suspend the CES prerequisite for DCELP in FY13; however, it will be strictly enforced in FY14.

Why are we writing about this? Individual acquisition workforce members need to work with their supervisors and CES quota managers to try to get into the appropriate-level course if they, their supervisor or their command wants them to seek advanced leadership opportunities for which CES is a prerequisite.

Per Army Regulation 350-1, "Army Training and Leader Development," many civilians are required to complete the appropriate CES course(s), depending on their grade level and supervisory responsibility.

There are three ways to complete the CES requirement:
• Take the course through the Army Management Staff College.
• Submit for equivalency, if you have already completed an Army-approved equivalent course.
• Submit for constructive credit, if you feel you have already met the course learning objectives through your past training, education and/or experience.

To find out which level of CES you are required to complete, please log on to the Army Career Tracker at **https://actnow.army.mil**.

To enroll in a CES course, log into the Civilian Human Resources Training Application System. If you need assistance or have questions, contact your local

## FIGURE 2

| CAREER FIELD | LEVEL | ADDED | DELETED |
|---|---|---|---|
| Contracting (C) | 1 | • CLC 025 – Small Business Program for Contracting Officers<br>• CLC 057 – Performance-Based Payments and Value of Cash Flow | None |
| Contracting (C) | 2 | None | CLC 057 – Performance-Based Payments and Value of Cash Flow |
| Contracting (C) | 3 | ACQ 315 – Understanding Industry (Business Acumen) to the list of options for students to select one | None |
| Life-Cycle Logistics (L) | 2 | • CLC 011 – Contracting for the Rest of Us<br>and a choice of one of the following:<br>• EVM 101 (BCF 102 valid predecessor course) – Fundamentals of Earned Value Management<br>• LOG 204 – Configuration Management<br>• RQM 110 – Core Concepts for Requirements Management<br>or the combination of:<br>• CON 121 – Contract Pricing<br>• CON 124 – Contract Execution<br>• CON 127 – Contract Management | None |
| Life-Cycle Logistics (L) | 3 | • ACQ 315 – Understanding Industry (Business Acumen) to the list of options for students to select one of four<br>• LOG 211 – Supportability Analysis to the list of options for students to select one | • RQM 110 – Core Concepts for Requirements Management<br>• LOG 204 – Configuration Management |
| Production, Quality and Manufacturing (H) | 1 | CLE 003 – Technical Reviews | CLC 024 – Basic Math Tutorial |
| Production, Quality and Manufacturing (H) | 2 | None | CLE 003 – Technical Reviews |
| SPRDE – Systems Engineering (S) | 1 | • CLE 001 – Value Engineering<br>• CLE 004 – Introduction to Lean Enterprise Concepts | None |
| SPRDE – Systems Engineering (S) | 2 | • LOG 103 – Reliability, Availability and Maintainability (RAM) | None |
| SPRDE – Systems Engineering (S) | 3 | • CLE 012 – DOD Open Systems Architecture (OSA)<br>• CLE 068 – Intellectual Property and Data Rights | None |
| Test and Evaluation (T) | 2 | TST 204 – Intermediate Test and Evaluation | TST 203 – Intermediate Test and Evaluation |

**FY14 CERTIFICATION CHANGES**
As of Oct. 1, these changes took effect in certification standards for the DOD acquisition, technology and logistics career field. There are no approved changes to date for career fields not listed here. (SOURCE: DAU iCatalog)

training coordinator or CES quota manager. Figure 1 shows how the CES training opportunities fit into the civilian career path.

**DEFENSE ACQUISITION UNIVERSITY TRAINING**

- The FY14 schedule of Defense Acquisition University (DAU) courses has been available for student registration since May 16. Students may apply using the Army Training Requirements and Resources Internet Training Application System (AITAS) at **https://atrrs.army.mil/channels/aitas/**. Planning and applying early will afford students a better opportunity to obtain a class in the time frame requested.

- Encourage your supervisor to approve your training request as soon as you apply. That approval is necessary in AITAS before the training request can be processed. View the DAU iCatalog at **http://icatalog.dau.mil** to ensure that prerequisite(s) are met before applying to a DAU course. A weekly low-fill listing is posted weekly on DAU's website. Low-fill classes are available on a first-come, first-served basis within 60 days from the start date of the class for students in Priority 2, and within 40 days for Priority 3-5 students. Even if a class is on the low-fill list, students must choose a cost-effective location for their training.

- The Army Registrar's office cannot process applications until the supervisor has approved the employee's request for training. It is also imperative that the student and supervisor's email addresses are correct on the AITAS student profile. For more information on DAU training, including systematic instructions, training priority definitions and frequently asked questions, please visit USAASC's DAU Web page at **http://asc.army.mil/web/career-development/programs/defense-acquisition-university-training/**. Once you have received a confirmed reservation in the requested class, ensure

that you attend the class as scheduled. Cancellation requests for a confirmed reservation must be submitted at least 30 calendar days before the class starts or by the reservation cutoff date, whichever is earlier, to avoid a no-show.

- For FY14, we anticipate a 30 percent cut in DAU travel funds. At this time, USAASC will fund only Priority 1 (required training) travel to cost-effective locations. Depending on funding, we may also elect to centrally fund Priority 2 travel to cost-effective locations. All requests, including submission of the travel worksheet (for students approved for DAU funding), should be completed no later than 15 days before the start date of the course. Students may start their travel order as early as 60 days before the start date.

- Requirements for DAWIA certification still exist; the furlough did not affect the deadlines. (For example, six furlough days would not extend your grace period by six days. However, in the event of furloughs related to a partial government shutdown, the Office of the DACM would issue guidance should grace periods be extended.) Workforce members and their supervisors should plan their training and ensure that they have adequate time to complete prerequisite training before attending the follow-on course. Reservations for follow-on training will be canceled if prerequisite requirements have not been met 30 days before the start date of the follow-on course.

- **FY14 certification changes**: DOD acquisition, technology and logistics career field certification standards are implemented on Oct. 1 of each fiscal year. See Figure 2 on Page 182 for the FY14 changes. For career fields not listed in the table, there are no approved changes to date. To view the most current career field certification standards for your acquisition position, go to DAU's iCatalog at **http://icatalog.dau.mil**.

# ON THE MOVE

## LEADERSHIP CHANGE AT ACC

**MG Camille M. Nichols**, commanding general (CG) of U.S. Army Contracting Command (ACC), has been selected for assignment as deputy CG (DCG) for support/chief of staff, U.S. Army Installation Management Command, San Antonio, TX.

**BG Theodore "Ted" C. Harrison**, CG, U.S. Army Expeditionary Contracting Command (ECC), is succeeding Nichols at ACC. The change-of-command takes place in October. ECC is a subordinate command of ACC. Both are headquartered at Redstone Arsenal, AL. Nichols became ACC's first CG on May

17, 2012. She previously served as Program Executive Officer (PEO) Soldier at Fort Belvoir, VA. She enlisted in the Army in 1975 in her hometown of Niagara Falls, NY, and was commissioned as an engineer officer upon graduating from the United States Military Academy at West Point in 1981.

Harrison assumed command of ECC in April 2012. Previously, he was the deputy director, National Contracting Organization, U.S. Army Corps of Engineers. He entered the Army in 1980 as a distinguished military graduate through the ROTC program at Virginia Tech and was commissioned in the Air Defense Artillery.

MG Camille M. Nichols

## FLAMM RETIRES AFTER MORE THAN 33 YEARS

**Mr. Kevin J. Flamm**, executive director, programs and technology transition within the Office of the Deputy Assistant Secretary of the Army for Research and Technology (DASA(R&T)) retired from federal service on Sept. 19 after more than 33 years in the Army, both as a Chemical Corps officer and DA civilian. For the past three years, Flamm served as the principal planner, adviser and top-level coordinator for the Army Science and Technology (S&T) Program, with an annual budget of more than $2 billion.

Flamm was responsible for the development and defense of the S&T investment strategy, prioritization,

Mr. Kevin J. Flamm

integration, program justification and coordination with users, as well as for overseeing the S&T Special Access

Programs, Technology Maturation Initiative (competitive/prototyping) and manufacturing technology investments.

Flamm is a 2000 graduate of the National Defense University and a member of the AAC with Level III certification in program management; test and evaluation engineering; systems planning, research, development and engineering; and S&T management.

During his career, he was awarded the Department of the Army Meritorious Service Medal; the Defense Threat Reduction Agency Meritorious Service Medal; the Department of the Army Significant Scientific Achievement Award; and a National Intelligence Meritorious Unit Citation.
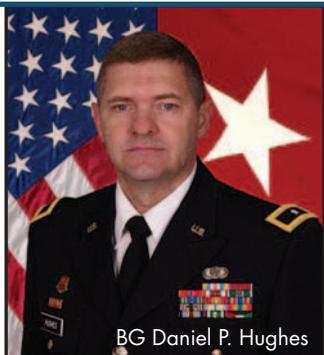
## PRICE RETIRES; HUGHES IS NEW PEO C3T



BG Daniel P. Hughes

**MG N. Lee S. Price**, the first woman to serve as a PEO in the Army, stepped down as PEO Command, Control and Communications – Tactical (PEO C3T) on Sept. 4, passing the organization's charter to **BG Daniel P. Hughes**, and retired from the Army after almost 38 years of service. She began her military career when she enlisted in 1975.

Price assumed leadership of PEO C3T in November 2009. She oversaw critical upgrades to the tactical network, the Army's top modernization priority, which has delivered lifesaving communications capabilities to Soldiers in Iraq, Afghanistan and South Korea. Even before the financial pressures of sequestration, Price infused PEO C3T with a culture of efficiency that increased capabilities with reduced resources. In the first two years of Price's tenure, PEO C3T won back-to-back David Packard Awards for Acquisition Excellence.

"Though it is bittersweet to leave, I am so very proud of what we have accomplished at PEO C3T," Price said. "BG Hughes will undoubtedly continue to take this organization to great heights." A retirement ceremony for Price followed the Sept. 4 change of charter, capping Price's Army career, more than 27 years of which she spent in Army Acquisition. Price's acquisition service includes a wide variety of assignments, including as deputy acquisition executive for the U.S. Special Operations Command and Project Manager Defense Communications and Army Transmission Systems. She received the U.S. Army Acquisition Corps (AAC) Project Manager of the Year Award in 2004.

Hughes takes the reins of PEO C3T after a dual assignment as CG, Natick Soldier Systems Center and DCG, U.S. Army Research, Development and Engineering Command. He was a key contributor to the Army's network modernization during his previous assignment as director of system-of-systems integration in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology.

As PEO C3T, Hughes will guide a workforce of more than 1,600 personnel who develop, field and support more than 40 Acquisition Category I, II and III programs, executing an annual budget of more than $3 billion. He will be assisted by another new leader at PEO C3T, **Ms. Mary Woods**, who was named deputy PEO in May, succeeding **Mr. William "Bill" Sverapa**, who retired.

"PEO C3T has a well-deserved reputation for getting the job done," Hughes said. "With the foundation laid by MG Price and her predecessors, and our talented, dedicated staff, I am confident the PEO will continue its track record of excellence."

## UH-60M CHANGE OF CHARTER



LTC Bradley Bruce, left, accepts the colors from COL Thomas Todd, Project Manager Utility Helicopters, during a UH-60M Black Hawk Product Office change of charter ceremony July 16 at Redstone Arsenal, AL. Bruce assumed responsibility as product manager (PdM) from LTC Billy Jackson, right, who has been assigned to a position at the Pentagon. As the new PdM, Bruce will oversee the UH-60M fielding to the next three combat aviation brigades. The UH-60 Black Hawk is the Army's largest procurement program, with 28 configurations and mission equipment package variants, representing approximately half of the Army's rotary-wing fleet. (Photo by Sofia Bledsoe, PEO Aviation)

## CHANGE OF CHARTER



Mr. Dennis Williamson, PEO Aviation chief of staff, presents COL James B. Brashear with the Charter for Project Manager Non-standard Rotary Wing Aircraft (PM NSRWA) Aug. 7 during a change of charter ceremony at Redstone Arsenal. Brashear assumed responsibility for the project office from Mr. Kelvin Nunn, who had held the position for 10 months and will return to his former position as deputy PM. Brashear most recently served as director of the Defense Science and Technology Center. He had also served as PEO Aviation's first centrally selected PdM Light Utility Helicopter. (Photo by Randy Tisor, PEO Aviation Public Affairs)

**HONORABLE ORDER
OF ST. MICHAEL**
LTC Heyward Wright, outgoing PdM UH-60 A/L/M Black Hawk, receives the Honorable Order of St. Michael, Bronze Award June 26 from COL Thomas Todd, Project Manager Utility Helicopters and vice president of the Tennessee Valley Chapter of the Army Aviation Association of America. (Photo by Sofia Bledsoe, PEO Aviation)



**LEGION OF MERIT**
LTC Dave Bristol receives his retirement certificate from Mr. Kelvin Nunn, at the time acting PM NSRWA, during a retirement luncheon and ceremony. Bristol, who served for more than 30 years, was also recognized with a LOM. He held a variety of leadership positions in Army aviation, most recently as acting deputy PM NSRWA. (Photo by Sofia Bledsoe, PEO Aviation)

### A NEW DEPUTY IN TOWN
The U.S. Army Acquisition Support Center welcomed a new deputy director, **COL David W. "Wil" Riggins**. (See general officer nominations.)

### HALLOCK PICKED TO SERVE
### ON WHITE HOUSE COMMITTEE
**President Barack Obama** nominated **Mr. Harry P. Hallock**, the new deputy assistant secretary of the Army for procurement (DASA(P)), to the Committee for Purchase from People Who Are Blind or Severely Disabled, also known as the AbilityOne Commission. Created in 1938 to provide jobs for the blind, the AbilityOne program now also includes people with severe disabilities, enabling them to provide services to the federal government. The commission includes 15 presidential appointees, 11 of whom serve as advocates for federal agencies. Hallock has served since July as the Army's competition advocate. (See related article on Page 155.)

### GENERAL OFFICER ASSIGNMENTS
**BG John G. Ferrari**, to deputy director, Program Analysis and Evaluation, Office of the Deputy Chief of Staff, G-8, U.S. Army, Washington, DC. He most recently served as the G-8's director, Joint and Futures.

**BG Mark W. Palzer**, U.S. Army Reserve, chief, C/J-4, International Security Assistance Force/deputy CG – support, U.S. Forces – Afghanistan, Operation Enduring Freedom (OEF), Afghanistan, to deputy director for Logistics Operations, J-4 (Individual Mobilization Augmentee), Joint Staff, Washington, DC.

### GENERAL OFFICER NOMINATIONS
*Secretary of Defense* **Chuck Hagel** *has announced that President Obama nominated the following Army Competitive Category colonels for promotion to the rank of brigadier general and reassignment:*

**COL David W. "Wil" Riggins**, deputy director, U.S. Army Acquisition Support Center, Fort Belvoir, VA, to deputy CG, U.S. Army Research, Development and Engineering Command/Senior Commander, Natick Soldier Systems Center, Natick, MA.

**COL Kurt J. Ryan**, military assistant to the Assistant Secretary of Defense (Logistics and Materiel Readiness), Washington, DC to commander, 593rd Sustainment Command (Expeditionary), Joint Base Lewis-McChord, WA.

**COL William E. Cole** to chief of staff, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)), Washington, DC. He most recently served as director, ASA(ALT) (Forward), OEF, Afghanistan.

*Army Chief of Staff GEN Raymond T. Odierno announced the following officer assignments:*

**MG Margaret W. Boor**, U.S. Army Reserve, as commander (Troop Program Unit), 99th Regional Support Command, Fort Dix, NJ. She is currently serving as the deputy director for Logistics Operations, J-4 (Individual Mobilization Augmentee), Joint Staff, Washington, DC.

**MOVING ON**

Mrs. Sherry L. Taylor left the U.S. Army Acquisition Support Center, where she was chief, Resource Management Division, Aug. 6 to attend Senior Service School at the Dwight D. Eisenhower School for National Security and Resource Strategy (formerly the Industrial College of the Armed Forces), Fort McNair, Washington, DC.

**MG Jonathan A. Maddux** as assistant military deputy to the ASA(ALT), Washington, DC. He most recently served as the deputy CG, support, Combined Security Transition Command – Afghanistan, OEF, Afghanistan.

**BG David G. Bassett**, deputy PEO Combat Support and Combat Service Support, Warren, MI, to PEO Ground Combat Systems, Warren, MI.

*The following general officers were promoted to the ranks indicated below from July 2 through Aug. 1:*

**LTG Thomas W. Spoehr,** currently serving as the director, Office of Business Transformation, Office of the Undersecretary of the Army, Washington, DC.

**MG Thomas A. Horlander**, currently serving as the director, Business Operations, Office of Business Transformation, Office of the Secretary of the Army, Washington, DC.

**BG Edward M. Daly**, currently serving as special assistant to the CG, U.S. Army Training and Doctrine Command, Fort Lee, VA.

*The following general officers were promoted to the ranks indicated below from Aug. 2 through Sept. 1:*

**LTG David L. Mann**, currently serving as CG, U.S. Army Space and Missile Defense Command/Army Forces Strategic Command, Redstone Arsenal, AL.

**MG Brian C. Lein**, currently serving as deputy CG (operations), U.S. Army Medical Command, Falls Church, VA.

**BG Leon N. Thurgood**, currently serving as PEO Missiles and Space, Redstone Arsenal, AL.

**BG Flem B. Walker Jr.**, currently serving as CG, 3rd Sustainment Command (Expeditionary), Fort Knox, KY.

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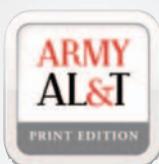


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## RECOMMENDED READING LIST

Army leaders have always encouraged their Soldiers to read. Even—and especially—in this age of information overload, the pursuit of knowledge through books is essential to develop a fuller understanding of acquisition, logistics and technology. In the words of Chief of Staff of the Army GEN Raymond T. Odierno, "We can never spend too much time reading and thinking about the Army profession and its interaction with the world at large. … There is simply no better way to prepare for the future than a disciplined, focused commitment to a personal course of reading, study, thought, and reflection." On that note, we publish "Off the Shelf" as a regular feature to bring you recommended reading from Army AL&T professionals.

### PRIVATE MILITARY CONTRACTORS AND THE RECONSTRUCTION OF IRAQ: TRANSFORMING MILITARY LOGISTICS
by Christopher Kinsey
(New York, NY: Routledge, 2013, 208 pages)

Not long after Operation Enduring Freedom began Oct. 7, 2001, contractors supporting military personnel outnumbered those they were supporting. This book looks at how and why the United States and the United Kingdom became so dependent on contractors in the reconstruction of Iraq, and what that dependence means for the future. The author, a lecturer in the Defence Studies Department of King's College London, specializes in the privatization of security, new wars, strategic thought and security reform. Kinsey is also the author of "Corporate Soldiers and International Security: The Rise of Private Military Companies."
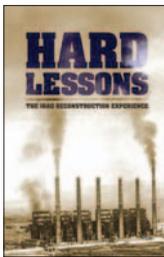
### HARD LESSONS: THE IRAQ RECONSTRUCTION EXPERIENCE, A REPORT OF SIGIR, THE SPECIAL INSPECTOR GENERAL FOR IRAQ RECONSTRUCTION
by the U.S. Government, U.S. Army
(CreateSpace Independent Publishing Platform, 2013, 374 pages; available online at **http://www.sigir.mil/files/HardLessons/Hard_Lessons_Report.pdf**)

This first comprehensive account of the Iraq reconstruction effort reviews in detail the United States' rebuilding program, shedding light on why certain programs worked while others fell short. "Hard Lessons" examines that reconstruction from mid-2002 through the fall of 2008. Like SIGIR's previous lessons-learned reports, this study is not an audit. Rather, it arises from a congressional mandate to provide "advice and recommendations on policies to promote economy, efficiency, and effectiveness" in programs created for Iraq's relief and reconstruction.

### CONTINGENCY CONTRACTING: IMPROVED PLANNING AND MANAGEMENT OVERSIGHT NEEDED TO ADDRESS CHALLENGES WITH CLOSING CONTRACTS
by the U.S. Government Accountability Office
(CreateSpace Independent Publishing Platform, 2013, 48 pages; available online at **http://www.gao.gov/products/GAO-11-891**)

Since 2002, DOD has obligated at least $166.6 billion on contracts supporting reconstruction and stabilization efforts in Iraq and Afghanistan. Many of these contingency contracts, in particular those in Iraq, need to be closed; DOD still must review and potentially close at least 58,000 contracts awarded between FY03 and FY10. GAO's analysis indicates that few of these contracts will be closed in the time required. To help address this backlog of contracts, GAO recommends that the secretary of defense direct the secretary of the Army to ensure that the U.S. Army Contracting Command – Rock Island, IL, has adequate resources to meet forecasted closeout demands.
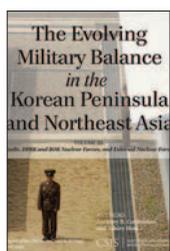
## THE EVOLVING MILITARY BALANCE IN THE KOREAN PENINSULA AND NORTHEAST ASIA, VOL. III: MISSILE, DPRK AND ROK NUCLEAR FORCES, AND EXTERNAL NUCLEAR FORCES (CSIS Reports)

by Anthony H. Cordesman and Ashley Hess

(Washington, DC: Center for Strategic & International Studies, 2013, 186 pages; available online at **http://csis.org/publication/evolving-military-balance-korean-peninsula-and-northeast-asia**)

The analysis in this third volume of "The Evolving Military Balance in the Korean Peninsula and Northeast Asia" series from Cordesman, who holds the Arleigh A. Burke Chair in Strategy at the Center for Strategic & International Studies, and Hess, who worked with Cordesman as a research intern, shows how tensions between the Koreas—the Democratic People's Republic of Korea and the Republic of Korea—create a nearly open-ended spectrum of possible conflicts that could also include the People's Republic of China, Japan and the United States. These range from posturing and threats, to a major conventional conflict on the Korean Peninsula, to intervention by outside powers such as the United States and China, to the extreme of nuclear conflict. The authors also raise the possibility of conflicts that could extend far beyond the boundaries of the Koreas.
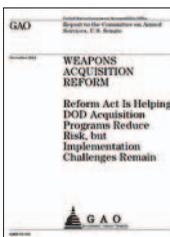
## WEAPONS ACQUISITION REFORM: REFORM ACT IS HELPING DOD ACQUISITION PROGRAMS REDUCE RISK, BUT IMPLEMENTATION CHALLENGES REMAIN

by the U.S. Government Accountability Office

(CreateSpace Independent Publishing Platform, 2013, 48 pages; available online at **http://www.gao.gov/products/GAO-13-103**)

This third GAO analysis of 11 weapon acquisition programs shows that the Weapon Systems Acquisition Reform Act of 2009 (WSARA) has reinforced early attention to requirements, cost and schedule estimates, testing and reliability. For example, before starting development, an independent review team raised concerns about the Ground Combat Vehicle program's requirements and the risks associated with its seven-year schedule. The Army then reduced the requirements by about 25 percent and prioritized them, giving contractors more flexibility in designing solutions. In addition, the Office of the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation—created by WSARA—used test results to help the Joint Light Tactical Vehicle program develop a more realistic reliability goal and a better approach. Still, DOD faces five challenges—organizational capability constraints, the need for additional guidance on cost estimating and WSARA implementation, uncertainty about the sufficiency of systems engineering and developmental testing resources, limited dissemination of lessons learned, and cultural barriers between the Office of the Secretary of Defense and the military services—that limit its ability to broaden WSARA's influence.
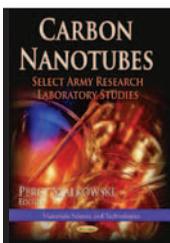
## CARBON NANOTUBES: SELECT ARMY RESEARCH LABORATORY STUDIES

Edited by Percy Szalkowski

(Hauppauge, NY: Nova Science Publishers Inc., 2013, 72 pages)

This book delves into the science of carbon nanotubes (CNTs) as explored by the U.S. Army Research Laboratory. CNTs, rolled-up sheets of graphite with very high mechanical strength and novel electronic properties, have potential applications in materials science, such as the structural dynamics of helicopter rotor blades. Topics in this book include increasing the capacitance of CNT- or graphene-based supercapacitors by adding pseudocapacitive manganese oxide nanoparticles; electrochemical double layer capacitors fabricated using CNT/paper flexible electrodes; improving microbolometric response using CNTs; and the performance of CNTs in extreme conditions and in the presence of microwaves.

*A wealth of suggested reading titles is in GEN Odierno's professional reading list, online at **http://www.history.army.mil/html/books/105/105-1-1/index.html**. Is there a book you'd like to recommend for this column? Send us an email at **armyalt@gmail.com**. Please include your name and daytime contact information.*

# THEN & NOW

## 1974 & 2013

Throughout history, most military combat was conducted during the day because it was difficult, if not impossible, to see the enemy in the dark with the naked eye. So, without artificial illumination, such as fire and later searchlights, warriors tended to steer clear of operations at night.

A good example of avoiding night combat operations may have been an account from the Old Testament (*Joshua 10:3*) when Joshua prayed for the sun to stand still so his army could continue pursuing the enemy and thwarted their escape. It was best to engage the enemy in the daylight where you could not only see them, but also find their hiding places and calculate their intent.

Today, with the latest night vision devices, night operations are not only feasible but have been proven effective time and again on the battlefield. However, it took decades of research, testing and lessons learned from night operations before the U.S. military could make the claim: "We own the night."

The advent of modern night vision technologies came in the 1930s and continued through World War II, the '50s and the '60s. An article in the May-June 1974 edition of Army R&D Magazine (now Army AL&T magazine) reported that "in the Southeast Asia conflict, the U.S. Army introduction of night vision devices was hailed as a far-reaching breakthrough that took the night away from 'Charlie,' meaning dramatic curtailing of effective guerrilla cover-of-darkness enemy attacks." The need for further advanced night vision systems came from "lessons learned during the Middle East War in October [1973], during which many engagements evidenced the critical importance of night vision devices."

Fast forward to 2013, when engineers and scientists have discovered ways to capture available electromagnetic radiation outside the portion of the light spectrum visible to the human eye, using night vision technologies. These include thermal imaging (uncooled infrared detectors, and second- and third-generation forward-looking infrared), image intensification, countermine/counter improvised explosive devices and lasers. On the horizon are platform-centric sensor suites for ground and air platforms that will improve situational awareness and allow closed-hatched hemispherical vision. These systems will provide near-360-degree night vision integrated with threat cueing, video capture and cueing interrogation.

The ultimate goal of night vision technology is to improve Soldiers' capabilities by providing affordable lightweight sensors that will lighten their load, improve survivability and increase lethality so they can continue to "own the night" during combat operations.

*For more information on night vision technologies, go to* **http://www.nvl.army.mil/index.html**. *For a historical tour of AL&T over the past 52 years, go to the Army AL&T magazine archives at* **http://asc.army.mil/web/magazine/alt-magazine-archive/**.

**WE OWN THE NIGHT**
A Soldier with 1st Battalion, 5th Cavalry Regiment, 2nd Brigade Combat Team, 1st Cavalry Division fires a Squad Automatic Weapon Aug. 11 during close quarters marksmanship training on Firebase Maholic, Bagram Airfield, Afghanistan. (U.S. Army photo by SPC Ryan Green, 982nd Combat Camera)

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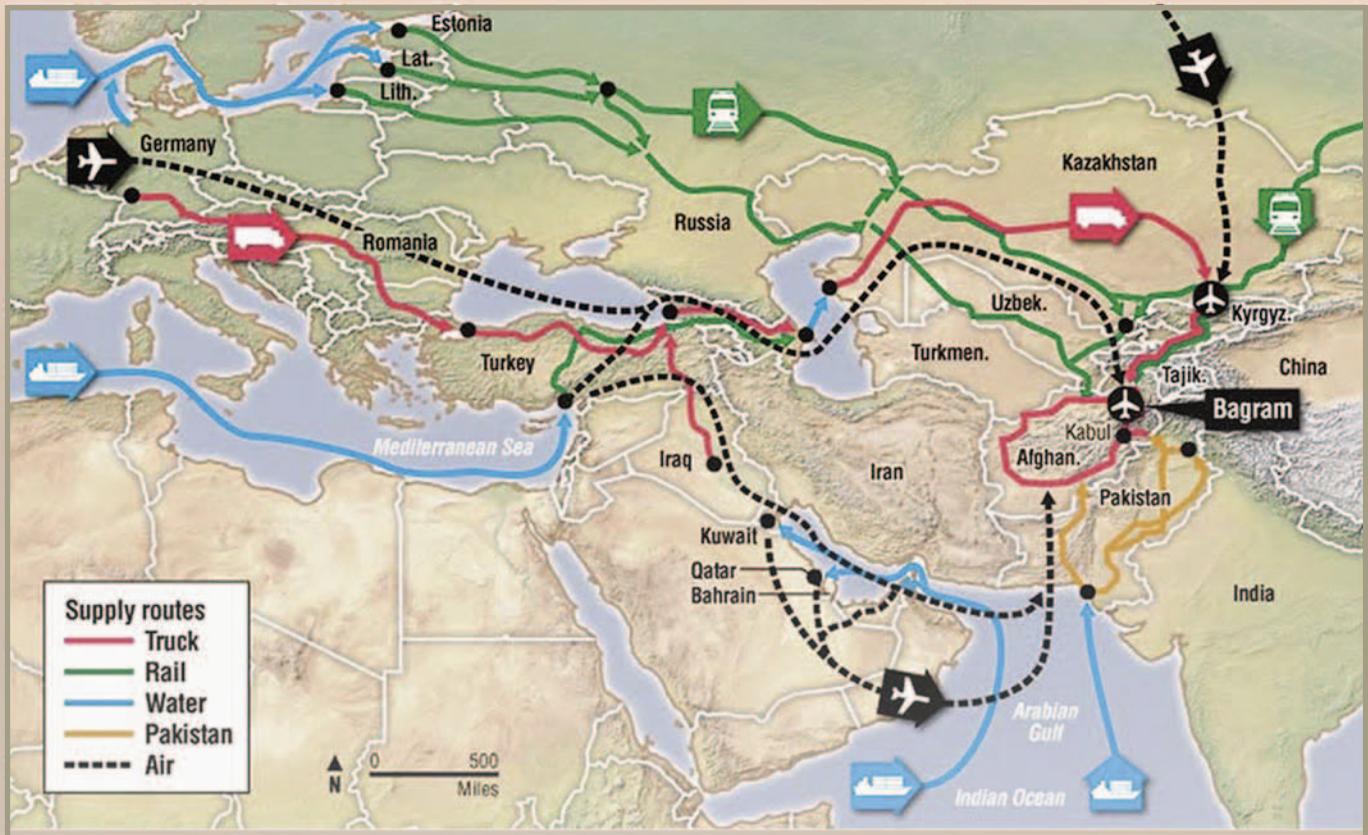


"We are tracking every single unit ... and are trying to automate so we can build the requirement for the transportation earlier. ... Even before they move from their forward operating base to turn in their equipment, we've already prioritized their equipment to return home ..."

**COL Gregg Skibicki**
*Chief, G-8 Force Development Operations
and Integrations Division*

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